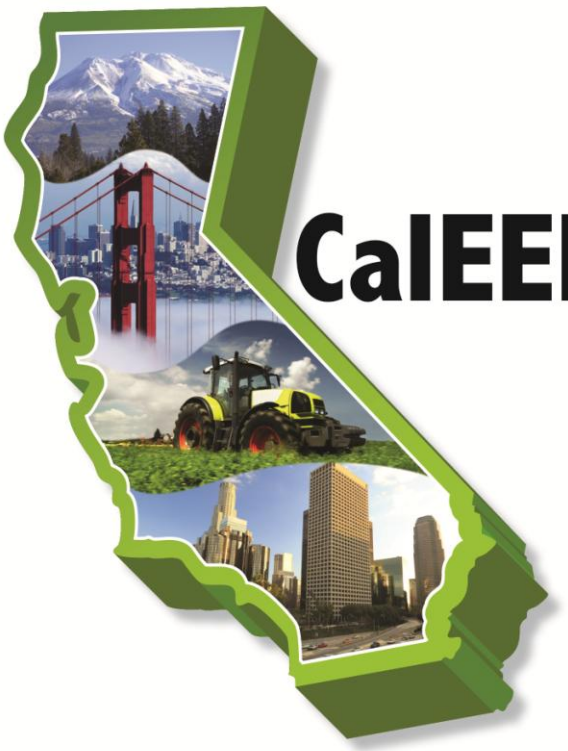

California Emissions Estimator Model®

User's Guide

Version 2013.2

Prepared for:
California Air Pollution Control Officers Association (CAPCOA)

Prepared by:
ENVIRON International Corporation and the California Air Districts

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1 Introduction

This User's Guide (Guide) to the California Emission Estimator Model (CalEEMod)® is meant to give the user an introduction on how to use the program as well as document the detailed calculations and default assumptions made in associated appendices. The purpose of CalEEMod is to provide a uniform platform for government agencies, land use planners, and environmental professionals to estimate potential emissions associated with both construction and operational use of land use projects. It is intended that these emission estimates are suitable for use in California Environmental Quality Act (CEQA) compliant documents for air quality and climate change impacts. In addition individual districts may develop additional uses for the model's emission estimates to show compliance with local agency rules.

CalEEMod utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the United States Environmental Protection Agency (USEPA) AP-42 emission factors, California Air Resources Board (ARB) vehicle emission models, studies commissioned by California agencies such as the California Energy commission (CEC) and CalRecycle. In addition, local air districts were given the opportunity to provide default values and existing regulation methodologies to use in their specific regions. If no information was provided by local air districts, appropriate state-wide values were utilized if regional differences could not otherwise be defined. Since new information and regulations are always changing, local agencies should be consulted to determine any recommended values to use that may differ from the defaults currently used in CalEEMod. User's of CalEEMod should keep in mind the assumptions and limitations of the default data in CalEEMod. A large majority of the default data associated with locations and land use is based on surveys of existing land uses. Caution should be taken if the project deviates significantly from the types and features included in the survey that forms the substantial evidence supporting the default data. In these situations site specific data that is supported by substantial evidence should be used if available.

The model provides a number of opportunities for the user to change the defaults in the model, however, users are recommended to provide justification for changing the defaults (e.g., reference more appropriate data) in the "Remarks" box provided at the bottom of the screen. Further, the user is reminded that CalEEMod is an emissions model and not an enforcement mechanism, thus, the user should ensure correct data is inputted, including the choice and percent reduction of mitigation most applicable to the land use project being evaluated.

1.1 Purpose of Model

CalEEMod provides a simple platform to calculate both construction emissions and operational emissions from a land use project. It calculates both the daily max and annual average for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions which can be used in support of analyses in CEQA documents such as Environmental Impact Reports (EIRs) and Negative Declarations. In addition, default values for water and energy use are quantified which may be useful for other sections in an EIR or represent opportunities to incorporate the

rigorous site-specific information from the other EIR sections. Specifically the model aids the user in the following calculations:

- Short term construction emissions associated with demolition, site preparation, grading, building, coating, and paving from the following sources
  - Off-road construction equipment
  - On-road mobile equipment associated with workers, vendors, and hauling
  - Fugitive dust associated with grading, demolition, truck loading, and roads (Fugitive dust from wind blown sources such as storage piles are not quantified in CalEEMod which is consistent with approaches taken in other comprehensive models.)
  - Volatile emissions of reactive organic gasses (ROG) from architectural coating *(including painting on parking lots)* and paving.
- Operational emissions associated with the fully built out land use development
  - On-road mobile vehicle traffic generated by the land uses
  - Fugitive dust associated with roads
  - Volatile emissions of ROG from architectural coating
  - Emissions from off-road equipment (e.g., forklifts, cranes) used during operation
  - Off-road emissions from landscaping equipment
  - Volatile emissions of ROG from consumer products and cleaning supplies
  - Wood stoves and hearth usage
  - Natural gas usage in the buildings
  - Electricity usage in the buildings (GHG only)
  - Electricity usage from lighting in parking lots and lighting, ventilation and elevators in parking structures
  - Water usage by the land uses (GHG only)
  - Solid waste disposal by the land uses (GHG only)
- One-time vegetation sequestration changes
  - Permanent vegetation land use changes
  - New tree plantings
- Mitigation impacts to both short-term construction and operational emissions
- Several of the mitigation measures described in CAPCOA's Quantifying Greenhouse Gas Mitigation Measures[1] have been incorporated into CalEEMod.

[1] Available at : http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

2 Program Installation

The program is distributed and maintained by the California Air Pollution Control Officers Association[2]. The most recent version can be downloaded from www.caleemod.com.

2.1 Operating System Requirements

CalEEMod was programmed by ENVIRON using Microsoft SQL Compact Edition in conjunction with a Visual Basic Graphical User Interface (GUI). CalEEMod requires the following system requirements:

- Microsoft Windows XP, Vista, or 7 Operating System
- Microsoft .Net Framework 4 or higher
- 90 Mb hard drive space available

2.2 Installation Procedures

To install

1. Be sure to uninstall any previous versions of CalEEMod before installing a new version as some file names will be the same potentially confusing the computer. To uninstall for most computers, under Settings, Control Panel. Programs and Features, highlight CalEEMod .msi and .exe files and then click 'uninstall.'

2. Ensure you have the required Microsoft .Net framework 4 or higher installed on your machine. If not install this first. It is available free from Microsoft at http://www.microsoft.com/net/download.aspx

3. Download the installation files (setup.exe and CalEEMod_2013.2.msi).

4. Click the setup.exe file that you downloaded. This should walk you through the rest of the installation.

5. The default directory for CalEEMod is C:\CalEEMod\. The user may select alternative locations for installation[3]. The user will also be prompted to select to install CalEEMod for everyone who uses the computer or just the current user.

6. Click "Next" until the installation has completed. Then click close to exit the installer.

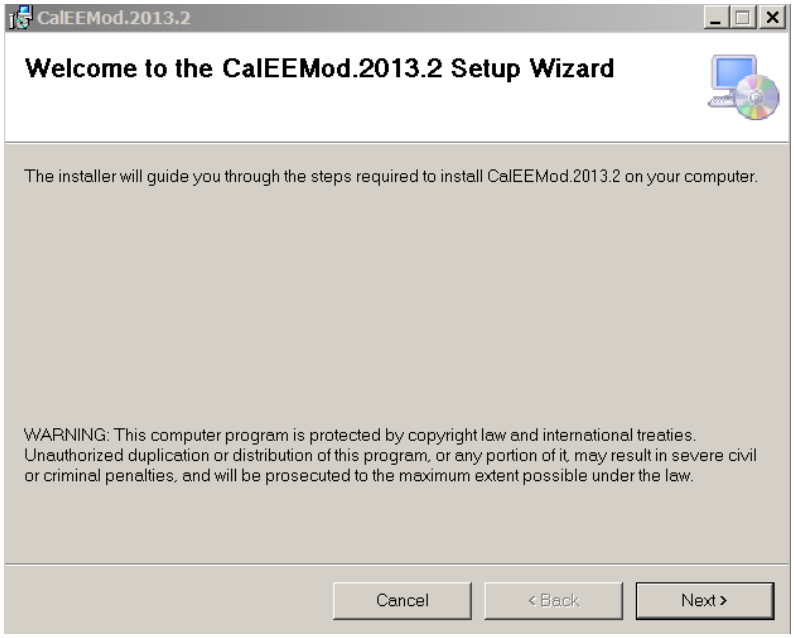
7. Click the link below to install SQL Server Compact 3.5 SP2

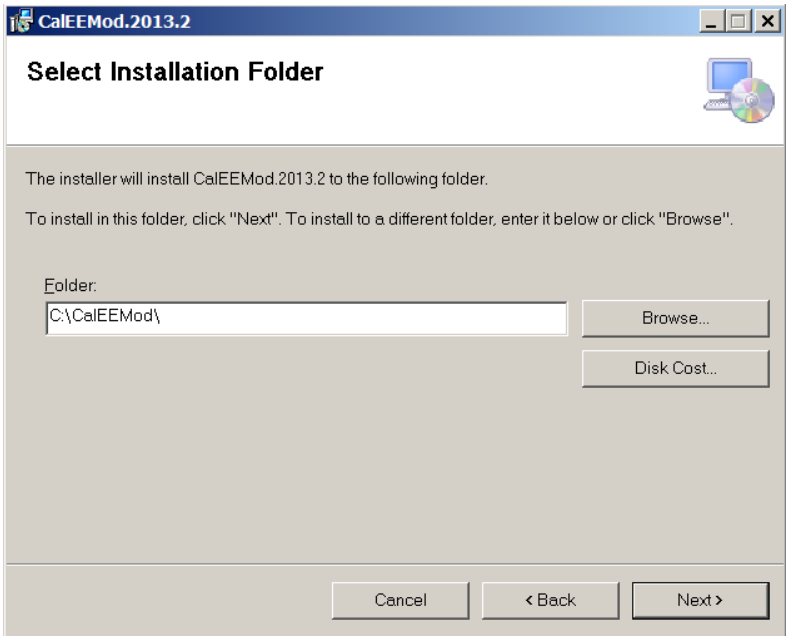
   http://www.microsoft.com/downloads/details.aspx?familyid=E497988A-C93A-404C-B161-3A0B323DCE24&displaylang=en

2 CalEEMod® 2012 All Rights Reserved by California Air Pollution Control Officers Association.
3 If you use windows Vista or 7, please be aware of file privileges which may not allow access rights to some folders during program operations such as C:\Program Files\

Once this file is downloaded, unzip the file anywhere on your computer and run the installation file (setup.exe). Be sure to follow the instructions on Microsoft's website and locate the appropriate .msi file. For 32-bit computers, one needs SSCERuntime_x86-ENU.msi and on a 64-bit computer, install both the 32-bit and the 64-bit version of the SQL Server Compact 3.5 SP2 MSI files. Existing SQL Server Compact 3.5 applications may fail if only the 32-bit version of the MSI file is installed on the 64-bit computer.

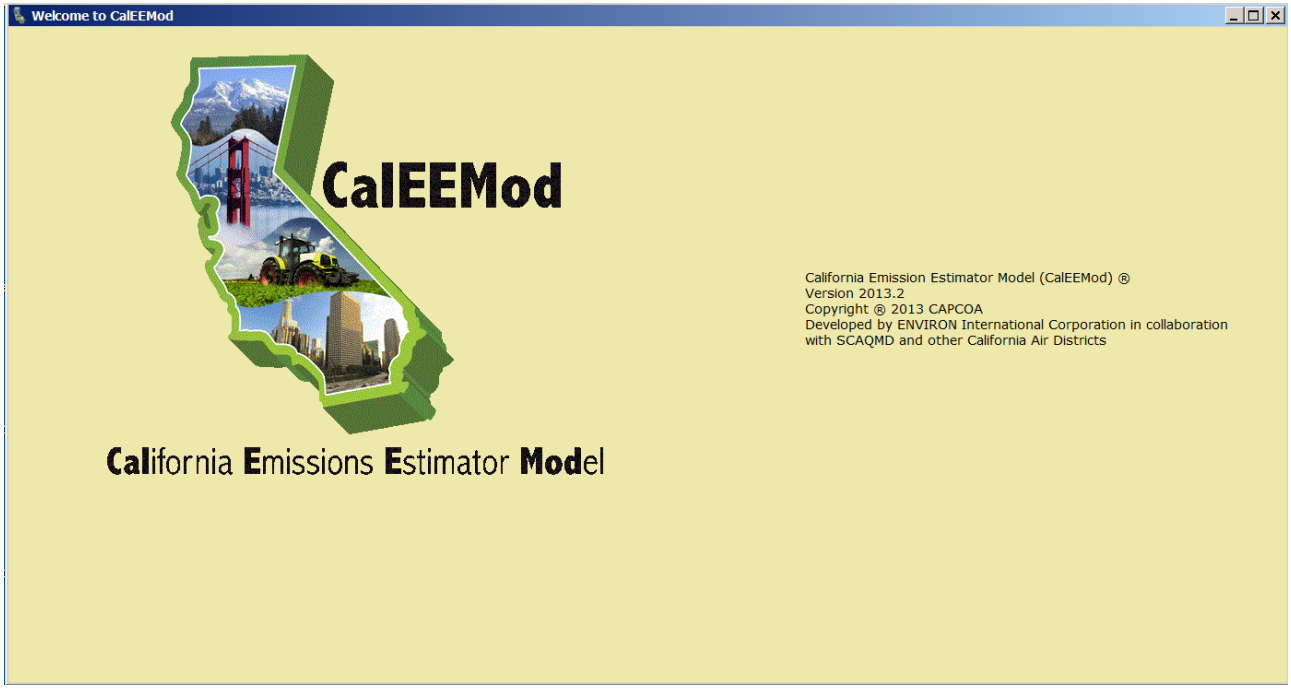
8. If you have any further trouble installing CalEEMod, make sure you have appropriate user privileges and the system requirements.





2.3 Starting CalEEMod

The installation will create a short cut icon on the desktop as well as add CalEEMod to the Programs available from the Start Button. Select CalEEMod from the program files or double click on the CalEEMod short cut. This will open CalEEMod.



3 Using CalEEMod

CalEEMod is designed as a linear series of screens with an individual purpose such as project characteristics, construction schedule and equipment, operational activity, mitigation measures, etc. The user is expected to input basic information about the project such as location, land use type (e.g., residential, commercial, retail, etc.) and its size. The functionality of the model is to populate later screens with pre-determined defaults based on basic project and location information provided by the user. However, if more accurate information is known, the user has the ability to override the defaults provided.

The figure on page 7 identifies some key features of CalEEMod which are described below.

1. Menu Bar: A drop down menu found on all screens. The "Home" menu controls file features such as New Project, Open Project, Save Project, and Save As Project. The "Help" will link to appropriate information for the relevant screen from this User's Guide. All other menus will allow navigation between screens in any order.

2. Screen Name: Identifies the name of the current screen.

3. Default Button: This button allows the restoration of program defaults if the user has changed any values on the screen. User entered values will be highlighted yellow to clearly indicate that they have been changed from the defaults. The user will be prompted if they would like to restore default for the current or last cell or the whole page. "Import CSV" will allow a user to load in a csv file for a specific data grid. "Cancel" cancels the previous action.

4. Remarks: This section at the bottom of each screen allows the user to enter comments regarding any user defined values entered on this screen. This is meant to assist reviewers of the program in determining justification for values selected.

5. Next Button: This button when clicked will take the user to the next sequential step. Later modules will also have a "Previous" button that will take the user back to the previous sequential step.

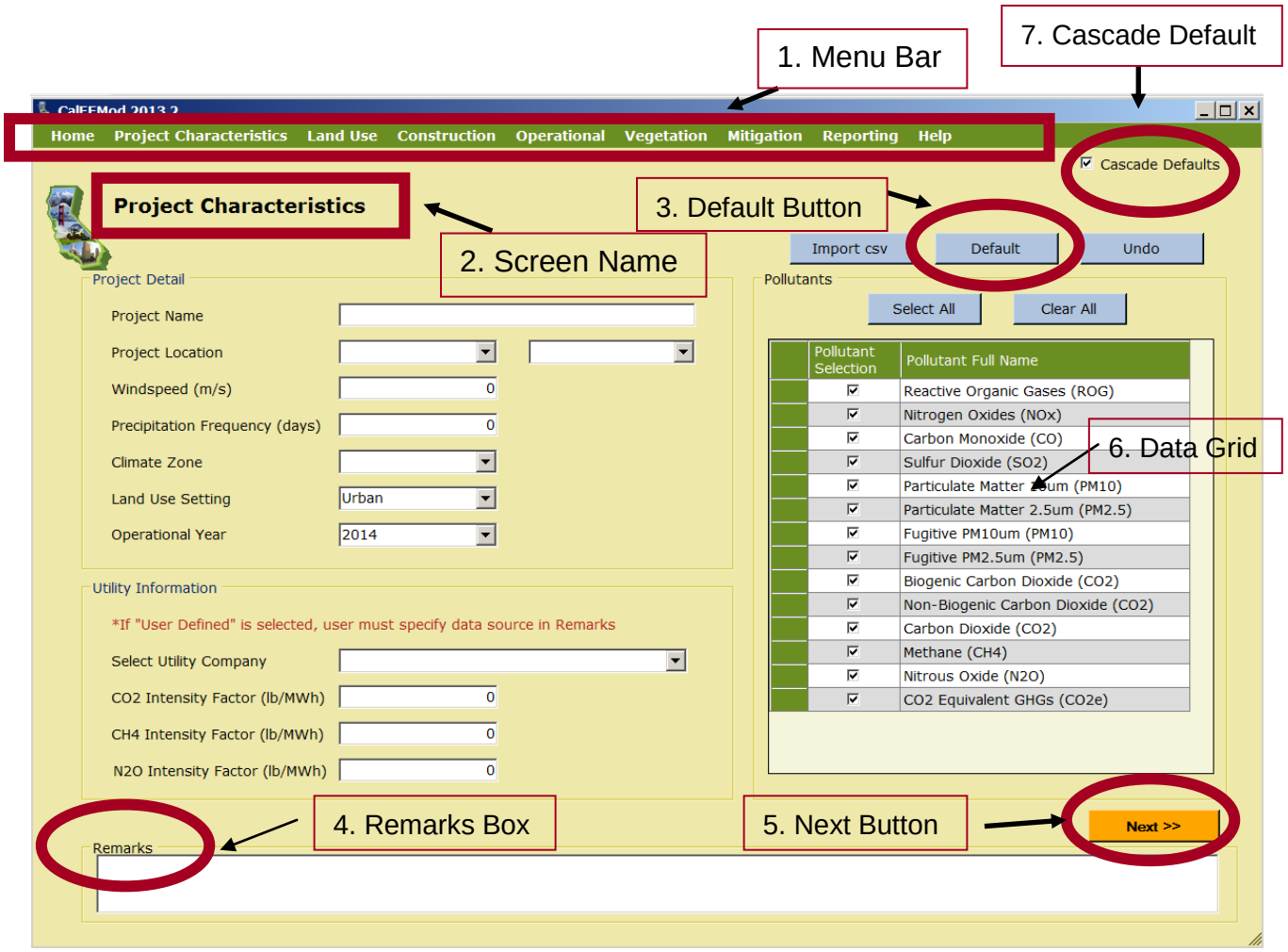
6. Data Grid: This is a common box where values for the variables defined across the top to be filled in. The number of rows will automatically be adjusted based on the number of rows of information required to define the information. The last row is indicated with an asterisk (*) and once information is started to be added to this row a new row will be added at the end. To delete a row select the desired row to delete, and hit the delete button on your keyboard (This is allowed unless the data grid is a fixed list such as the Pollutant selection list.). Scroll bars (both horizontal and vertical) will occur automatically if necessary.

7. Cascade Default: CalEEMod version 2013.2 introduces a new feature freezing the downloading of programmed defaults. Each input screen displays a box called "cascade default" automatically checked to populate defaults in future screens. However, if the "cascade default" box is unchecked, no defaults will be populated in subsequent screens. Unless all the necessary input parameters required for a proper analysis are known, it is recommended the user runs the model at least once with "cascade default" clicked on to allow the defaults to be populated. Then, if the user would like to change project parameters (e.g., number of dwelling units, building square footage, etc) without cascading new defaults in later screens, then uncheck the "cascade default" box when in the land use screen. This feature will prove useful for those users who override the defaults with specific project information (e.g., construction schedule, construction equipment, water use, energy use, etc.) and would like to evaluate different project scenarios with the same basic project information (i.e., land use type, location). If unchecking the "cascade default" box, the user should also be aware of the following:

    - *All* subsequent screens will freeze defaults
    - Changes to screens after land use (e.g., adding a new construction phase) will not cascade defaults relating to that change or add new tabs (e.g., trips and VMT, dust material movement) so any necessary input information will have to be added manual or impact will not be calculated
    - If changing or adding a land use type (e.g., from single family housing to a hospital), the future screens will not reflect the new land use type so some calculations (e.g., impacts from energy and water use) will not be properly performed

If a land use type is changed or added, it is recommended to click on the "cascade default" so the future screens can be populated with appropriate defaults and included in the analysis.

The next sections will give you some quick details on how to get started with a project in CalEEMod. Section 4 gives more specific details about each individual screen the user can encounter in CalEEMod.



3.1 Home

This is the part of the file menu bar that controls the file saving and opening features. The available options are:

- New Project
- Open Project
- Save
- Save As
- Exit

The user should select Open Project if they wish to load in a project that has been previously saved. Note that this will remove any information that has been entered into the GUI unless it has been saved to a file. Save will save the currently loaded project database as a Microsoft Excel file that can be used to open this project again into CalEEMod. Save As will allow the user to change the name of the saved project file. Exit will close CalEEMod. The Microsoft Excel file can be edited following the format of the save file to quickly make edits outside of the Graphical User Interface (GUI). The user will still need to use the GUI for reporting of results. This can be most useful in making changes to construction lists. Individual tabs can be loaded in as a .csv file in various places in CalEEMod to minimize the data entry.

3.2 Defining a Project

In order to define a project, the user will have to enter information on both the Project Characteristics screen and land use screen. After entering information on these two screens, CalEEMod will populate all of the other information required to calculate unmitigated construction (unless there is demolition, grading, or site preparation) and operation emissions using default data. Demolition, grading, and site preparation requires additional information regarding the amount of material to be demolished and material (debris, soil, etc) transported to or from the site that is entered on the appropriate construction screens. If site specific information will not be used, the user can jump to entering mitigation measures followed by reporting. If the user has any site-specific information that will replace the default information, this should be entered on the appropriate screens and provide justification for the change in the "Remarks" section at the bottom of each screen before moving on to mitigation and reporting. This justification for the default override will be printed in the report so the user is encouraged to provide a robust reasoning to allow for seamless review of the analysis.

3.3 Altering Default Data

CalEEMod was designed to allow for ease in changing default assumptions. Site-specific information that is supported with substantial evidence required by CEQA, is preferred when it is available. However, it is often the case that site-specific information is not available. CalEEMod was designed to assume reasonable default assumptions supported by substantial evidence to

the degree available at the time of programming. CalEEMod is based on fully adopted methods and data. Therefore, draft methods and data are not used as defaults.

3.4 Mitigation

Common construction mitigation measures that impact the calculations in CalEEMod have been incorporated as options for the user to select. At this time, required mitigation measures to comply with individual fugitive dust rules have not been incorporated in unmitigated calculations due to different interpretations of CEQA guidance regarding required mitigation.

Several mitigation measures from CAPCOA's Quantifying Greenhouse Mitigation Measures have been incorporated including combinations and caps when using multiple mitigation measures. Some mitigation measures are not as amenable to simple input information or are less common in their use and therefore not included at this time. CalEEMod was designed to include typical mitigation measures that are some of the more effective measures available to development projects. If mitigation measures are not available as options in CalEEMod, the user can likely alter values in the program that will allow for adjustment of hand calculated reductions due to mitigation that may be less common. This will require separate runs of CalEEMod files in order to properly account for unmitigated and mitigated scenarios.

3.5 Reporting

This is the part of the program that allows the user to select predefined reports that will display the emission calculation results. The user will be able to view these on a screen and save as either a Microsoft Excel file or a pdf file.

4 Detailed Program Screens

4.1 Project Characteristics

The project characteristics screen is where the user enters key location, electricity company information and pollutants they want to analyze. The information on this screen needs to be entered before proper default information can be used in subsequent screens. Changes on this screen will result in over riding user defined data with defaults in subsequent screens where this information is used. Under the Project Detail section the user enters the Project Name which will appear in the reports. The user then selects information from drop down boxes or overrides the default values in the text boxes. Each of the information categories on this screen are described in more detail below.

Project Location

The user selects the region in which the project is located. The user first selects if they want to choose an Air District, Air Basin, County, or State-wide. The second drop down box will give the list of specific locations based on the first drop down box which the user selects. For counties

that are divided between air districts, air basins or district requested subregions; the county is followed by the sub-county area which can influence some of the default values selected by modules. Consult your lead agency on their preference for location. This primarily influences on-road vehicle emissions, trip lengths, water supply and treatment electricity use, solid waste disposal rates, amount of paved roads, days of landscaping equipment use, architectural coating emissions, and hearth usage.

Wind Speed and Precipitation Frequency

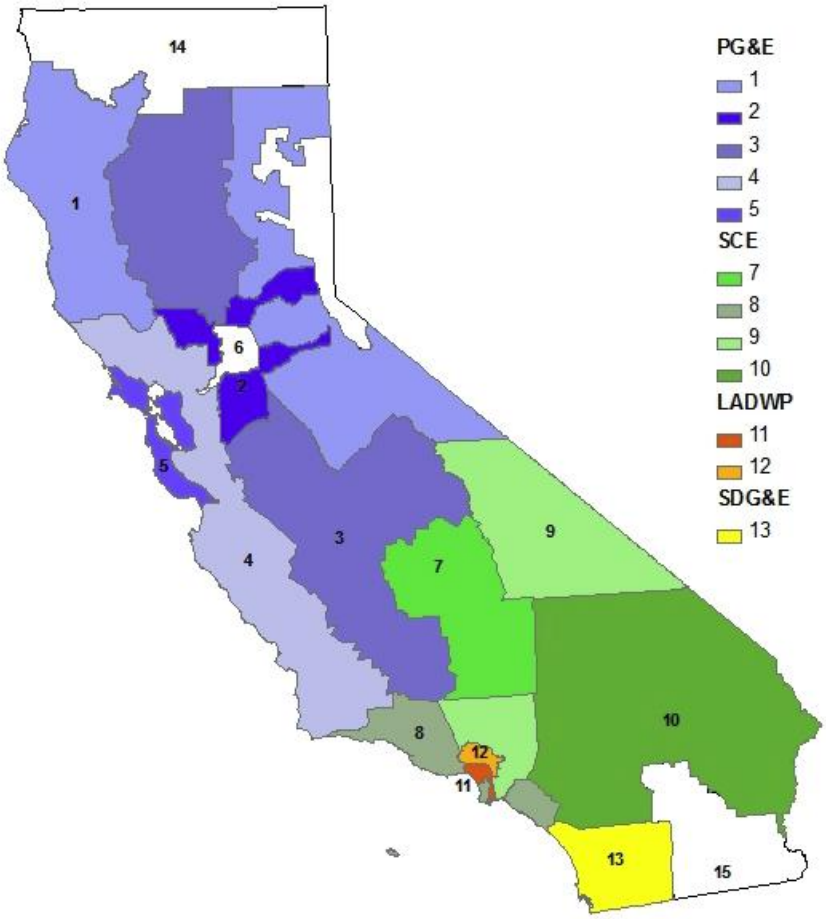
Selection of project location will fill in the default wind speed and precipitation frequency. The user can choose to override this information and type in a different value. The wind speed is in units of meters per second and is used in some fugitive dust calculations. Precipitation frequency is the number of days in a year that has precipitation greater than 0.01 inches in a day and is used in fugitive dust calculations.

Climate Zone

Selection of project location will restrict the climate zones available for the user to choose from based on the climate zones in the project location. The climate zones used are based on CEC forecasting climate zones (different than Title-24 building climate zones) as used in the California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS)[4.] The figure below indicates these climate zones. A spreadsheet is available in Appendix F, which allows the user to look up climate zones based on city or zipcodes if a user needs further assistance in selecting the appropriate climate zone.

4 CalEEMod v. 2013.2 has been updated to incorporate the October 2010 version of RASS.

CEC Forecast Climate Zones[5,6]



Land Use Setting

This is where the user indicates if the project is located in a rural or urban setting. The user should contact their local air districts for guidance on the appropriate land use setting to select as the definition used may differ based on the definitions used to support the urban and rural trip lengths in the relevant air basin.

5 Adapted from Figure ES-2 of CEC. 2010. Residential Appliance Saturation Survey. Available online at: http://www.energy.ca.gov/2010publications/CEC-200-2010-004/CEC-200-2010-004-ES.PDF

6 White spaces represent areas served by other electric utilities not included in survey.

Operational Year

The user should indicate the first year the project will be fully operational that they wish to use as a basis for determining emission factors for all operational modules. CalEEMod can handle the following years: 1990, 2000, 2005, 2010-2025, 2030, 2035, and 2040. This was done to limit the file size associated with vehicle emission factors. CalEEMod is currently designed for one year that initiates the beginning of the full operation of the project. However, it is recognized that some projects could be phased so the operation of the project begins over more than one year. In that case, it is recommended the user run the model multiple times for the various input parameters for each operational year.

Utility Information

The user should select the appropriate electricity utility provider from the list or select "user defined". If a specific utility is entered, the default GHG intensity factors will be filled in. The user will need to enter values if "user defined" is selected. These values are used to determine the GHG emissions associated with electricity use in various modules. The default values are based on ARB's Local Government Operations Protocol (LGO)[7](CO_2), updated public utility protocols (CO_2), and E-Grid values (CH_4 and N_2O). The CO_2 intensity factor used as defaults in CalEEMod are based on the latest reporting year available for each of the different utilities. Table 1.2 in Appendix D provides the default CO_2 intensity factor used and reporting year from which the factor was identified for each of the utilities. As with other defaults in the model, if a new value is identified before the defaults are updated, the user has the ability to override the default and provide justification for the change in the "Remarks" section at the bottom of the "Project Characteristics" screen.

Pollutants

The list of pollutants to the right of the screen automatically has all boxes checked. Uncheck any pollutants you don't want reported. Some of the pollutants are a combination of other identified pollutants such as Carbon dioxide (CO_2) is made up of biogenic and non-biogenic carbon dioxide. CO_2 Equivalent GHGs is the Global Warming Potential (GWP) weighted value of all GHGs. GWPs are based on the IPCC's Second Assessment Report[8].

Remarks

The user can enter any remarks to describe the reasonable explanation and justification of non-default values or to add additional detail regarding the basis for information used such as relevant EIR sections. These remarks are included in the report and will assist a reviewer in understanding the reasons for a change in the default value (e.g., new trip rate based on a project specific traffic study conducted by (*reputable traffic engineers*)).

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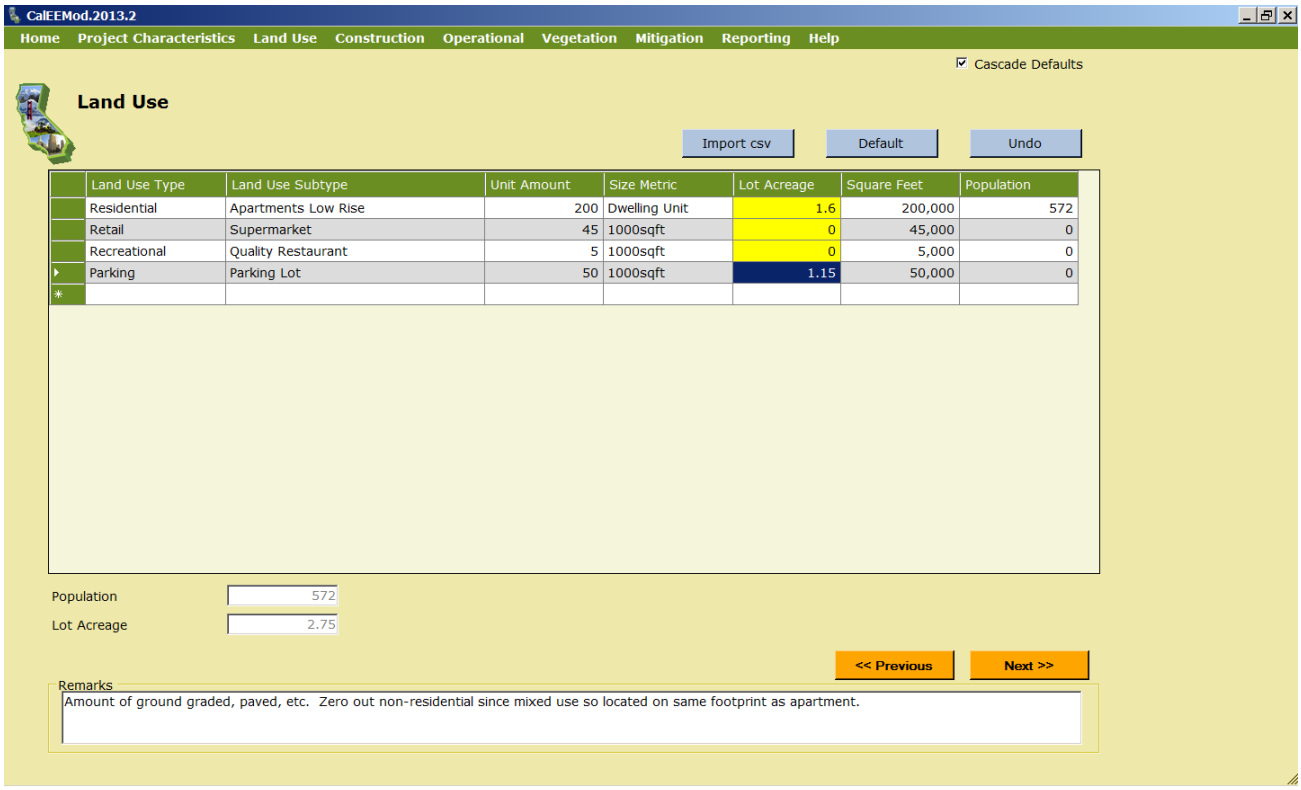
7 Available at: http://www.arb.ca.gov/cc/protocols/localgov/localgov.htm

8 Available at: http://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2nd-assessment/2nd-assessment-en.pdf

4.2 Land Use

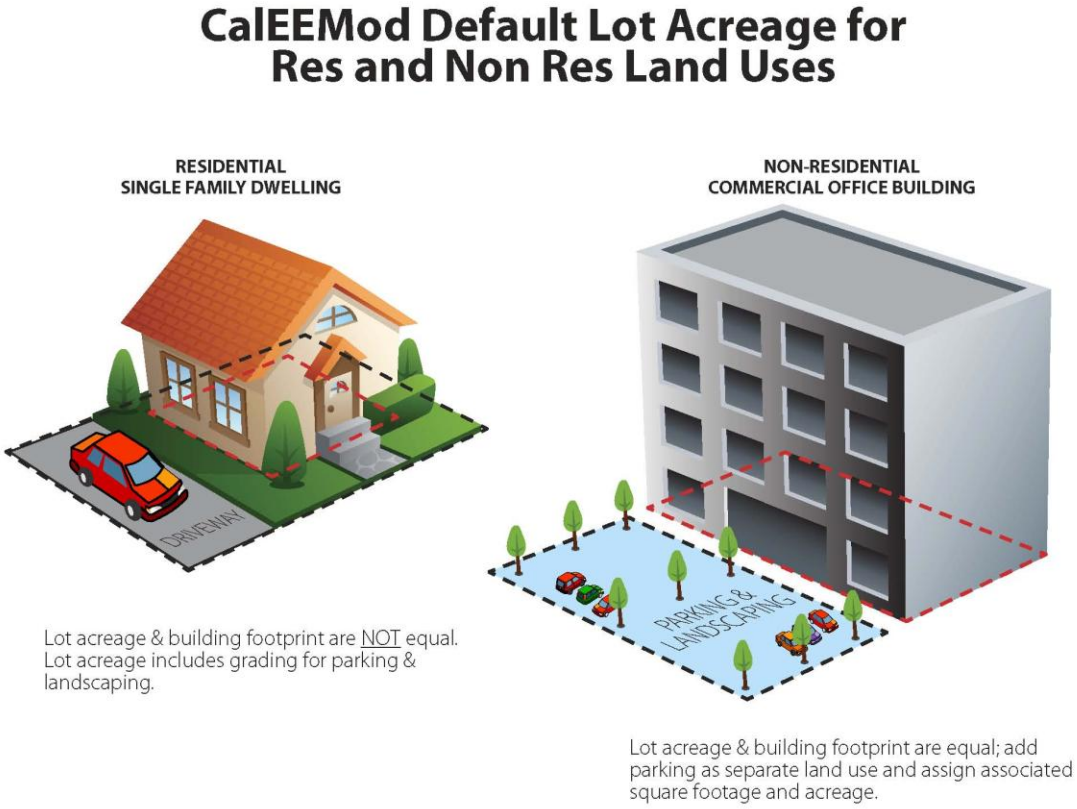
This screen is used to define the specific land uses that will occur at the project site. The land uses, size features and population are used throughout CalEEMod in determining default variables and calculations.



Land Use Type

The user selects from the drop down list of the primary land use types: Commercial, Educational, Industrial, Residential, Retail, Recreational, and ***Parking***. The 63 different land uses types were chosen for inclusion in CalEEMod because each has an established trip rate critical for mobile source calculations.

This program specifically designates parking areas as a separate land use rather than as a part of an associated non-residential land use (e.g., commercial buildings, retail facilities, etc.). Due to the nature of the available data, parking (i.e., driveway) for residential land uses have been incorporated (see discussion under Lot Acreage) so no separate parking land use needs to be identified. For a better understanding of how CalEEMod treats parking based on the footprint and lot acreage of residential and non-residential land uses, please refer to the following figure. As depicted, the lot acreage of a residential land use includes the parking and building footprint. For non-residential land uses, the lot acreage is the same as the building footprint so parking needs to be added as a separate land use.



For the parking land use, two primary options are available: parking lots or parking structure (e.g.,garages). There are four types of parking structures for the user to choose – enclosed, enclosed with an elevator, unenclosed, or unenclosed with an elevator. The reason for the specific description is to properly calculate energy impacts from ventilation and elevator operation. Parking as a separate land use made the estimate of default acreage and paving area easier.

For those land uses not listed (e.g., roads, underground parking, pipelines, etc.) each land use type has a "User Defined" land use subtype associated with it that the user can select if the other land use subtypes do not describe or reflect the project being analyzed. It is critical to understand that there is no default data (including size metric) associated with the "User Defined" land uses and all information that is based on these land uses will need to be entered by the user otherwise no emissions will be calculated. Also, whatever size metric (e.g., per acre, per 1000 square foot, etc.) the user chooses for the "User Defined" land use needs to be applied to all subsequent default values (e.g., gallons of water used *per acre* or *per 1000 square foot*) associated with that "User Defined" land use. An alternative approach would be to choose a land use that most closely fits the proposed project and allow the model to populate with pre-

determined defaults. Then, go back through the model and modify the defaults with any known specific project information.

Land Use Subtype

Tabbing over to the next column in a row, the user selects from a drop down list of available land use subtypes based on the primary land use type selected. The user also has the option to select a "User Defined" land use subtype, however, as discussed above, no default data will be available and the user will have to enter in subsequent screens the appropriate values. Land use subtypes are based primarily on the ITE land use definitions used for (mobile source) trip generation rate information. In some cases similar generalized land uses or surrogate data was mapped to some land use subtypes in order to generate the default data needed for various modules.

Table 1: Land Use Sub Type Descriptions

Land UseSubType	Description[1]	ITE Number
RESIDENTIAL		
Apartments High Rise	High-rise apartments are units located in rental buildings that have more than 10 levels and most likely have one or more elevators.	222
Apartments Low Rise	Low-rise apartments are units located in rental buildings that have 1-2 levels.	221
Apartments Mid Rise	Mid-rise apartments in rental buildings that have between 3 and 10 levels.	223
Condo/Townhouse	These are ownership units that have at least one other owned unit within the same building structure.	230
Condo/Townhouse High Rise	These are ownership units that have three or more levels.	232
Congregate Care (Assisted Living)	These facilities are independent living developments that provide centralized amenities such as dining, housekeeping, transportation and organized social/recreational activities. Limited medical services may or may not be provided.	253
Mobile Home Park	Mobile home parks consist of manufactured homes that are sited and installed on permanent foundations and typically have community facilities such as recreation rooms, swimming pools and laundry facilities.	240
Retirement Community	These communities provide multiple elements of senior adult living. Housing options may include various combinations of senior adult housing, congregate care, assisted living, and skilled nursing care aimed at allowing the residents to live in one community as their medical needs change.	255
Single Family Housing	All single-family detached homes on individual lots typical of a suburban subdivision	210

Table 1: Land Use Sub Type Descriptions

Land UseSubType	Description[1]	ITE Number
EDUCATIONAL		
Day-Care Center	A day care center is a facility where care for pre-school age children is provided, normally during the daytime hours. Day care facilities generally include classrooms, offices, eating areas and playgrounds.	565
Elementary School	Elementary schools typically serve students attending kindergarten through the fifth or sixth grade. They are usually centrally located in residential communities in order to facilitate student access and have no student drivers.	520
High School	High schools serve students who have completed middle or junior high school.	530
Junior College (2Yr)	This land use includes two-year junior, community, or technical colleges.	540
Junior High School	Junior High schools serve students who have completed elementary school and have not yet entered high school.	522
Library	A library is a facility that consists of shelved books; reading rooms or areas; and sometimes meeting rooms.	590
Place Of Worship	A church is a building in which public worship services are held. A church houses an assembly hall or sanctuary; it may also house meeting rooms, classrooms and occasionally dining catering or party facilities.	560
University/College (4Yr)	This land use includes four-year universities or colleges that may or may not offer graduate programs.	550
RECREATIONAL		
Arena	Arenas are large indoor structures in which spectator events are held. These events vary from professional ice hockey and basketball to non-sporting events such as concerts, shows, or religious services. Arenas generally have large parking facilities, except when located in or around the downtown of a large city.	460
City Park	City parks are owned and operated by a city.	411
Fast Food Restaurant W/O Drive Thru	This land use includes fast-food restaurants without drive-through windows. Patrons generally order at a cash register and pay before they eat.	933
Fast Food Restaurant With Drive Thru	This category includes fast-food restaurants with drive-through windows.	934
Golf Course	Golf courses include 9, 18, 27 and 36 hole courses. Some sites may also have driving ranges and clubhouses with a pro shop, restaurant, lounge and banquet facilities.	430
Health Club	These are privately-owned facilities that primarily focus on individual fitness or training. Typically they provide exercise classes; weightlifting, fitness and gymnastics equipment; spas; locker rooms; and small restaurants or snack bars.	492

Table 1: Land Use Sub Type Descriptions

Land UseSubType	Description[1]	ITE Number
High Turnover (Sit Down Restaurant)	This land use consists of sit-down, full-service eating establishments with turnover rates of approximately one hour or less. This type of restaurant is usually moderately priced and frequently belongs to a restaurant chain.	932
Hotel	Hotels are places of lodging that provide sleeping accommodations and supporting facilities such as restaurants; cocktail lounges; meeting and banquet rooms or convention facilities; limited recreational facilities and other retail and service shops.	310
Motel	Motels are places of lodging that provide sleeping accommodations and often a restaurant. Motels generally offer free on-site parking and provide little or no meeting space and few supporting facilities.	320
Movie Theater (No Matinee)	Movie theaters consist of audience seating, single or multiple screens and auditoriums, a lobby and a refreshment stand. Movie theaters without matinees show movies on weekday evenings and weekends only; there are no weekday daytime showings.	443
Quality Restaurant	This land use consists of high quality, full-service eating establishments with typical turnover rates of at least one hour or longer. Quality restaurants generally do not serve breakfast, some do not serve lunch; all serve dinner. This type of restaurant usually requires reservations and is generally not part of a chain. Patrons commonly wait to be seated, are served by a waiter, order from menus and pay for meals after they eat.	931
Racquet Club	These are privately-owned facilities that primarily cater to racquet sports.	491
Recreational Swimming Pool	This is a typical recreational swimming pool that may be associated with community centers, parks, swim clubs, etc.	
PARKING		
Enclosed Parking Structure	This is an enclosed parking structure that may be above or below ground. It is not covered in asphalt. This land use will require lighting and ventilation, and will be more than one floor with no elevator.	
Enclosed Parking with Elevator	This is an enclosed parking structure that may be above or below ground. It is not covered in asphalt. This land use will require lighting and ventilation, and will be more than one floor with an elevator.	
Other Asphalt Surfaces	This is an asphalt area not used as a parking lot (e.g., long driveway, basketball court, etc.)	
Other Non-Asphalt Surfaces	This is a non-asphalt area (e.g., equipment foundation, loading dock area, etc.).	
Parking Lot	This is a typical single surface parking lot typically covered with asphalt. This land use will require lighting.	
Unenclosed Parking Structure	This is an unenclosed parking structure that may be above or below ground. It is not covered in asphalt. This land use will require lighting but not ventilation. It will be more than one floor with no elevator.	
Unenclosed Parking with Elevator	This is a unenclosed parking structure that may be above or below ground. It is not covered in asphalt. This land use will require lighting but not ventilation. It will be more than one floor with an elevator.	

Table 1: Land Use Sub Type Descriptions

Land UseSubType	Description[1]	ITE Number
RETAIL		
Automobile Care Center	An automobile care center houses numerous businesses that provide automobile-related services, such as repair and servicing; stereo installation; and seat cover upholstering.	942
Convenience Market (24 Hour)	These markets sell convenience foods, newspapers, magazines and often beer and wine. They do not have gasoline pumps.	851
Convenience Market With Gas Pumps	These markets sell gasoline, convenience foods, newspapers, magazines and often beer and wine. This includes convenience markets with gasoline pumps where the primary business is the selling of convenience items, not the fueling of motor vehicles.	853
Discount Club	A discount club is a discount store or warehouse where shoppers pay a membership fee in order to take advantage of discounted prices on a wide variety of items such as food, clothing, tires and appliances. Many items are sold in large quantities or in bulk.	857
Electronic Superstore	These are free-standing facilities that specialize in the sale of electronic merchandise.	863
Free-Standing Discount Store	Discount stores offer centralized cashiering and sell products that are advertised at discount prices. These stores offer a variety of customer services and maintain long store hours seven days a week.	815
Free-Standing Discount Superstore	The discount superstore is similar to the free-standing discount stores with the addition that they also contain a full-service grocery department under the same roof that shares entrances and exits with the discount store area.	813
Gasoline/Service Station	This land use includes gasoline/service stations where the primary business is the fueling of motor vehicles. They may also have ancillary facilities for servicing and repairing motor vehicles.	944
Hardware/Paint Store	These stores sell hardware and paint supplies and are generally free-standing buildings.	816
Home Improvement Superstore	These are free-standing facilities that specialize in the sale of home improvement merchandise.	862
Regional Shopping Center	A shopping center is an integrated group of commercial establishments that is planned, developed, owned and managed as a unit. A shopping center's composition is related to its market area in terms of size, location and type of store.	820
Strip Mall	Small strip shopping centers contain a variety of retail shops and specialize in quality apparel, hard goods and services such as real estate offices, dance studios, florists and small restaurants.	814

Table 1: Land Use Sub Type Descriptions

Land UseSubType	Description[1]	ITE Number
Supermarket	Supermarkets are free-standing retail stores selling a complete assortment of food: food preparation and wrapping materials; and household, cleaning items. Supermarkets may also contain the following products and services: ATMs, automobile supplies, bakeries, books and magazines, dry cleaning, floral arrangements, greeting cards, limited-service banks, photo centers, pharmacies and video rental areas.	850
COMMERCIAL		
Bank (With Drive-Through)	Drive-in banks provide banking facilities for motorists who conduct financial transactions from their vehicles; many also serve patrons who walk into the building.	912
General Office Building	A general office building houses multiple tenants where affairs of businesses commercial or industrial organizations or professional persons or firms are conducted. If information is known about individual buildings, it is suggested that this land use be used instead of the more generic office park.	710
Government (Civic Center)	A group of government buildings that are interconnected by pedestrian walkways.	733
Government Office Building	This is an individual building containing either the entire function or simply one agency of a city, county, state, federal, or other governmental unit.	730
Hospital	A hospital is any institution where medical or surgical care and overnight accommodations are provided to non-ambulatory and ambulatory patients. However, it does not refer to medical clinics or nursing homes.	610
Medical Office Building	This is a facility that provides diagnoses and outpatient care on a routine basis but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility.	720
Office Park	Office parks are usually suburban subdivisions or planned unit developments containing general office buildings and support services, such as banks, restaurants and service stations, arranged in a park-or campus-like atmosphere. This should be used if details on individual buildings are not available.	750
Pharmacy/Drugstore W/O Drive Thru	These are retail facilities that primarily sell prescription and non-prescription drugs. These facilities may also sell cosmetics, toiletries, medications, stationery, personal care products, limited food products and general merchandise. The drug stores in this category do not contain drive-through windows.	880

Table 1: Land Use Sub Type Descriptions

Land UseSubType	Description[1]	ITE Number
Pharmacy/Drugstore With Drive Thru	These are retail facilities that primarily sell prescription and non-prescription drugs. These facilities may also sell cosmetics, toiletries, medications, stationery, personal care products, limited food products and general merchandise. The drug stores in this category contain drive-through windows.	881
Research & Development	R&D centers are facilities devoted almost exclusively to R&D activities. The range of specific types of businesses contained in this land use category varies significantly. R&D centers may contain offices and light fabrication areas.	760
INDUSTRIAL		
General Heavy Industry	Heavy industrial facilities usually have a high number of employees per industrial plant and are generally limited to the manufacturing of large items.	120
General Light Industry	Light industrial facilities are free-standing facilities devoted to a single use. The facilities have an emphasis on activities other than manufacturing and typically have minimal office space. Typical light industrial activities include printing, material testing and assembly of data processing equipment.	110
Industrial Park	Industrial parks contain a number of industrial or related facilities. They are characterized by a mix of manufacturing, service and warehouse facilities with a wide variation in the proportion of each type of use from one location to another. Many industrial parks contain highly diversified facilities.	130
Manufacturing	Manufacturing facilities are areas where the primary activity is the conversion of raw materials or parts into finished products. It generally also has office, warehouse, R&D functions at the site.	140
Refrigerated Warehouse-No Rail	This is a warehouse that has refrigeration but no rail spur.	150
Refrigerated Warehouse-Rail	This is a warehouse that has refrigeration and a rail spur.	150
Unrefrigerated Warehouse-No Rail	This is a warehouse that does not have refrigeration and no rail spur.	150
Unrefrigerated Warehouse-Rail	This is a warehouse that does not have refrigeration but has a rail spur.	150

1. Based on land use descriptions in ITE Trip Generation 8th Edition. In September 2012, ITE published the 9th edition that updated some of the trip rates from the 8th edition. The updates are not yet incorporated into CalEEMod. However, the user has the ability to override the trip rate default but is expected to justify the change in the "Remarks" section at the bottom of the Operational -Mobile screen.

Unit Amount

Tabbing over to the next column, the user enters the appropriate size of the land use in terms of the size metric selected. This will be used to calculate the rest of the columns in this datagrid.

Size Metric

Tabbing over to the next column in the land use identification row, the user can select another size metric unit if it is available for that land use subtype. For example, a school land use allows the user to define its size by the number of students, building square footage, or number of employees. Please note that the square footage, which is used for calculating such impacts as architectural coatings and energy use, relates to the total building square footage and not the building footprint or lot acreage (which is used for housing density as well as grading and site preparation calculations).

Lot Acreage (datagrid)

The user should override the default value if known. For multi-use, multistory building, the square footage should be preserved for each individual land use and the acreage assigned to the residential portion or split between non-residential land uses if there is no residential. The figure below provides an example of a mixed use project and how to apply the appropriate square footage and acreage for an accurate calculation of air quality impacts.

Acreage is used to estimate housing density as needed for calculations (see Table 2) and total acreage for the project is used in assigning construction default data (e.g., grading, site preparation, etc.). Based on ITE data, CalEEMod is able to estimate the acres per dwelling unit (DU) for residential land use. For example, 10 apartments in a low rise will need a 0.625 acre lot (10 DU divided by 16 acres/DU). According to the California Energy Commission's Residential Appliance Saturation Survey (RASS), low rise apartments are 1000 square foot per DU (see Table 2.1) so the building footprint is 0.23 acres (10 DU x 1000 sq ft/DU divided by 43,560 sq ft per acre). Thus, the lot space beyond the residential footprint accounts for driveway and landscaping.

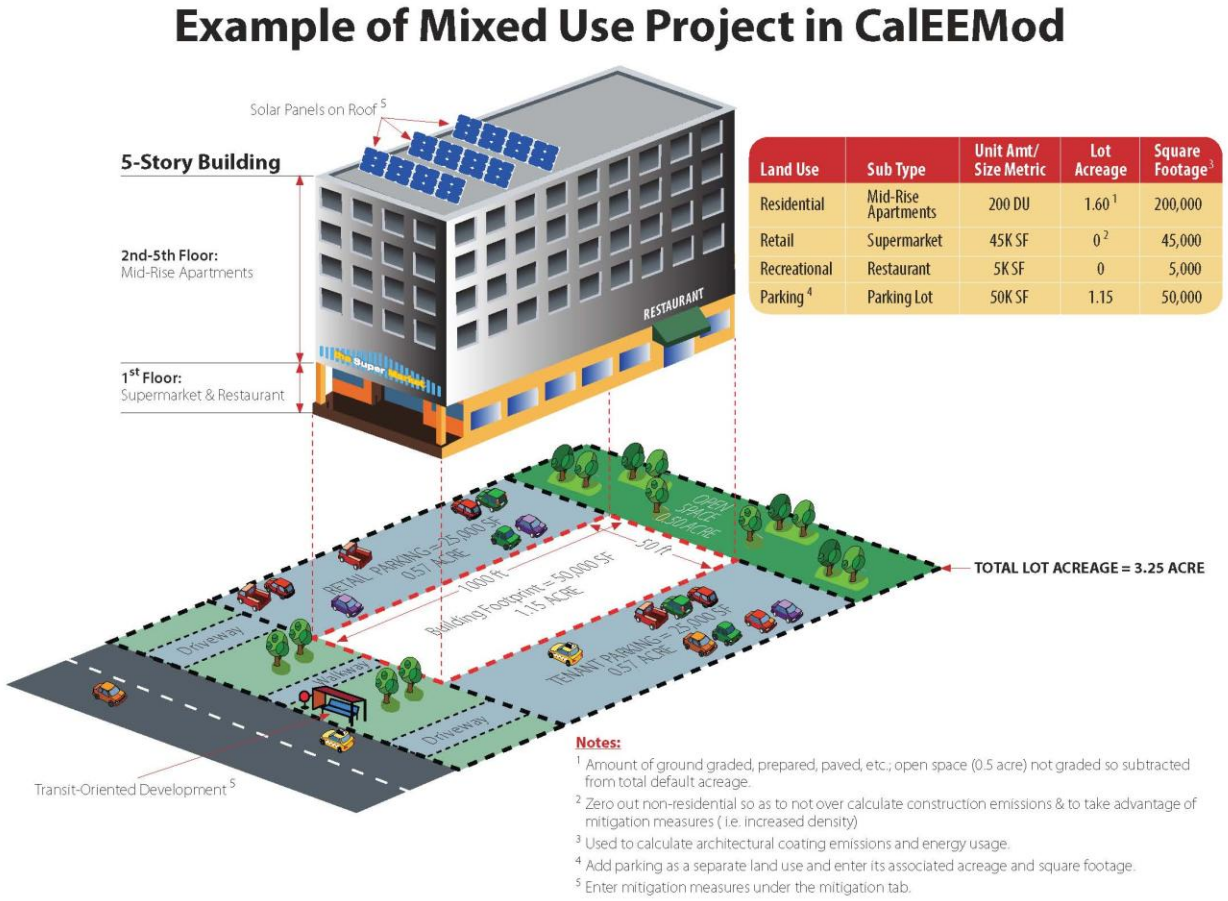


Table 2: Default Housing Density

Land Use Sub Type	Density (Dwelling Units/Acre)
Single Family Housing	3
Apartments low rise	16
Apartments mid rise	38
Apartments high rise	62
Condo/townhouse	16
Condo/townhouse high rise	64
Mobile Home Park	8
Retirement Community	5
Congregate care (Assisted Living)	16

1. Based on the density assumed in ITE Trip Generation 8th Edition

Square Footage

The user should override the default value if known. This is the total building square footage.

Population (datagrid)

This is the population estimated for the land use identified. The user should override the default value if known.

Population and Lot Acreage (text box)

This is the total population and acreage of all land uses entered in the data grid. This is for informational purposes of values that will be used by the program and can't be changed by the user.

4.3 Construction

The construction screen introduces the first of a tabbed structure subscreens. There are seven subscreens for construction with each one listed in the grey area under the screen name. To jump to different subscreens: the user can use the next and previous buttons, click on the grey tab name, or use the menu bar. Default information is based on a survey of construction sites grouped by construction phase and lot acreage performed by SCAQMD which can be found in Appendix E. The default construction equipment list and phase length are most appropriate for the size and types surveyed while the survey has been extrapolated to indicate default values, more detailed site specific equipment and phases are highly suggested in these cases for the most accurate results.

4.3.1 Construction Phase

This is the screen where the user enters the type of each construction phase and the date range of these phases. The date of the construction phase is critical in determining the correct emission factor for the off-road equipment since CARB's factors change each year. Default phases are based on the total lot acreage of the project. Depending on the project being modeled, not all phases will be necessary (e.g., not all projects require demolition). In addition multiple phases of similar types may be used for large projects with build out in stages. If the project has demolition, grading, and site preparation phases, additional project specific data will need to be entered on Demolition subscreen and Dust from Material Movement subscreen.

Phase Name

The user should enter a unique name for the phase in the text box.

Phase Type

The user selects from the drop down list the type of construction phase: Site preparation, demolition, grading, building construction, paving, and architectural coating. This influences the types of calculations and default assumptions for on-road vehicle trips and fugitive emissions that occur in subsequent construction subscreens. The definitions of the default data phases are as follows:

- *Demolition* involves tearing down of buildings or structures.
- *Site Preparation* involves clearing vegetation (grubbing and tree/stump removal) and stones prior to grading.
- *Grading* involves the cut and fill of land to ensure the proper base and slope for the construction foundation.
- *Building Construction* involves the construction of structures and buildings.
- *Architectural Coating* involves the application of coatings to both the interior and exterior of buildings or structures and includes parking lot striping as well as painting of the walls of parking structures.
- *Paving* involves the laying of concrete or asphalt such as in parking lots or roads.

Start Date and End Date

The user can enter with the aid of a calendar, the start and end dates. The default start date is 1/1/2014 starting with demolition with subsequent phases starting the next day after the previous phase's end date. Changes to these cells will alter the total days estimated for the phase.

Days per Week

The user can select from a drop down box the number of days per week (5, 6, or 7) the project will operate. Five days per week is assumed to be Monday through Friday, and six days per week is Monday through Saturday.

Total Days

The total number of days in the construction phase is indicated. If the end date or the days per week are changed, clicking in this cell will recalculate the number of days. If the total number of days for a phase is changed, then once leaving this cell, the program will adjust the end date based on the start date for that phase.

4.3.2 Off-Road Equipment

This subscreen shows the off-road equipment usage for each phase. Since equipment lists can be lengthy, the user must go through a different subscreen for each phase. This is done by selecting the appropriate phase name from the drop down list or the Previous or Next buttons located next to the phase name. The emission calculations associated with this screen are from off-road equipment engine use based on the equipment list and phase length. The fugitive emissions from off-road equipment performing work are associated with additional information in other construction screens.

The user enters in the datagrid each piece of equipment in the phase in a new row. The user enters the unit amount and hours per day of equipment usage. Horsepower and load factors are loaded with the default average values of the mode tier according to population based on OFFROAD2011, but the user can override these values. Since CalEEMod is restricted in the

years of OFFROAD emission factors, CalEEMod will use the lower end year if a construction year is in between a year of OFFROAD values in the database. For example if a construction phase is in 2027, CalEEMod will use OFFROAD emission factors from 2025.

For site specific construction equipment lists including equipment not specifically listed can be added under the Other Equipment categories or Off-Highway Trucks listed in CalEEMod matching the closest in horsepower to the missing equipment for each phase the construction equipment is operating. For inclusion of water trucks and cement trucks specifically can be considered in two ways although both of those trucks were part of the SMAQMD vendor trip survey during construction. The first is to use the Off-Highway Trucks category in this screen. The second is to add these as additional vendor trips in the Trips and VMT screen.

4.3.3 Dust from Material Movement

This subscreen is used to enter the information necessary to calculate the fugitive dust emissions associated with grading phases. Three distinct fugitive dust calculations are performed as described in Appendix A: dust from dozers moving dirt around, dust from graders or scrapers leveling the land, and loading or unloading the dirt into haul trucks. These methods have been adapted from USEPA's AP-42 method for Western Coal Mining. The user needs to enter the amount of material imported and exported to the site in order for CalEEMod to estimate hauling trips correctly from material transport. There is an option to select either ton of debris or cubic yards. The user also selects if the import and export of material are phased. If they are phased a truck comes in with material and leaves with another load of material to export. Non-phased trips have one-way of the haul trip performed with an empty truck. Phasing material import and export reduces the number of haul trips. The number of acres that are displayed represent the total acres traversed by grading equipment assuming a blade width of 12 feet. In order to properly grade a piece of land multiple passes with equipment may be required. The acres is based on the equipment list and days in grading or site preparation phase according to the anticipated maximum number of acres a given piece of equipment can pass over in an 8-hour workday. See Appendix A for the equipment specific grading rates.

4.3.4 Demolition

This subscreen is used to enter the amount of material that is demolished if demolition phases are selected. The user can enter either the ton of material or the building square footage. Fugitive dust emissions from the demolition are then calculated. Demolition fugitive dust emissions are based on the methodology described in the report prepared for the USEPA by Midwest Research Institute, Gap Filling PM_{10} Emission Factors for Selected Open Area Dust Sources.

4.3.5 Trip and VMT

This subscreen is used to provide the number and length of on-road vehicle trips for workers, vendors, and hauling. It also allows the user to select different weightings of vehicle fleet mixes and is either the EMFAC mix for the region, or an mix of the vehicle classes listed. HHDT,MHDT is a 50/50 percent mix of heavy-heavy duty trucks and medium-heavy duty trucks. LDA,LDT1,

LDT2 is 50/25/25 percent mix of light duty autos, light duty truck class 1 and light duty truck class 2. Since CalEEMod is restricted in the years of EMFAC emission factors, CalEEMod will use the lower end year if a construction year is in between a year of EMFAC values in the database. For example if a construction phase is in 2027, CalEEMod will use EMFAC emission factors from 2025.

The number of workers is 1.25 times the number of pieces of equipment for all phases except building construction and architectural coating. Building construction estimates the number of workers based on the types of land use and their size based on an analysis of a study conducted by SMAQMD. This study and its analysis are included in Appendix E. The number of workers for architectural coating is based on 20% of the building construction workers.

The number of vendor trips for building construction phase is based on a study performed by SMAQMD based on land use types and their size. As noted earlier, the SMAQMD trip survey during construction counted cement and water trucks as vendor trips. These values were placed under the "building construction" phase in CalEEMod. If the "building construction" phase is being eliminated and there are known water (and/or cement) trucks, it is recommended to consider those vendor trips under another phase or accounted for as OFFROAD equipment. Hauling trips are based on the assumption that a truck can handle 20 tons (or 16 cubic yards) of material per load. Assuming one load of material, CalEEMod considers a haul truck importing material will have a return trip with an empty truck (2 trips). Similarly, the haul truck to take material away will have an arrival trip in an empty truck (2 trips). Thus, each trip to import and export material is considered as two separate round trips (4 trips) unless the "phase" box is clicked. Then, a haul truck trip to import material will be the same haul truck to export material (2 trips).

4.3.6 On-Road Fugitive Dust

This subscreen defines the variables that will be used to determine the fugitive dust emissions from construction on-road vehicles over paved and unpaved roads. The emission calculations are based on USEPA's AP-42 Janaury 2011 paved road and November 2006 unpaved roads emission factors. The variables in this datagrid are the same as those defined in the appropriate AP-42 sections.

4.3.7 Architectural Coatings

This subscreen allows the user to override any of the default interior and exterior surface area estimated for residential and non-residential buildings. In addition, each of these surface types has a different emission factor indicating the VOC content of the paint in grams per liter. See Appendix A for the method of estimating surface areas to be coated from building square footage.

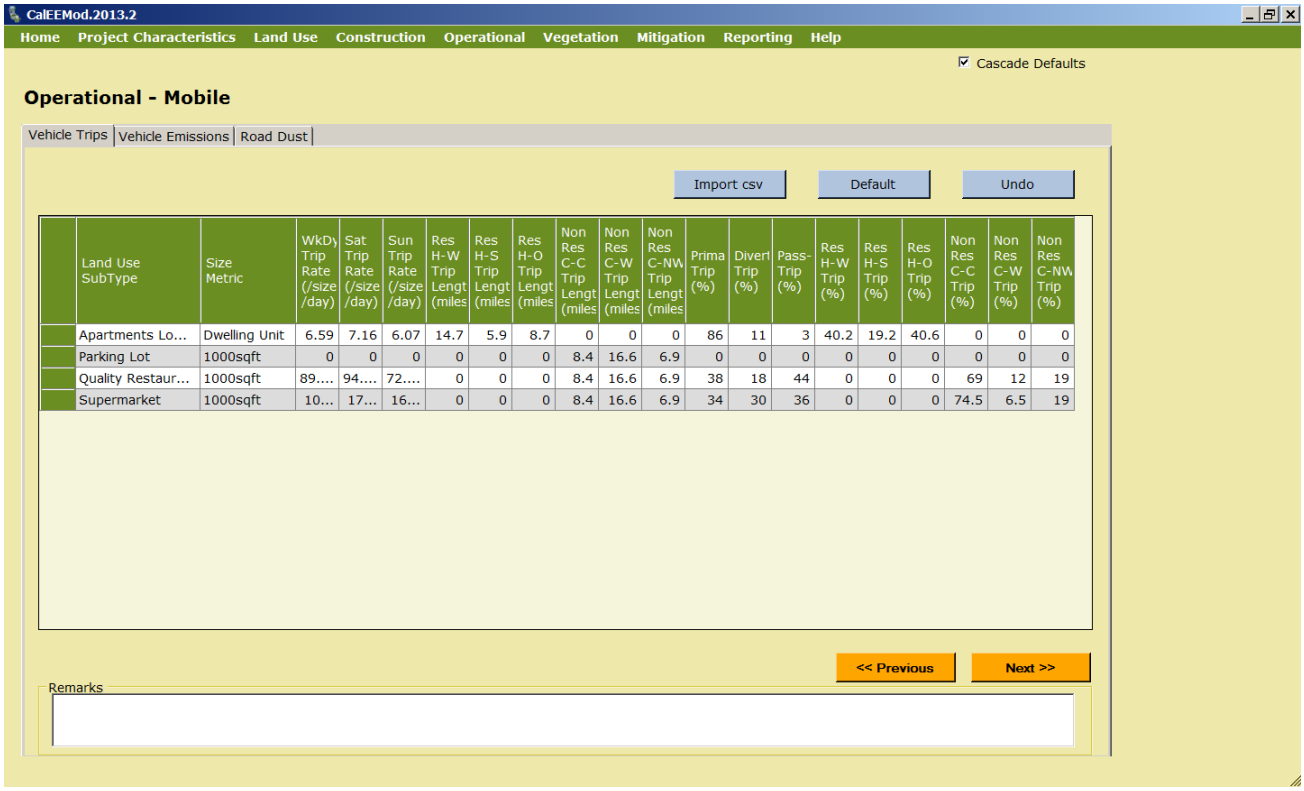
4.4 Operational Mobile

The operational mobile screen is made up of 3 subscreens: Vehicle Trips, Vehicle Emissions, and Road Dust. These screens are used in defining the information necessary to calculate the emissions associated with operational on-road vehicles.

4.4.1 Vehicle Trips

This subscreen's datagrid lists the trip rate, trip lengths, trip purpose, and trip type percentages for each land use subtype in the project. The user can edit any of this information by entering a new value in the appropriate cell. Trip rates are in terms of the size metric (square footage or dwelling unit) defined on the land use screen and are listed for weekday, Saturday and Sunday if available. Trip lengths are for primary trips. Trip purposes are primary, diverted, or pass-by trips. Diverted trips are assumed to take a slightly different pass than a primary trip and are assumed to be 25% of the primary trip lengths. Pass-by trips are assumed to be 0.1 miles in length and are a result of no diversion from the primary route. Residential trip types are defined as home-work (H-W), home-shop (H-S), and home-other (H-O). Non-residential trip types are defined as commercial –customer (C-C), commercial-work (C-W), and commercial-nonwork (C-NW) such as delivery trips. See Appendix A for the equations and methodology used to calculate motor vehicle emissions from the operation of a project.

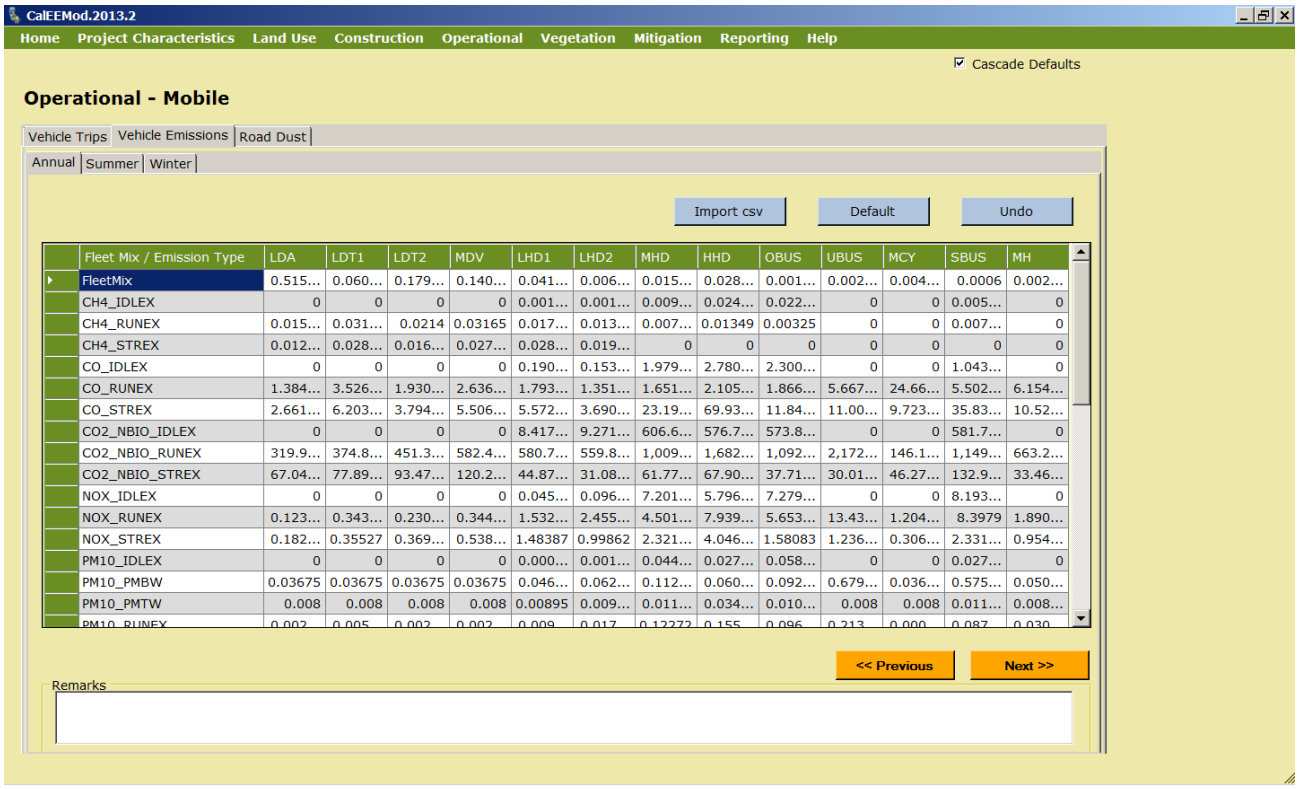
In most cases the trip rate is based on ITE's average trip rate for the respective land use category. For warehouses, SCAQMD evaluated the primary data from ITE along with other recent studies regarding warehouses and concluded that it was more appropriate to break out the warehouses based on access to a rail spur and refrigeration. In addition, they concluded that it was more appropriate to use the maximum values from the studies. A detail memorandum describing the justification for these values is contained in Appendix E.



4.4.2 Vehicle Emissions

This subscreen is a large datagrid containing the detailed vehicle emission factors and fleet mix based on EMFAC2011. See Appendix A for information on how these emission factors were developed based on burden mode EMFAC runs including effects from Pavley (Clean Car Standards) and Low Carbon Fuel Standards. Pavley and Low Carbon Fuel Standards are applicable for future years and do not impact EMFAC values prior to these regulations implementations (i.e, 1990, 2000, 2005, etc). It is anticipated that most users will not edit data in this subscreen. There is a separate tab for annual, summer, and winter emission values. If the user wants to alter the breakdown of fuel types (catalytic, non-catalytic, other) within a vehicle class, they will have to provide their own data as this will likely be an infrequent change due to CEQA enforceability requirements. For details on how EMFAC data was processed see Appendix A.

This screen along with the previous screen (Vehicle Trips) will calculate the emissions associated with on-road motor vehicle use. It does not include the fugitive dust emissions from travel over roads as these are associated with the next screen (Road Dust).



4.4.3 Road Dust

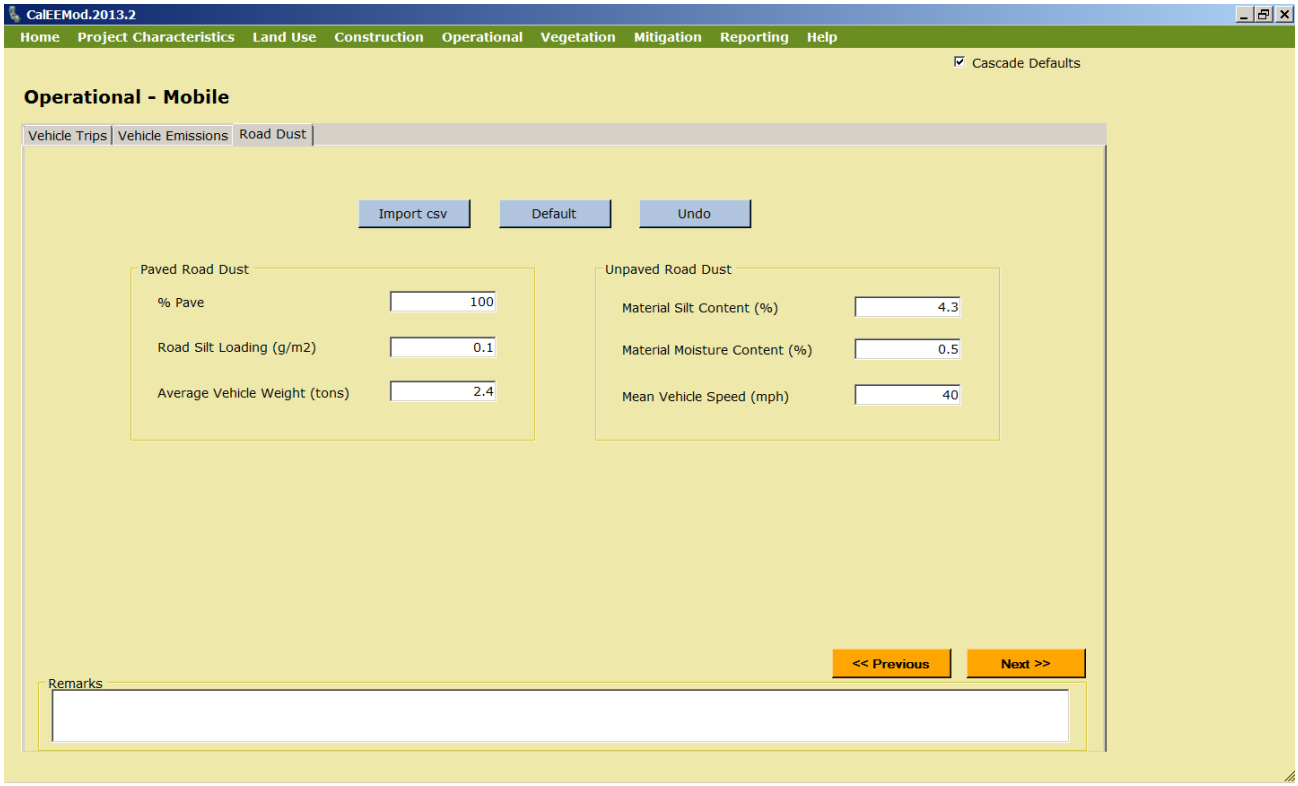
This subscreen is used to change any of the default values that are used in the USEPA's AP-42 methods for calculating fugitive emissions from paved and unpaved roads. The defaults for the road dust (e.g., material silt content, material moisture content,) are statewide averages, but the user has the ability to override the defaults if data specific to the project is known. Local jurisdictions can also provide guidance to users as to what default properly reflects known regional road dust parameters.

For the San Luis Obispo region, users are recommended to provide the following road dust parameters overriding the statewide defaults:

9.3 for "Material Silt Content (%)" *(instead of 4.3 statewide default)*

0.1 for "Material Moisture Content (%)" *(instead of 0.5 statewide default)*

32.4 for "Mean Vehicle Speed (mph)" *(instead of 40 statewide default)*

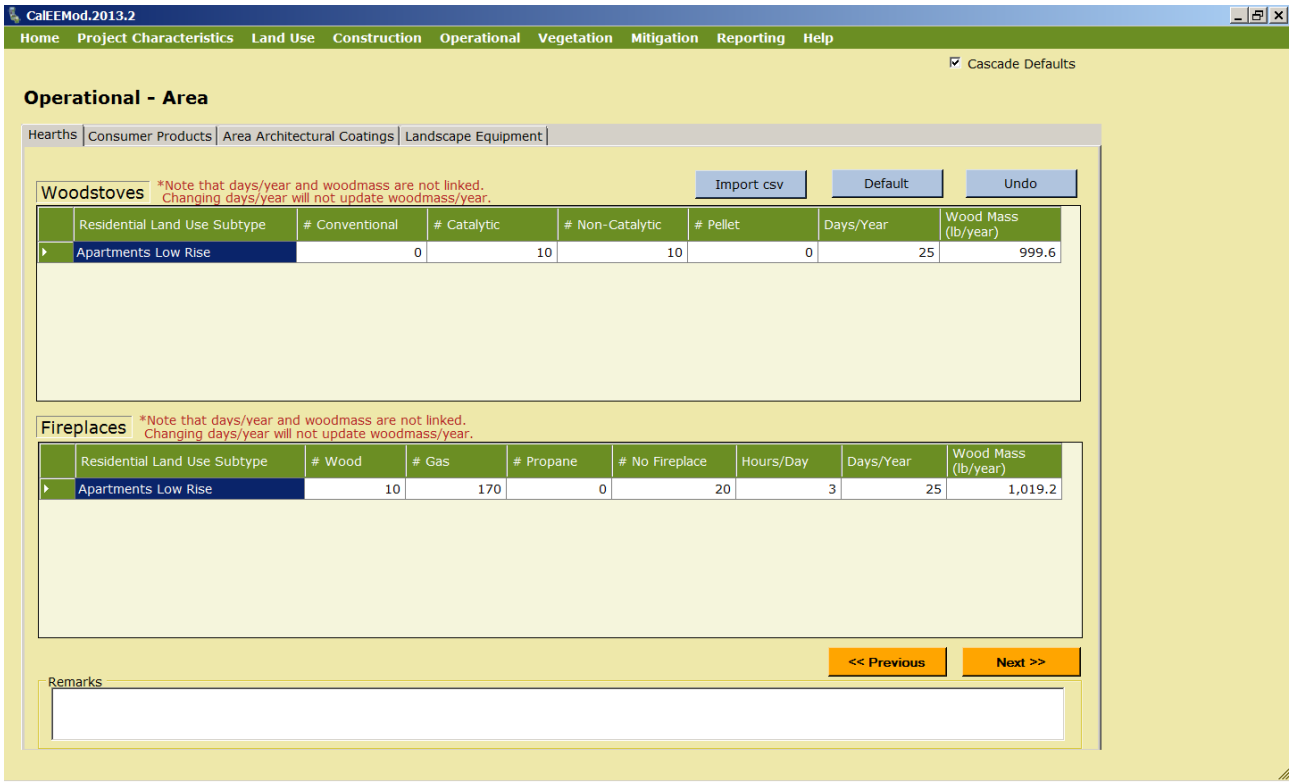


4.5 Area

The area source screen consists of four subscreens: Hearths, Consumer Products, Area Architectural Coatings, and Landscaping Equipment. Natural gas emission variables from all uses except hearths are included in the energy use screen.

4.5.1 Hearths and Woodstoves

This subscreen allows the user to enter the number of woodstoves and hearths of various types as well as the usage of these devices. Woodstoves are separate from fireplaces since a home may have both and these devices may have different use patterns. The number of devices that is entered for each device type represents the total number of devices installed in the dwelling units for a particular land use. See Appendix A for emissions calculation methodology and details of variables that the user can not override. Some of these emissions may be classified as biogenic and are therefore reported as CO_2-Biogenic. For most locations a default percent of hearths and stoves was provided by districts and is multiplied through. The number was chosen for CalEEMod instead of a percentage to allow for incorporation of various districts rules regarding hearths and woodstoves in new residences without having specialized screens. Commercial land uses by default do not have any hearths or woodstoves in CalEEMod. These are included for those cases where they may occur such as in restaurants or hotels.



The San Joaquin Valley jurisdiction has a regulatory limit on the number of hearths depending upon the type and number of residential development. The regulatory limit is generated by CalEEMod but all the input parameters (e.g., unit density, etc.) are necessary to determine the value. Thus, the regulatory limit is disclosed during the reporting stage under the "Default Value" box in the report. The model, however, calculates emission impacts from the number of hearths inputted on the Area source screen (listed under the "New Value" column in the report). Therefore, if the user wants to calculate emissions from regulatory limit, the report needs to be run to determine the regulatory limit and the user needs to go back to the Area source screen to

input that value and re-run the report. If the user chooses to calculate emissions from a different number of hearths (e.g, a number of hearths less than the regulatory limit), then that number needs to be inputted on the Area source screen to properly calculate emissions. Again, the report will provide the regulatory limit under the "Default Value" column and the user input value under "New Value" column.

4.5.2 Consumer Products

Consumer products are various solvents used in non-industrial applications which emit VOCs during their product use. These typically include cleaning supplies, kitchen aerosols, cosmetics and toiletries. SCAQMD has developed an emission factor based on the total of all building square footage for both residential and non-residential buildings. Details of how this emission factor was developed can be found in Appendix E. The user can change this emission factor if they have more relevant data.

4.5.3 Area Architectural Coating

This subscreen has text boxes for the reapplication rate and paint VOC content for each building surface type. The reapplication rate is the frequency at which surfaces get repainted every year. A default of 10% is used which means that 10% of the surface area is repainted each year so all surfaces are completely repainted once every 10 years. Daily emissions divide the annual rate by 365 days per year. This is based on assumptions used by SCAQMD in their district rules regarding architectural coatings. Some districts provided details on their coating regulations that phase in over time which have been incorporated to the extent feasible given the general classifications of paint (interior or exterior for residential and non-residential). As not all districts submitted their architectural coating regulations, consult your local agency for any suggested values that may be lower than the state regulations.

If changing the operational architectural coating VOC content (e.g., lower VOC content limit), the User is advised to change the architectural coating VOC content under the Area Mitigation screen where the operational coating VOC content defaults will not change unless prompted. If not, the model assumes the value on the mitigation screen is the "New Value" (as listed in report). In the case of applying a lower VOC content limit on the operational architectural coating screen, the unchanged mitigation value ("New Value") will be higher. However, unless the box is checked on the Area Mitigation screen next to the coating type, the model will not calculate a mitigated emissions value.

4.5.4 Landscape Equipment

This subscreen has two text boxes to show the number of snow days or summer days. In addition, the defaults consider a realistic number of days which the landscaping equipment would be operated. For example, landscaping at commercial facilities typically do not take place during a weekend or during the summer at educational facilities that are not open. The number of days are applied to the appropriate landscape equipment types available in OFFROAD2011 using the average horsepower and load factors of the population mode. The

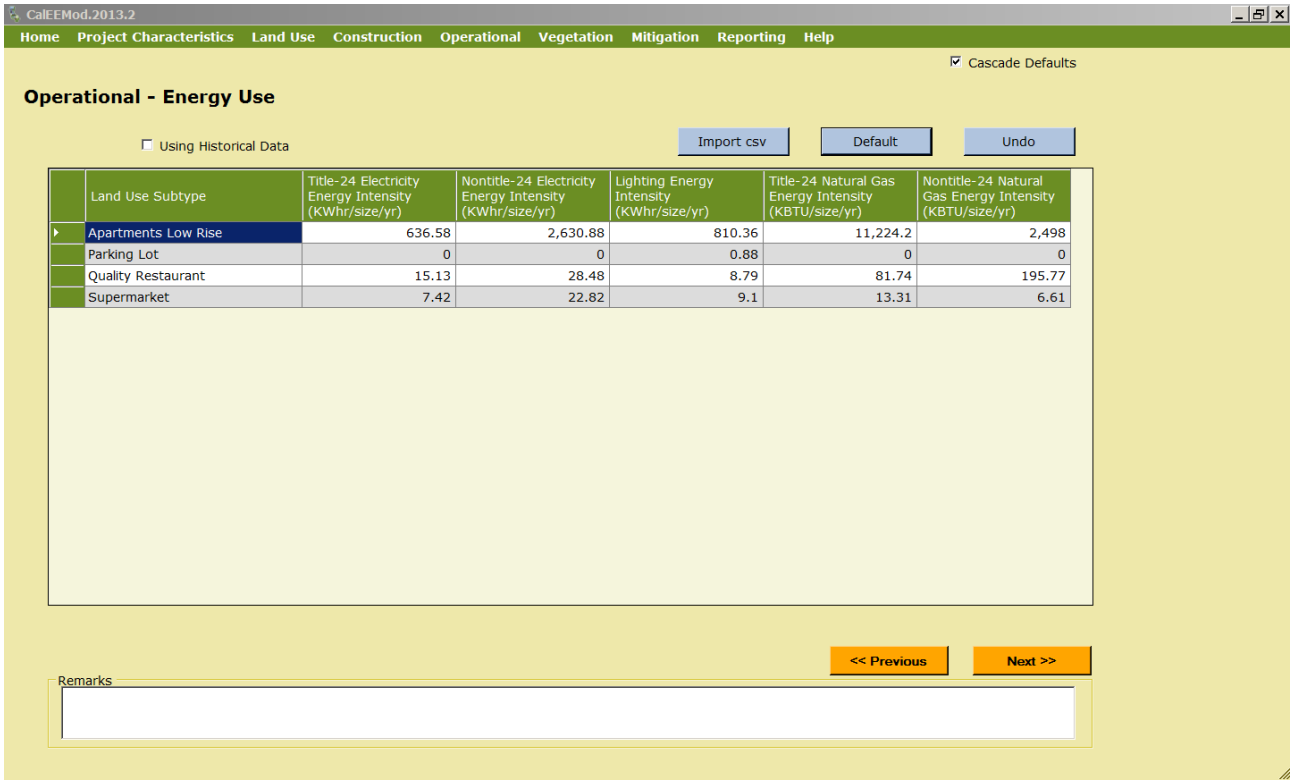
derivation of emission factors used for each equipment type from OFFROAD2011 is described in Appendix A.

4.6 Energy Use

The energy use screen is used to gather the information necessary to estimate the emissions associated with building electricity and natural gas usage (non-hearth). The electricity energy use is in kilowatt hours per size metric for each land use subtype and natural gas use is in kiloBritish Thermal Units (kBTU) per size metric for each land use subtype. The California Energy Code contains energy conservation standards applicable to all residential and non-residential buildings throughout California, including schools. The electricity use is split into three areas: Title-24, non-Title 24, and lighting. The Title 24 of the California Code of Regulations, known as the California Building Standards Code (or "Title 24"), uses are defined as the major building envelope systems covered by Part 6 (California Energy Code) of Title 24 such as space heating, space cooling, water heating, and ventilation. Lighting was separated out since it can be both part and not part of Title-24. Since lighting is not considered as part of the building envelope energy budget, CalEEMod does not consider lighting to have any further association with Title 24 references in the program. Non-Title 24 is everything else such as appliances and electronics. Natural gas is just distinguished as Title 24 or Non-Title 24. The default values are based on the CEC sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies[9]. For climate zones not included in these surveys a data from the closest climate zone was used as a surrogate. Since these studies are based on older buildings, adjustments have been made to account for changes to Title 24 building codes as described in Appendix A. A user should select the use historical box if they only want an adjustment to the 2005 standards which were in effect when ARB developed its Scoping Plan 2020 No Action Taken predictions. After selecting the historical button, the user must also click the default button to load the historical default values.

9 CEC. October 2010. Residential Appliance Saturation Survey. Available online at: http://www.energy.ca.gov/appliances/rass

CEC. 2006. Commercial End-Use Survey. Available online at: http://www.energy.ca.gov/ceus/



4.7 Water and Wastewater Use

This module only estimates the land uses contribution of GHG emissions associated with supplying and treating the water and wastewater. This screen is used to enter the amount of water in gallons used indoors and outdoors for each land use subtype[10]. The indoor water is also used to estimate the amount of wastewater. The electricity intensity for various phases of providing water is broken out. Depending on the specific water supply used or treatment method used these numbers can vary over a wide range. Supplying water is bringing the water from its primary source such as the ground, river, or snowpack to the treatment plant. Distributing the water is bringing the water from the treatment plant to the end users. The electricity intensities are multiplied by the utility intensity factors for the GHGs and are classified as indirect emissions. The default electricity intensity is from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and

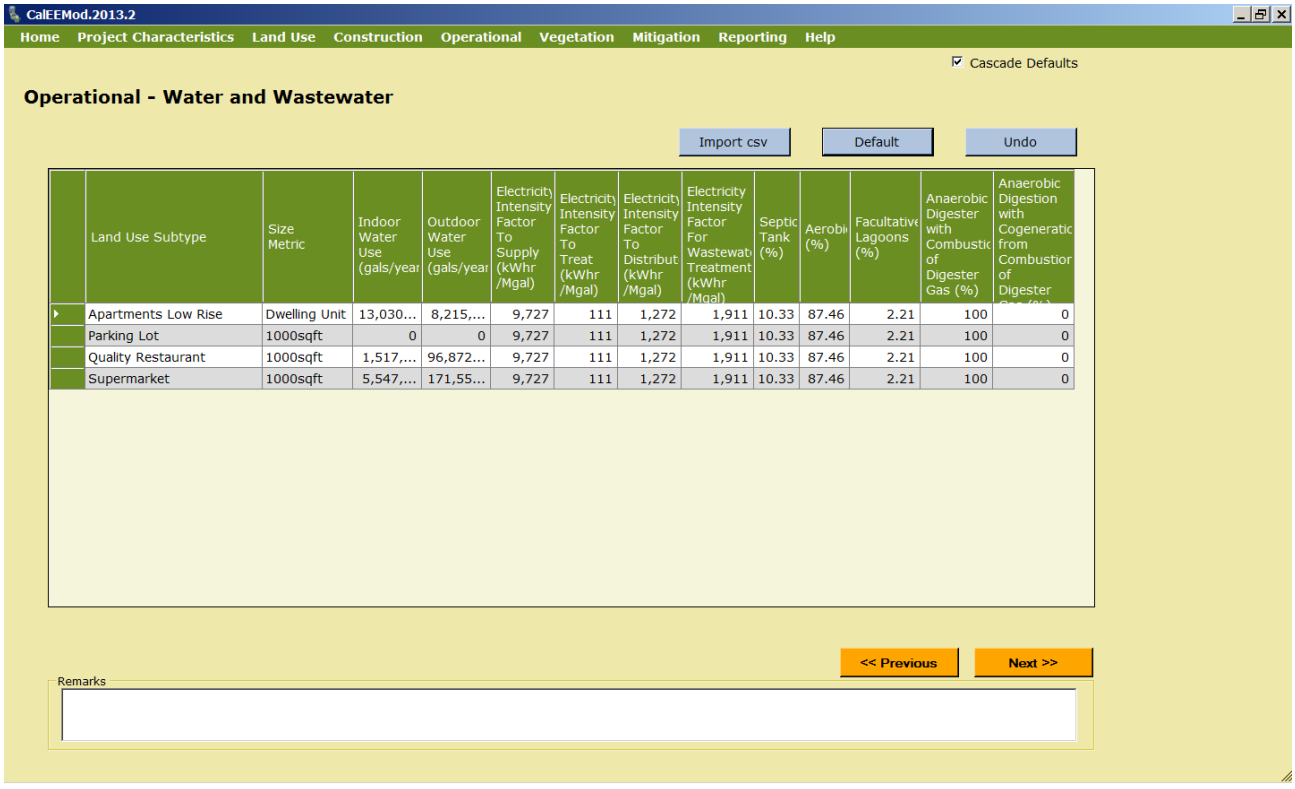
10 Gleick, P.H.; Haasz, D.; Henges-Jeck, C.; Srinivasan, V.; Cushing, K.K.; Mann, A. 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California. Published by the Pacific Institute for Studies in Development, Environment, and Security. Full report available online at: http://www.pacinst.org/reports/urban_usage/waste_not_want_not_full_report.pdf. Appendices available online at: http://www.pacinst.org/reports/urban_usage/appendices.htm

Dziegielewski; B.; Kiefer, J.C.; Optiz, E.M.; Porter, G.A.; Lantz, G.L.; DeOreo, W.B.; Mayer, P.W.; Nelson, J.O. 2000. Commercial and Institutional End Uses of Water. Published by the American Water Works Association Research Foundation.

Northern California Golf Association. Improving California Golf Course Water Efficiency. http://www.owue.water.ca.gov/docs/2004Apps/2004-079.pdf

Southern California[11]. The location will automatically select the appropriate values if using these defaults. Since the electricity can vary greatly based on locations, the user should override these values if they have more specific information regarding their specific water supply and treatment.

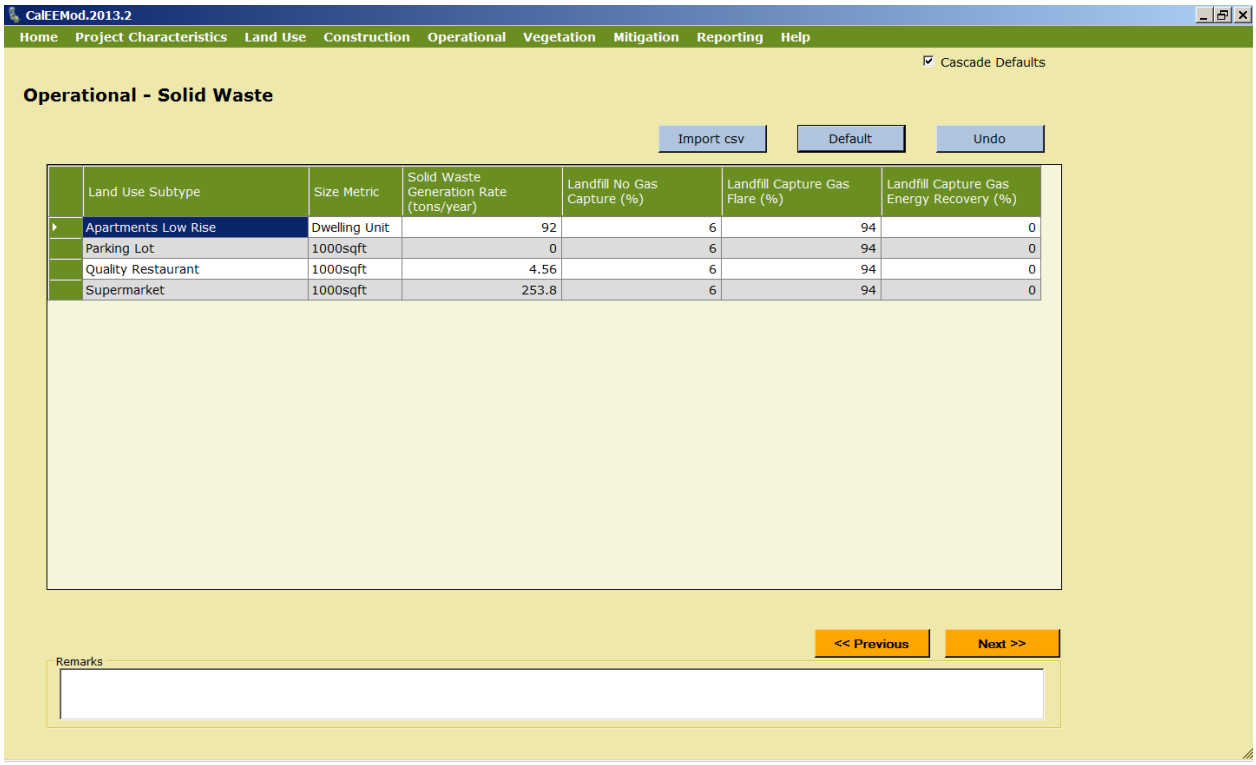
Wastewater may also have direct emissions of GHGs. These depend on the type of wastewater treatment system (e.g., septic, aerobic or lagoons) used and therefore the wastewater treatment type percentages are variables. In addition, the model calculates impacts if the solids are digested either through an anaerobic digester or with co-generation from combustion of digester gas. Each type has associated GHG emission factors. Some of these may be classified as biogenic. Not all of the biogenic emissions are accounted for since there are not adequate emissions factors at this time. Refer to Appendix A on how to properly change the defaults, if necessary, and the methodology used to calculate impacts from wastewater treatment.



[11] CEC-500-2006-118.

4.8 Solid Waste

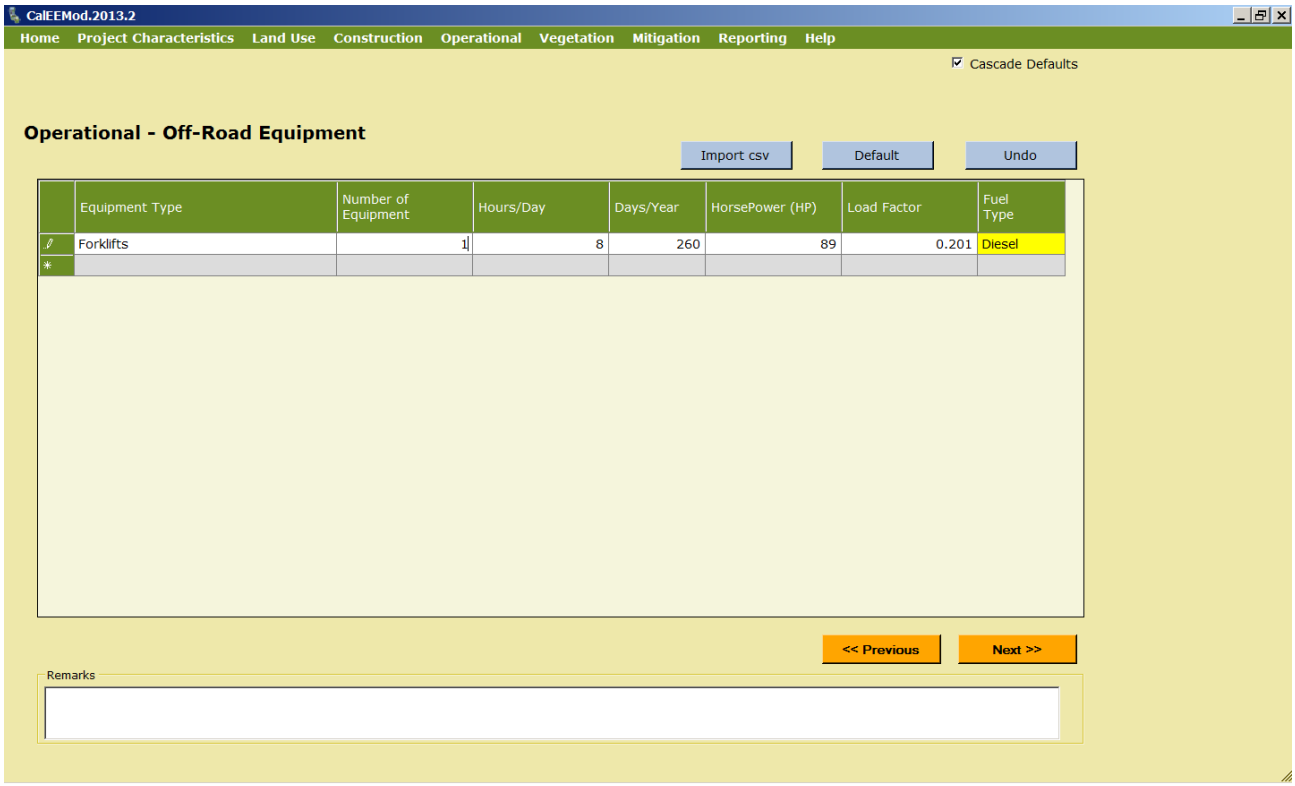
The solid waste module determines the GHG emissions associated with disposal of solid waste into landfills. In order to estimate the eventual contribution of GHG emissions from solid waste for the waste disposed by a land use annually, the total amount of carbon dioxide and methane that would be evolved over the span of many years is calculated. This is based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste[12]. Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on Calrecycle data. The amount of methane emitted depends on characteristics of the landfill, and therefore the default percentage is based on the types of landfills assumed by ARB in their GHG emission inventories. Portions of these emissions are biogenic. The defaults for the gas capture (e.g., no capture, flaring, energy recovery) are statewide averages, but the user has the ability to override the defaults if the gas capture is known. Local jurisdictions can also provide guidance to users as to what default properly reflects known regional solid waste gas capture. Users in the Santa Barbara region are recommended to apply 100% landfill capture gas flare overriding the statewide default to reflect a more accurate regional solid waste activity.



12 IPCC. 2006. 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 5 Waste.

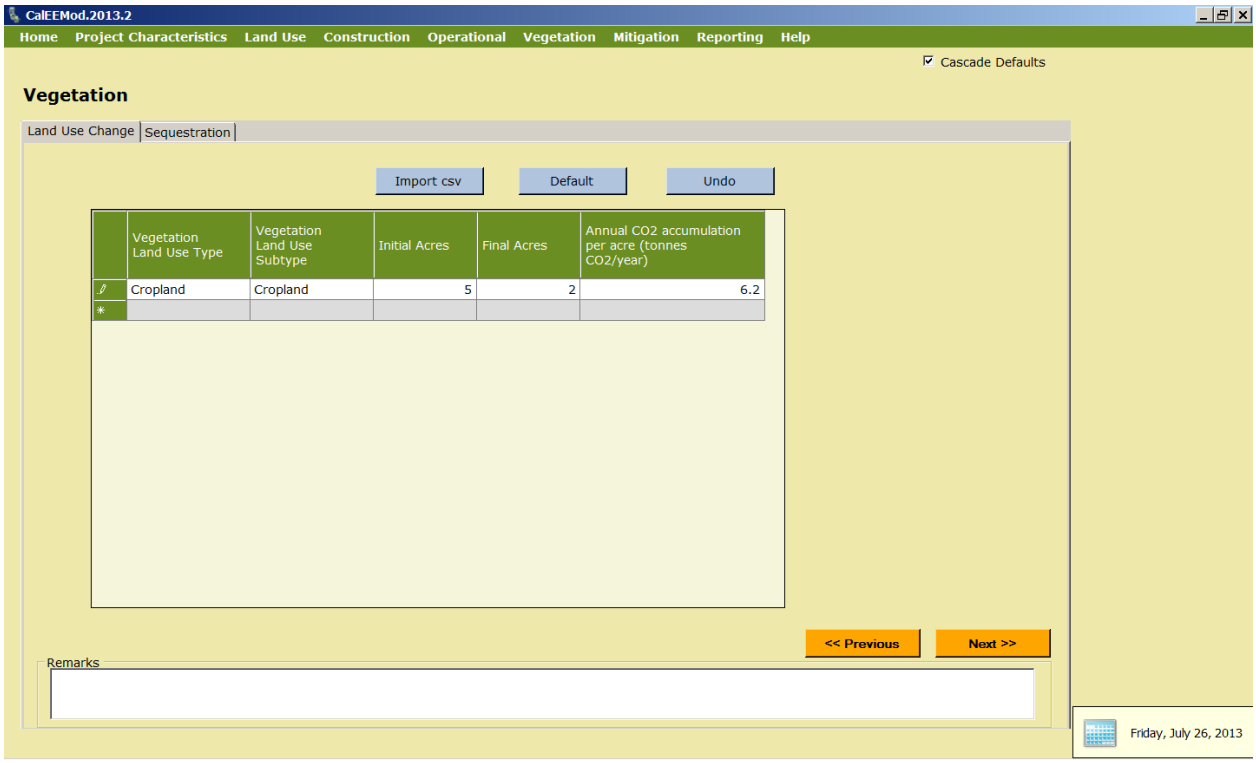
4.9 Off-Road Equipment

A new sub-screen under Operational allows the user to identify any off-road equipment used during operational activities (e.g., forklifts, cranes, loaders, generator sets, pumps, pressure washers, etc.) at the project site. Because such equipment cannot be assumed to be needed for a particular land use project, a user needs to provide the input in order for CalEEMod to calculate the resulting emissions from equipment operation. A dropdown list of off-road equipment is provided for the user to identify each piece of equipment. The model requires the following specific information per equipment type. The user would need to provide the number of pieces for each equipment type. The model assumes an operation activity of 8 hours per day and 260 days per year, as well as the horsepower and load factor of the equipment type, but the user has the ability to override the default assumptions with project specific information. Finally, the model assumes diesel fuel, but a dropdown menu is provided to allow the user to choose bio-diesel or compressed natural gas (CNG) if known to power the equipment.



4.10 Vegetation

The vegetation module is used to estimate the one-time change in carbon sequestration capacity of a vegetation land use type. The methods used are based on IPCC[13]. The user enters the vegetation land use type, the initial and final acreage of the vegetation land use type, and the annual carbon dioxide equivalent accumulation per acre if the user chooses to over ride the default value. Settlement land use acreage is not considered since it is a net zero at steady state unless trees are added.



4.10.1 Sequestration

This subscreen to vegetation is used to estimate the GHG emissions associated with the sequestration of net new trees added to the project site. Consistent with IPCC recommendations a 20 year active growth period is assumed. The user enters the tree type or miscellaneous if it is not known, and the total number of trees. The user can override the default carbon sequestration rate.

4.11 Mitigation

The mitigation module screen consists of six subscreens that the user can indicate and supply the necessary information to estimate the emissions after mitigation measures have been implemented. The mitigation measures included in CalEEMod are largely based on the recent

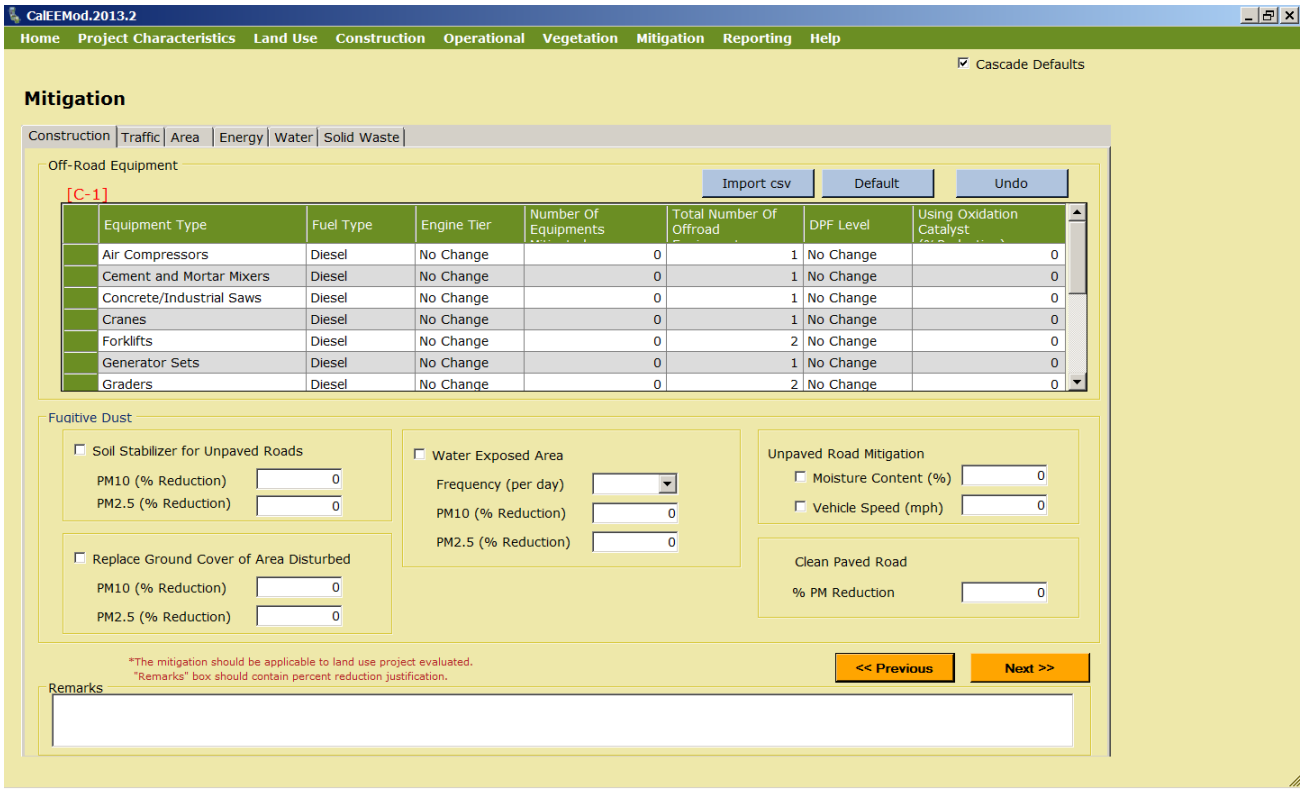
13 IPCC. 2006. 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4.

CAPCOA Quantifying Greenhouse Gas Mitigation Measures (http://www.capcoa.org/wp-content/uploads/downloads/2010/09/CAPCOA-Quantification-Report-9-14-Final.pdf) document. To assist the user in understanding each measure by referencing back to the CAPCOA document, the CAPCOA measure numbers are provided next to the listed measures in CalEEMod. Therefore, this user's guide focuses on key aspects of the program screens that user's should pay attention to.

4.11.1 Construction Mitigation

This screen consists of a datagrid to apply mitigation to off-road construction equipment and check boxes with supplemental information for fugitive dust emissions.

To apply mitigation to construction equipment, the user selects the equipment type the number of equipment noting the total number displayed based on construction equipment lists, and type of mitigation to apply. If substantial evidence supporting reductions was available at the time of development, options include fuel type (diesel, CNG, electric, hybrid, biodiesel), engine tier (typically will select Tier 4), diesel particulate filter tiers (Tier 3 being the best), and oxidative catalyst reduction. The program estimates how much if any increase or decrease in emissions to apply for each pollutant. Some mitigation measures have trade-offs in pollutant reductions and therefore may result in increases of some pollutants.



To apply mitigation to fugitive dust from construction, the user selects the check box in front of the mitigation measure name, and enters in the appropriate information in the drop down or text

boxes. Some fugitive dust mitigation required by some districts do not appear here since the fugitive dust source they mitigate is not quantified by CalEEMod in particular this includes fugitive dust generated by wind over land and storage piles. Since they are not quantified it is not appropriate to apply the reduction. The construction mitigation to use alternative fuel for construction equipment is consistent with the mitigation number C-1 in the CAPCOA Quantifying GHG Mitigation document.

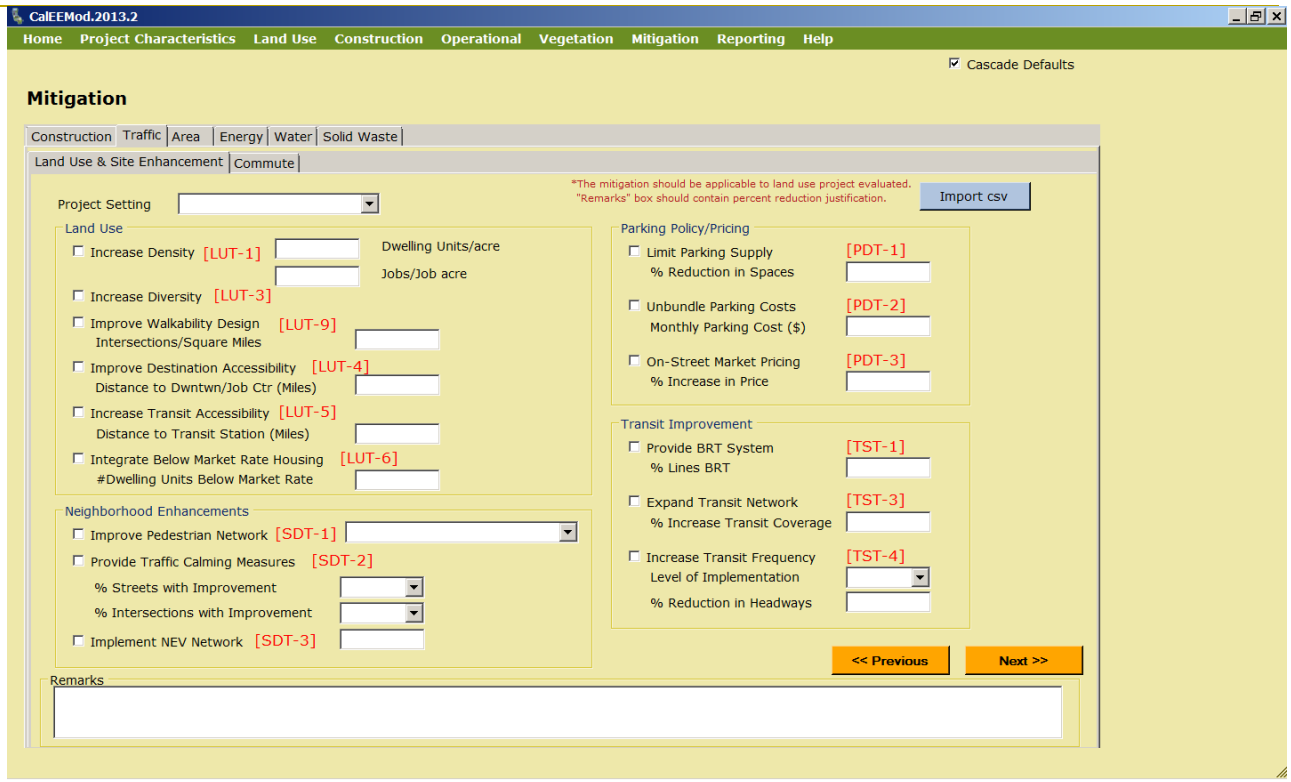
4.11.2 Traffic Mitigation

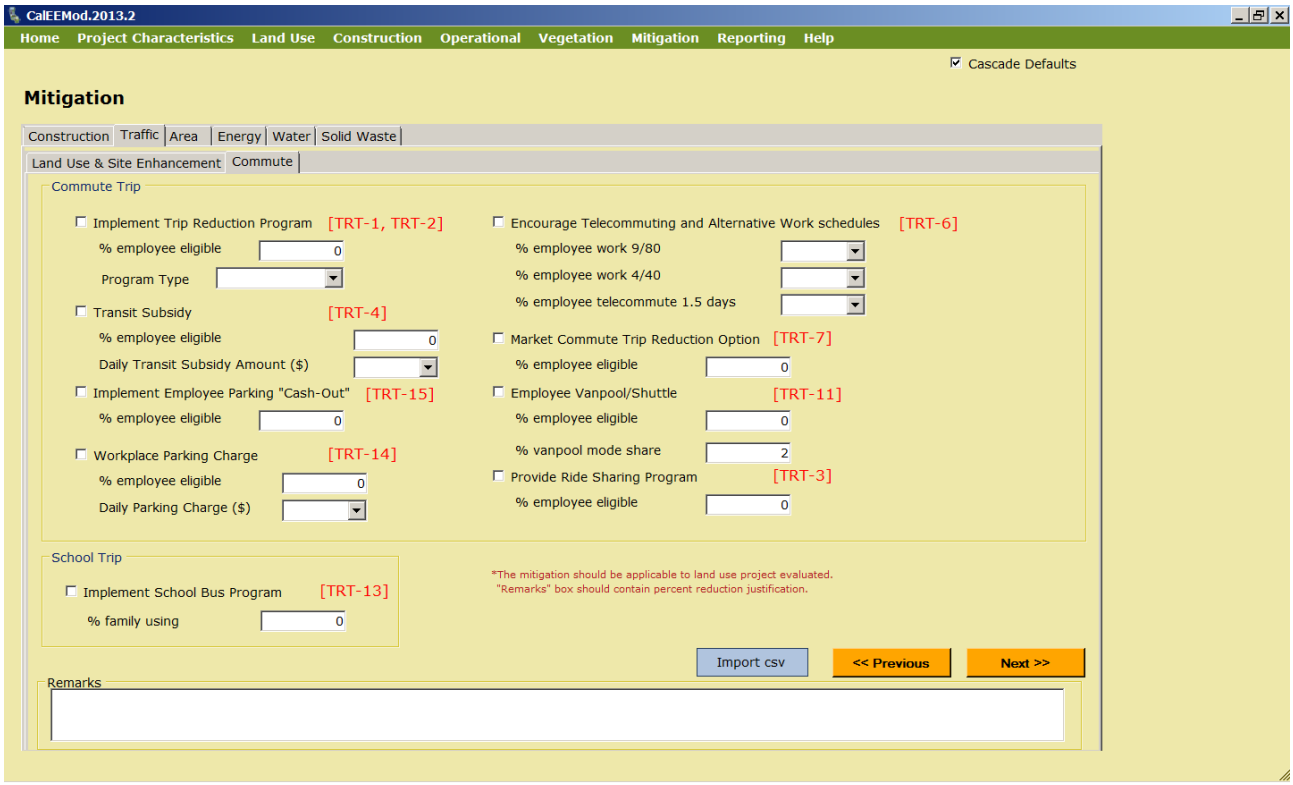
There are two traffic mitigation subscreens that the user can select from. First the user must select the Project Setting as defined in the CAPCOA document (pages 59-60).

- Low Density Suburban: An area characterized by dispersed, low-density, single-use, automobile dependent land use patterns, usually outside of the central city (a suburb).
- Suburban Center: serves the population of the suburb with office, retail and housing which is denser than the surrounding suburb.
- Urban: an area which is located within the central city with higher density of land uses than you would find in the suburbs. It may be characterized by multi-family housing and located near office and retail.
- Urban Center *(known as "Compact Infill" in CAPCOA document)* : A project which is located within or contiguous with the central city. Examples may include redevelopment areas, abandoned sites, or underutilized older buildings/sites.

If the CAPCOA measure did not distinguish between suburban center and low density suburban, values for low density suburban were used. Similarly, if urban center and urban values were not distinguished urban values were used.

The user checks the box next to each mitigation measure and fills in the appropriate information as required. The maximum reduction caps defined in the CAPCOA Quantifying GHG Mitigation document are integrated into these calculations. The CAPCOA traffic mitigation measure numbers included in CalEEMod are the following: LUT-1, LUT-3, LUT-9, LUT-4, LUT-5, LUT-6, SDT-1, SDT-2, SDT-3, PDT-1, PDT-2, PDT-3, TST-1, TST-3, TST-4, TRT-1, TRT-2, TRT-4, TRT-15, TRT-14, TRT-6, TRT-7, TRT-11,TRT-3, and TRT-13. The NEV network mitigation measure assumes the low end of the CAPCOA recommendations.


CalEEMod.2013.2
Home Project Characteristics Land Use Construction Operational Vegetation Mitigation Reporting Help
Cascade Defaults
Mitigation
Construction Traffic Area Energy Water Solid Waste
Land Use & Site Enhancement Commute
*The mitigation should be applicable to land use project evaluated.
"Remarks" box should contain percent reduction justification.
Import csv
Project Setting
Land Use
Increase Density [LUT-1]
Dwelling Units/acre
Jobs/Job acre
Increase Diversity [LUT-3]
Improve Walkability Design [LUT-9]
Intersections/Square Miles
Improve Destination Accessibility [LUT-4]
Distance to Dwntwn/Job Ctr (Miles)
Increase Transit Accessibility [LUT-5]
Distance to Transit Station (Miles)
Integrate Below Market Rate Housing [LUT-6]
#Dwelling Units Below Market Rate
Neighborhood Enhancements
Improve Pedestrian Network [SDT-1]
Provide Traffic Calming Measures [SDT-2]
% Streets with Improvement
% Intersections with Improvement
Implement NEV Network [SDT-3]
Parking Policy/Pricing
Limit Parking Supply [PDT-1]
% Reduction in Spaces
Unbundle Parking Costs [PDT-2]
Monthly Parking Cost ($)
On-Street Market Pricing [PDT-3]
% Increase in Price
Transit Improvement
Provide BRT System [TST-1]
% Lines BRT
Expand Transit Network [TST-3]
% Increase Transit Coverage
Increase Transit Frequency [TST-4]
Level of Implementation
% Reduction in Headways
<< Previous
Next >>
Remarks

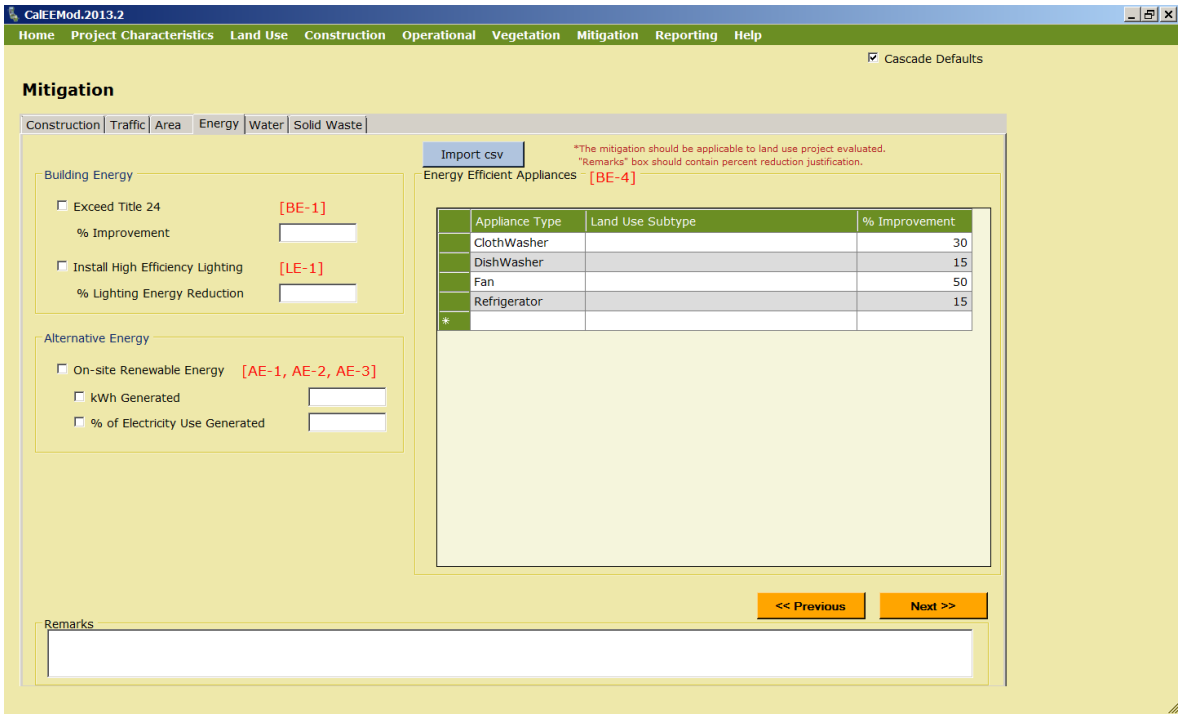

CalEEMod.2013.2
Home Project Characteristics Land Use Construction Operational Vegetation Mitigation Reporting Help
Cascade Defaults
Mitigation
Construction Traffic Area Energy Water Solid Waste
Land Use & Site Enhancement Commute
Commute Trip
Implement Trip Reduction Program [TRT-1, TRT-2]
% employee eligible
Program Type
Transit Subsidy [TRT-4]
% employee eligible
Daily Transit Subsidy Amount ($)
Implement Employee Parking "Cash-Out" [TRT-15]
% employee eligible
Workplace Parking Charge [TRT-14]
% employee eligible
Daily Parking Charge ($)
Encourage Telecommuting and Alternative Work schedules [TRT-6]
% employee work 9/80
% employee work 4/40
% employee telecommute 1.5 days
Market Commute Trip Reduction Option [TRT-7]
% employee eligible
Employee Vanpool/Shuttle [TRT-11]
% employee eligible
% vanpool mode share
Provide Ride Sharing Program [TRT-3]
% employee eligible
School Trip
Implement School Bus Program [TRT-13]
% family using
*The mitigation should be applicable to land use project evaluated.
"Remarks" box should contain percent reduction justification.
Import csv
<< Previous
Next >>
Remarks

4.11.3 Area Mitigation

The user can select from a few area source mitigation measures by checking the appropriate box and supplying any additional information in the text boxes. These measures include all natural gas hearths, no hearths, electric landscaping equipment use, reduced VOC coatings, and reduced consumer product VOC content. The area landscaping mitigation to prohibit gas powered landscape equipment is consistent with the mitigation number A-1 in the CAPCOA Quantifying GHG Mitigation document.

4.11.4 Energy Mitigation

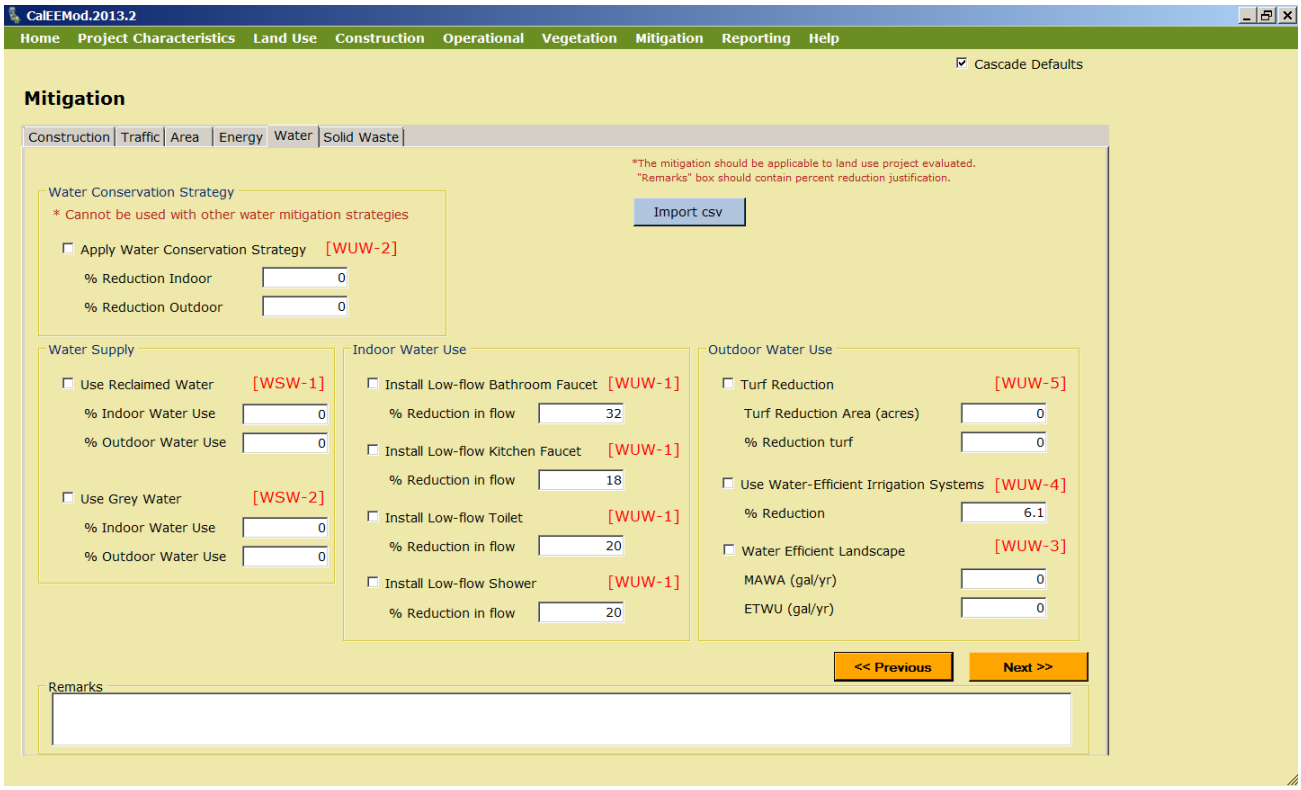
The user selects energy mitigation measures by using check boxes or a datagrid. These correspond to CAPCOA Mitigation Measures LE-1, BE-1, AE-1, AE-2, AE-3 and BE-4 as listed in the CAPCOA Quantifying GHG Mitigation document. The lighting is a percentage reduction in lighting as supplied by the user. The datagrid is used to enter the land use subtypes that will use energy efficient appliances. The percent improvement is the typical percent improvement above standard appliances according to the 2008 Energy Star Annual Report[14]. Alternative Energy has two methods to enter the amount of alternative energy. The first is the amount of kWhr generated. The second is the percentage of the total electricity use by buildings that is generated. At this time alternative energy methods that are not carbon neutral are not quantified. To apply the amount of alternative energy only one of the two methods (kWhr or percentage) needs to be entered for CalEEMod to calculate emission reductions.



14 Available at http://www.epa.gov/cpd/annualreports/annualreports.htm

4.11.5 Water Mitigation

Water mitigation can either be estimated as the percent reduction based on a water conservation strategy or the other individual mitigation measures. The CAPCOA Quantifying GHG Mitigation document includes water supply and use measures WSW-1 & 2, WUW-1 through 5. For CAPCOA Mitigation Measure WSW- 3 (Use Locally Sourced Water Supply), using locally-sourced water or water from less energy-intensive sources reduces the electricity and indirect CO_2 emissions associated with water supply and transport because water from local or nearby groundwater basins, nearby surface water and gravity-dominated systems have smaller energy-intensity factors. Therefore, for WSW-3, the user should alter the energy intensity values in water and run a separate CalEEMod run to accommodate these values.



4.11.6 Solid Waste Mitigation

The user can get a reduction for recycling waste. This mitigation measure corresponds to CAPCOA Mitigation Measure: SW-1.

4.12 Reporting

The user initiates final calculations by selecting the report and clicking on the button. The available reports include: Annual, Summer (peak) Daily, Winter (peak) Daily and Mitigation. A separate report viewer will come up. From this report viewer, the user can view their report on-screen, print reports, save as Microsoft excel file or save as a pdf file, or in the case of the Mitigation report, a Microsoft doc file. The data in the excel file has already been calculated and placed in the grids as text, thus, for example, one cannot change an emission value and expect the report to change the summed total value. These values, however, can be copied to new excel spreadsheet for any further desired calculation with the data.

California Emissions Estimator Model®

Appendix A
Calculation Details for CalEEMod

Prepared for:
California Air Pollution Control Officers Association (CAPCOA)

Prepared by:
ENVIRON International Corporation
San Francisco, California
and
California Air Districts

Revised:
July 2013
CalEEMod v.2013.2
(Previous version February 2011)

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1 Overview of Program

In 2010, ENVIRON International Corporation (ENVIRON) worked with the South Coast Air Quality Management District (SCAQMD), in collaboration with the other air districts in California, to create a new software program, California Emissions Estimator Model (CalEEMod), that calculates air and greenhouse gas (GHG) emissions associated with land use projects. This document provides the detailed methodologies and data source references that are used in the software program. CalEEMod calculates both the criteria emissions and greenhouse gas emissions associated with construction and operational sources as part of development projects. In addition it calculates GHG emissions associated with one-time changes in vegetation land use. These emission estimates can be used for quantification and reporting as part of the California Environmental Quality Act (CEQA) environmental impact reports and other environmental documentation.

This Appendix A serves as the basis for all methods and assumptions for calculating all emission categories. These category modules include construction, operational energy use, operational mobile sources, operational landscape maintenance, operational consumer product use, operational architectural coating use, operational hearth use, indirect emissions from water and wastewater use, vegetation carbon sequestration, and emissions associated with solid waste disposal.

1.1 Structure of this document

This Appendix will discuss each major module in detail with appropriate subdivisions. These major modules include the following:

- Project Characteristics
- Land Use
- Construction
- Operational Mobile
- Operational Area Sources
- Energy Use
- Water and Wastewater
- Solid Waste
- Vegetation
- Mitigation
- Results

2 Project Characteristics

The Project Characteristics screen has no calculations associated with it. It is used to provide information on appropriate default values in subsequent screens. A detailed description of this

screen and the areas requiring user input is given in the User's Guide main text. Some further information regarding some of the inputs are below.

- Mendocino County requested county subdivisions as follows:
    - Inland
    - Coastal
    - Rural Inland North
    - Rural Inland South
- Santa Barbara County requested county subdivisions as follows:
    - North Santa Barbara County: North of Santa Ynez range
    - South Santa Barbara County: South of Santa Ynez range
- Wind speeds are from District supplied information, nearby weather stations if easily identifiable[1], or a default of 2.2 m/s.
- Precipitation Frequency was based on data from the Western Regional Climate Center (WRCC)[2] which is an average of all of the stations found in that county, air basin, or district.

2.1 Utility Information

Several of the modules require an estimation of the indirect GHG emissions associated with supplying electricity to the Project site. The end user will need to specify the utility company that will be providing electricity to the Project. The default carbon intensities for the major utility companies as well as a state-wide default are based on Table G6 of the California Air Resources Board (ARB) Local Government Operation Protocol version 1.1 or the latest public utilities inventory reports. This is consistent with recommendations in the California Air Pollution Control Officer Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures document. The complete list of the utilities powering California and the reporting year from which the CO_2 intensity factor currently used in CalEEMod can be found in Table 1.2 in Appendix D. The CH_4 and N_2O values are based on E-grid values for the region since more refined data is not readily available. The end user will also be able to provide an alternative value that is recommended by the local agency, if applicable.

2.2 Criteria Pollutants

The criteria pollutants are those pollutants or precursor pollutants to the chemicals that have National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS). These pollutants are listed below:

- Particulate Matter: The program will define both Particulate Matter with aerodynamic radius less than 10 microns (PM_{10}) and Particulate Matter with aerodynamic radius less than 2.5

[1] http://www.wrcc.dri.edu/htmlfiles/westwind.final.html

[2] http://www.wrcc.dri.edu/htmlfiles/ca/ca.01.html

microns ($PM_{2.5}$). Since emission factors for $PM_{2.5}$ have not been fully defined, the conversion assumption for each generating source will be described in more detail with the specific modules. Particulate matter will be tracked by subtype which will include fugitive dust and equipment exhaust.

- Carbon Monoxide: The emissions from carbon monoxide (CO) will be calculated for all direct combustion sources associated with the project.
- Lead: The emissions from lead (Pb) will be calculated for all direct combustion sources associated with the project.
- Sulfur Dioxide: The emissions associated with sulfur dioxide (SO_2) will be calculated for all direct combustion sources associated with the project.
- Nitrogen Oxides: The emissions associated with nitrogen oxides (NOx) will be calculated for all direct combustion sources associated with the project or direct emissions associated with area sources. Note that there may be some nitrous oxide (N_2O) emissions that are calculated under the GHG module indirect sources that will not be incorporated into the nitrogen oxide emission tally for criteria pollutants since these emissions may be out of basin.
- Ozone: The ozone (O_3) emissions are not calculated directly in this program. Instead the emissions associated with ozone precursors are calculated.
- Ozone Precursors: Ozone precursors will be quantified as reactive organic gases (ROG). ROGs when released will interact in the atmosphere and produce ozone.

By definition, a Volatile Organic Compound (VOC) is an organic compound that can evaporate into an organic gas. VOCs can be either reactive or non-reactive. Over the years, non-reactive VOCs have been exempt from regulation. CalEEMod calculates the VOC emissions from the application of architectural coatings based on the locally required VOC content limit of the coatings. ROG is an organic gas that undergoes a photochemical reaction, thus, is reactive. ROG emissions are generated from the exhaust of mobile sources and these combustion emissions are calculated in CalEEMod based on ARB's ROG emission factors. Both VOC and ROGs are precursors to ozone so they are summed in the CalEEMod report under the header ROG. For the purposes of comparing the ROG value to a VOC significance threshold, the terms can be used interchangeably.

2.3 Greenhouse Gas Pollutants

The greenhouse gas (GHG) pollutants are those recognized by the state of California under Assembly Bill 32 (AB32). The most common GHGs emitted in association with land use developments include carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). All GHGs will be reported on a common currency of carbon dioxide equivalent (CO_2e). In order to obtain the CO_2e, an individual GHG is multiplied by its global warming potential (GWP). The GWP designates on a pound for pound basis the potency of the GHG compared to CO_2. The program

will use GWP from the IPCC Second Assessment Report (SAR)[3]. GWPs from the SAR were selected instead of more recent GWPs since it is the basis used in regulations and international protocols at this time (e.g., California and Federal GHG Reporting Programs, The Climate Registry).

3 Land Use

The primary project description data that needs to be entered by the user is a listing of all land use types and size of the land use types that make up the project. CalEEMod contains several land use categories that are mainly based on ITE land use classifications. Some further division of some land uses (mainly warehouses) has been added. The land use subtype is the basis to define several default values used by the modules. The user-defined land use does not have any default information and the end user is required to enter all of the necessary information. The program currently places a value of 0 for all areas where user defined values would be required for a blank land use.

The land use size has several different size metrics that the end user can choose from. In order for the information to be cross-compatible, the user can enter all of the metrics for a given land use or default conversions between the metrics will be used. The cross-comparison data generally came from the following sources:

- The value for average dwelling unit square footage is rounded based on the average square footage reported in the Residential Appliance Saturation Survey (RASS). Retirement communities and congregate care facilities are assumed to be similar in size to multifamily units.
- The conversion value is based on taking the ratios of different metrics reported in the Institute of Transportation Engineers (ITE) trip rate manual.
- Equivalent commercial building metrics as noted in Table B1 of the Energy Information Administration (EIA) Commercial Building Energy Consumption Survey (CBECS).
- South Coast Air Basin land use statistics (see Appendix E for this reference data).

Unlike other programs, CalEEMod does not account for additional acreage associated with commercial buildings. This was deemed unnecessary since parking lots have been separated out as a separate land use and multi-story buildings should have their lot acreage known.

3.1 Population

The population is used to estimate some metrics. The population per dwelling unit is based on the statewide default or information supplied by individual air districts.

[3] IPCC. 1995. Second Assessment Report. Available at http://www.ipcc.ch/ipccreports/sar/wg_I/ipcc_sar_wg_I_full_report.pdf

4 Construction

The construction module is used to calculate the emissions associated with the construction of the project. Construction emissions have several different types of sources which contribute to emissions of pollutants. These source types include off-road equipment usage, on-road vehicle travel, fugitive dust, architectural coating, and paving off-gassing. Each of these source types is discussed in more detail in the subsequent sections. These emission sources are associated with various types of construction phases. Typical construction phases include demolition, site preparation, grading, trenching, building construction, paving, and architectural coating. The extent to which these phases occur depends on the specific project. For instance, a demolition phase would only occur if demolition of existing structures was required. Similarly, trenching only occurs if the project requires trenching generally associated with underground utilities. Unique aspects and default assumptions associated with these phases is discussed below in the context of the different emission source calculations.

4.1 Construction Phase

No emission calculations are associated with this subscreen. The SCAQMD construction survey is used to estimate default phase lengths based on total project acreage as calculated from the acreage entered on the land use screen. If the acreage is in between the acreage in the survey, the next highest acreage tier is used. If the project size defined by the user is between the sizes of two surveyed projects, CalEEMod conservatively uses the phase duration for the larger project. For instance, if the given project is 7 acres, the program will use the phase duration for the 10-acre project rather than that for the 5-acre project. For large acreage sites, the survey was extrapolated by adding additional phase time equivalent to adding phase time from two acreage ranges in the survey. This occurs for sites with acreage larger than 34 acres. In these situations, the user should consider the accuracy of the equipment and phase duration estimations or using site-specific construction schedules and equipment lists.

The date range, work days per week and total days are dynamically linked to each other and will influence one another if the user changes these values.

4.2 Off-road Equipment

Construction consists of several types of off-road equipment. Since the majority of the off-road construction equipment used for construction projects are diesel fueled, CalEEMod assumes all of the equipment operates on diesel fuel. However, there are mitigation measures that can be implemented that will allow for use of alternative fueled equipment.

The SCAQMD construction survey is used to estimate default equipment lists based on total project acreage as calculated from the acreage entered on the land use screen. If the acreage is in between the acreage in the survey, the next highest acreage tier is used. For large acreage sites, the survey was extrapolated by adding additional phase time equivalent to adding phase time from two acreage ranges in the survey. This occurs for sites with acreage larger than 34 acres. In these situations, the user should consider the accuracy of the equipment and phase duration estimations or using site-specific construction schedules and equipment lists.

The calculations associated with this screen include the running exhaust emissions from off-road equipment. Since the equipment is assumed to be diesel, there are no starting or evaporative emissions associated with the equipment as these are *de minimis* for diesel-fueled equipment[4]. The software program calculates the exhaust emissions based on California Air Resources Board (ARB) OFFROAD2011 methodology using the equation presented below.[5]

$$Emission_{DieselEx} = \sum_{i} (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$$

Where:

EF = Emission factor in grams per horsepower-hour (g/bhp-hr) as processed from OFFROAD2011

Pop = Population, or the number of pieces of equipment

AvgHp = Maximum rated average horsepower

Load = Load factor

Activity = Hours of operation

i = equipment type

The program allows the end user to enter the number of pieces of equipment, horsepower, load factor, and daily hours of operation for each selected equipment type. CalEEMod assigns default parameters for the construction equipment as explained below:

Emission Factor

OFFROAD2011 was run for statewide with averaging days of MON-SUN for 22 scenario years each. All scenarios were run for three seasons – Annual, Summer, and Winter. The exhaust emission factors for each equipment at each horsepower range were back calculated from total daily emissions reported in the model output files using the following formula:

$$\text{Emission Factor [g/hp-hr]} = \frac{\text{Total Daily Exhaust x } 907{,}184.74}{\text{Activity} \times \text{AvgHP} \times \text{LF}}$$

Where:

Total Daily Exhaust	= Total pollutant emissions [tons/day]
Activity	= Total daily statewide usage of equipment [hours/day]
AvgHP	= Average HP of equipment within the horsepower range [HP]
LF	= Load Factor of equipment [unitless]
907,184.74	= Conversion factor tons to grams (2000 lbs/ton x 453.5924 g/lb)

[4] ARB. 2006. Program Structure of the OFFROAD2007. Dec. Available at http://www.arb.ca.gov/msei/offroad/pubs/offroad_overview.pdf

[5] California Air Resource Board (ARB). 2006. Overview: OFFROAD Model Available at http://www.arb.ca.gov/msei/offroad/pubs/offroad_overview.pdf

Total Daily Exhaust and Activity were obtained from OFFROAD2011 model output, while AvgHP and LF were obtained from input files to the model.

AvgHP

The default average equipment horsepower is from OFFROAD2011. OFFROAD2011 has an average horsepower for each engine tier which was used in developing the emission factor (from equip.csv). This is different than the default horsepower used for default data which is based on the average horsepower of the mode of populations for the various engine horsepower tiers in OFFROAD.

Load

The load factor is the ratio of the actual output to the maximum output of a piece of equipment. The program uses the OFFROAD2011 load factor as default. Based on OFFROAD2011, the load factor is equipment type-specific and does not vary with horsepower (hp) (e.g., the load factors of a 125-hp dozer and a 500-hp dozer are the same).

Activity

The default hours of operation are 8 hours a day and 5 days a week over the construction phase duration unless specified otherwise in the equipment list. The construction phase length is used from the construction phase screen.

i (Equipment Type) and Pop

The default equipment list and number of pieces of equipment for each equipment type is determined based on the size (i.e., acreage) of the construction project based on the construction activity survey performed by the SCAQMD (Appendix E). If the project size defined by the user is between the sizes of two surveyed projects, the program will use the equipment list and number for the larger project. All equipment in the construction category of OFFROAD2011 is included in CalEEMod.

Trenching Emissions

There is no default equipment list associated with trenching emissions at this time. The user can enter site-specific equipment lists for these situations.

4.3 Dust From Material Movement

Fugitive dust is generated by the various source activities occurring at a construction site. This dust contributes PM_{10} and $PM_{2.5}$ emissions and for detailed emission breakdowns are distinguished from exhaust particulate matter emissions. The program calculates fugitive dust associated with the site preparation and grading phases from three major activities: haul road grading, earth bulldozing, and truck loading. As recommended by SCAQMD, the fugitive dust emissions from the grading phase are calculated using the methodology described in USEPA AP-42.

Grading Equipment Passes

Fugitive dust emissions from grading equipment passes are estimated using the methodology described in Section 11.9, Western Surface Coal Mining, of the USEPA AP-42.[6] AP-42 estimates the emission factor of PM_{10} applying a scaling factor to that of PM_{15}. Similarly, the emission factor of $PM_{2.5}$ is scaled from that of total suspended particulates (TSP). The equations used to calculate the emission factors for PM_{15} and TSP and the scaling factor for those of PM_{10} and $PM_{2.5}$ are presented below:

$$EF_{PM15} = 0.051 \times (S)^{2.0}, \text{ and } EF_{PM10} = EF_{PM15} \times F_{PM10}$$
$$EF_{TSP} = 0.04 \times (S)^{2.5}, \text{ and } EF_{PM2.5} = EF_{TSP} \times F_{PM2.5}$$

Where:

EF = emission factor (lb/VMT)
S = mean vehicle speed (mph). The AP-42 default value is 7.1 mph.
$F_{PM2.5}$ = $PM_{2.5}$ scaling factor. The AP-42 default value is 0.031.
F_{PM10} = PM_{10} scaling factor. The AP-42 default value is 0.6.

The grading dust emissions are calculated by multiplying the emission factors with the total vehicle miles traveled (VMT) for the grading equipment (i.e., grader). The VMT are estimated based on the dimensions of the grading area and the blade width of the grading equipment.

$$E = EF \times VMT \text{, and}$$
$$VMT = As / Wb \times 43{,}560(sqft / acre) / 5{,}280(ft / mile)$$

Where:

E: emissions (lb)
EF: emission factor (lb/VMT)
VMT: vehicle miles traveled (mile)
A_S: the acreage of the grading site (acre)
W_b: Blade width of the grading equipment. The program uses a default blade width of 12 ft based on Caterpillar's 140 Motor Grader.[7]

Note that the dimensions (i.e., length and width) of the grading site have no impact on the calculation, only the total area to be graded. In order to properly grade a piece of land multiple passes with equipment may be required. The acres is based on the equipment list and days in grading or site preparation phase according to the anticipated maximum number of acres a given piece of equipment can pass over in an 8-hour workday. The equipment specific grading rates are given in the table below as determined by SCAQMD in consultation with building estimator references.

[6] Available at: http://www.epa.gov/ttn/chief/ap42/ch11/final/c11s09.pdf
[7] http://www.cat.com/cmms/16897760?x=7

Equipment Type	Acres/8hr-day
Crawler Tractors	0.5
Graders	0.5
Rubber Tired Dozers	0.5
Scrapers	1

Bulldozing

Similar to the grading equipment passes emission estimation, the bulldozing emission factors for PM_{10} and $PM_{2.5}$ are scaled from those of PM_{15} and TSP. Based on Section 11.9 of AP-42, the dust emission factor for bulldozing is calculated using the following equations:

$$EF_{TSP} = \frac{C_{TSP} \times s^{1.2}}{M^{1.3}}, \text{ and } EF_{PM\,2.5} = EF_{TSP} \times F_{PM\,2.5}$$

$$EF_{PM15} = \frac{C_{PM15} \times s^{1.5}}{M^{1.4}}, \text{ and } EF_{PM\,10} = EF_{PM\,15} \times F_{PM\,10}$$

Where:

EF = emission factor (lb/hr)
C = arbitrary coefficient used by AP-42
M = material moisture content (%)
S = material silt content (%)
F = scaling factor

C, M, s, and F vary depending on the bulldozed material. The table below summarizes the constants for overburden[8] presented in AP-42[9].

Bulldozing Fugitive Emission Factors

Constant	Overburden
C_{TSP}	5.7
C_{PM15}	1.0
M	7.9%
s	6.9%
F_{PM10}	0.75
$F_{PM2.5}$	0.105

[8] The earth that is between the topsoil and the coal seam (USEPA AP-42).
[9] Tables 11.9-1 and 11.9-3 of USEPA AP-42.

The program uses the constants associated with overburden as default for calculation of bulldozing dust emissions since overburden more closely models the bulldozed materials during the development construction. The dust emissions are calculated by multiplying the emission factor with the hours of operation for the dozers listed in the equipment list using the formula below:

$$E = EF \times Hr$$

Where:

E = emissions (lb)
EF = emission factor (lb/hr)
Hr = hours of operation

Truck Loading

Processes such as truck dumping on the pile or loading out from the pile to a truck with a front-end loader also cause fugitive dust emissions. The program calculates these emissions using the methodology described in Section 13.2, Introduction to Fugitive Dust Sources, of USEPA AP-42. The emission factor that is based on the material moisture content and mean wind speed is calculated using the following formula:

$$EF_D = k \times (0.0032) \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

Where:

EF = emission factor (lb/ton)

K = particle size multiplier. The AP-42 default value for PM_{10} is 0.35 and that for $PM_{2.5}$ is 0.053

U = mean wind speed. The program selects wind speed based on the value listed on the Project Characteristics screen. It has been converted internally to miles per hour.

M = material moisture content (%). The moisture contents of different materials are listed in Table 13.2.4-1 of AP-42. The program uses the moisture content of cover (12%) as default.

The fugitive dust emissions are calculated by multiplying the emission factor with the throughput of loaded and unloaded material that is entered by the end user.

$$E = EF \times TP$$

Where:

E = emissions (lb)

EF = emission factor (lb/ton)

TP = throughput of loaded and unloaded materials (ton)

CalEEMod assumes that 1.2641662 tons per cubic yard based on a bulk density of 1.5 grams per cubic centimeter. Typical soil densities range from about 1.25 to about 1.6. 1.5 is the approximate density of a silty loam soil which is relatively common in most other parts of the state. The density reported above does not account for watering to suppress dust, it only accounts for natural moisture. This is supported by the several references[10].

4.4 Demolition

The program calculates the demolition dust emissions using the methodology described in the report prepared for the USEPA by Midwest Research Institute (MRI).[11] The three primary operations that generate dust emission during the demolition phase are mechanical or explosive dismemberment, site removal of debris, and on-site truck traffic on paved and unpaved road. The truck traffic on roads in described with the trips and VMT information.

Mechanical or Explosive Dismemberment

Based on the MRI report, there is no AP-42 emission factor data available for this mechanical or explosive dismemberment. Thus, the emission factor for dismemberment and collapse of a structure is calculated using the following AP-42 equation for batch drop operations:

$$EF_D = k \times (0.0032) \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

Where:

EF_D = emission factor (lb PM/ton of debris)

$EF_{D\text{-}PM10}$ = 0.0011 lb PM_{10}/ton of debris

$EF_{D\text{-}PM2.5}$ = 0.00017 lb $PM_{2.5}$/ton of debris

k = particle size multiplier. The AP-42 default value for PM_{10} is 0.35 and that for $PM_{2.5}$ is 0.053.

[10] http://www.pedosphere.com/resources/bulkdensity/triangle.cfm?
Saxton et al., 1986 http://ddr.nal.usda.gov/bitstream/10113/35/1/IND86070586.pdf

[11] Midwest Research Institute. 1988. Gap Filling PM10 Emission Factors for Selected Open Area Dust Sources.

U = mean wind speed. The program selects the default mean wind speed based on the wind speed (m/s) provided on the project characteristics screen.

M = material moisture content. The program uses 2% as the default based on the MRI report.

The dust emissions are calculated by multiplying the above emission factors with the total weight of building waste using the following equation:

$$E_D = EF_D \times W$$

Where:

E_D = emissions (lb of PM)
EF_D = emission factor (lb of PM/ton of debris)
W = building waste (ton of debris)

If the total building waste weight is not known, the program will estimate the tonnage using the *building waste tonnage – structural floor space* relationship determined from a 1976 analysis by Murphy and Chatterjee of the demolition of 12 commercial brick, concrete, and steel buildings. The following data are cited directly from the MRI report:

1 ft^2 floor space = 10 ft^3 original building volume,
1 ft^3 building volume = 0.25 ft^3 waste volume,
1 yd^3 building waste = 0.5 ton weight,
Mean truck capacity = 20 yd^3 haulage volume, and therefore
1 ft^2 represents 0.046 ton of waste material.

The total building waste is then calculated using the following equation:

$$E_D = EF_D \times SF \times 0.046(ton / ft^2)$$

Where:

E_D = emissions (lb of PM)
EF_D = emission factor (lb of PM/ton of debris)
SF = building square footage (ft^2)

Debris Loading

The dust emission factor of PM_{10} and $PM_{2.5}$ in pounds per ton building waste is estimated based on the measured total suspended particulates (TSP) emission factor using the following equation:

$$EF_L = k \times EF_{L-TSP}$$

Where:

EF_L = emission factor (lb/ton)
k = particle size multiplier. The AP-42 default value for PM_{10} is 0.35 and that for $PM_{2.5}$ is 0.053.

The default value for $EF_{L\text{-}TSP}$ is 0.058 lb/ton, the average of the two TSP factor (i.e. 0.053 and 0.063 lb/ton) measured from two tests of the filling of trucks with crushed limestone using a front-end loader.

The dust emissions from debris loading are then calculated following the same methodology used for mechanical and or explosive dismemberment:

$$E_L = EF_L \times SF \times 0.046(ton / ft^2)$$

Where:

E_L = emissions (lb)
EF_L = emission factor (lb/ton)
SF = building square footage (ft^2)

4.5 Trips and VMT

The number of worker, vendor, and hauling trips and associated vehicle miles traveled (VMT) are used to determine both the exhaust emissions associated with on-road vehicle use and fugitive dust emissions.

Trips

Worker trips for all construction phases except building construction and architectural coating is based on 1.25 workers per equipment in that phase resulting in one roundtrip per worker. For building construction workers, the trip number is estimated using the trip generation rate from a survey conducted by SMAQMD. This has been reanalyzed and results in slightly different numbers than used by other programs and that was previously reported in some agency documents. The analysis and data supporting these values can be found in Appendix E. The land types selected for the project are grouped into four categories presented in the following table which also presents the associated SMAQMD trip generation rates.

Building Construction Worker and Vendor Trip Rates

Land Use SubType	Rate Metric	Worker Trip Rate	Vendor Trip Rate
Single Family	Daily Trips per DU	0.36	0.1069
Multi-Family	Daily Trips per DU	0.72	0.1069
Commercial/Retail	Daily Trips per 1000 sqft	0.32	0.1639
Office/Industrial	Daily Trips per 1000 sqft	0.42	0.1639
Source: SCAQMD's analysis of SMAQMD Building Construction Worker and Vendor trip rates found in Appendix E.			

Architectural coating worker trips are 20% of building construction phase trips. Vendor trips are only associated with building construction and is based on the land uses and trip rate indicated in the table above.

Haul trips are based on the amount of material that is demolished, imported or exported assuming a truck can handle 16 cubic yards of material. For phased trips, the truck is assumed

to be full both ways. For non-phased trips, the truck is assumed to be empty one direction and thus results in more haul trips calculated.

VMT

The VMT is estimated from the trip lengths input in this screen. The default trip length for workers is based on the location H-W trip length. The default trip length for vendors is the C-NW trip length. The hauling trip length default is set at 20 miles.

On-Road Vehicle Emissions

Construction generates on-road vehicle exhaust, evaporative, and dust emissions from personal vehicles for worker and vendor commuting, and trucks for soil and material hauling. These emissions are based on the number of trips and VMT along with emission factors from EMFAC2011.

EMFAC2011 was run in Burden mode with model year breakdown for all counties, air basins, air districts and statewide average with default settings for 22 scenario years each.[12] All scenarios were run for three seasons – Annual, Summer, and Winter.

Running emissions for all pollutants and PM emissions from tire and brake wear were divided by the VMT of each respective vehicle class from each scenario year and adjusted for unit conversions to derive emission factors in units of grams per VMT. All other emissions (including evaporative) were divided by the number of trips to derive emission factors in units of grams per trip.

For all CO_2 emissions (running, startup, and idling), emission reductions due to Pavley I were applied to LDA, LDT1, LDT2, and MDV for each vehicle model year, and summed to arrive at the total CO_2 emissions for each scenario year. Reductions from Low Carbon Fuel Standards and Pavley I are reflected in CO_2 emissions for scenario years 2011 and after. VMT fractions, calculated as the ratio of VMT for each vehicle class to total VMT for all vehicles were also derived for each scenario year. These values are based on ARB's EMFAC post processor. The emissions from mobile sources were calculated with the trip rates, trip lengths and emission factors for running from EMFAC2011 as follows:

$$Emissions_{pollutant} = VMT * EF_{running,pollutant}$$

Where:

$Emissions_{pollutant}$ = emissions from vehicle running for each pollutant

VMT = vehicle miles traveled

$EF_{running,pollutant}$ = emission factor for running emissions

[12] 1990, 2000, 2005, 2010 to 2025 inclusive, 2030, 2035, and 2040

Evaporative emissions, starting and idling emissions are multiplied by the number of trips times the respective emission factor for each pollutant.

Brake Wear and Tire Wear Emissions

As vehicles are driven, particulate matter is generated from degradation of brakes and tires. This is calculated based on the EMFAC emission factors for each vehicle class and the total VMT traveled by that vehicle class according to the following equation:

$$Emission_{brakewear\ or\ tirewear} = \sum_{class}(E.F._{brakewear\ or\ tirewear,class} \times VMT_{class})$$

Vehicle Mix

The user can select the type of vehicle mix. The EMFAC mix is the total mix of all vehicles provided by EMFAC. The program can also assume that the workers' personal vehicles consist of 50% light-duty auto (or passenger car), 25% light-duty truck type 1 (LDT1), and 25% light-duty truck type 2 (LDT2). The gross vehicle weight (GVW) from EMFAC2011 for each type of vehicle is presented below[13]:

Gross Vehicle Weights

Vehicle Type	GVW (lb)
LDA	All
LDT1	0 - 3,750
LDT2	3,751 - 5,750

For vendor trips, CalEEMod has the option to choose the EMFAC mix or also choose all HHDT or all MHDT vehicles. The program default assumes that all vendors' vehicles are heavy heavy-duty trucks (HHDT) with GVW between 33,000 and 60,000 lb based on EMFAC2011.

For hauling trips, CalEEMod has the option to choose the EMFAC mix, all MHDT, all HHDT or a 50% mix of MHDT and HHDT vehicles.

4.6 On-Road Fugitive Dust

CalEEMod calculates all on-road fugitive dust associated with paved and unpaved roads consistent with the method discussed in the traffic section. All vehicle miles traveled from worker commuting, vendor commutes, soil hauling, and demolition hauling are accounted for. The same equations described in section 5.3 are used here with the variables coming from this screen.

[13] ARB. EMFAC2007 version 2.30 User's Guide.
Available at: http://www.arb.ca.gov/msei/onroad/downloads/docs/user_guide_emfac2007.pdf

4.7 Architectural Coatings

Volatile organic compounds[14] (VOC) off-gassing emissions result from evaporation of solvents contained in surface coatings. The program calculates the VOC evaporative emissions from application of residential and non-residential surface coatings using the following equation:

$$E_{AC} = EF_{AC} \times F \cdot A_{paint}$$

Where:

E = emissions (lb VOC)

EF = emission factor (lb/sqft)

A = building surface area (sqft). The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user.[15] All of the land use information provided by a metric other than square footage will be converted to square footage using the default conversions or user defined equivalence.

F = fraction of surface area. The default values based on SCAQMD methods used in their coating rules are 75% for the interior surfaces and 25% for the exterior shell.

The emission factor (EF) is based on the VOC content of the surface coatings and is calculated estimated using the equation below:

$$EF_{AC} = C_{VOC} / 454(g/lb) \times 3.785(L/Gal) / 180(sqft)$$

Where:

EF = emission factor (lb/sqft)

C = VOC content (g/L). This varies by location and year

The emission factors for coating categories are calculated using the equation above based on default VOC content provided by the air districts or ARB's statewide limits[16].

CalEEMod also calculates the VOC emissions from the painting of stripes, handicap symbols, directional arrows and car space descriptions in parking lots. Please refer to Appendix E for the studies conducted to determine a default percent of parking lot square footage that is painted. The equation for striping emission is the same as that for E_{AC} above, but A_{paint} is:

$$A_{paint} = A_{PL} \times P\%$$

[14] This program will assume that all VOCs are represented by reactive organic gases (ROGs)

[15] The factors 2.7 and 2 are based on page A9-124 of SCAQMD's 1993 CEQA Guide.

[16] Received via email from James Koizumi dated April 27, 2010.

Where:

A_{PL} = Parking lot area (sqft)

P% = Default percent of parking lot area that is painted

The VOC content limit is based on the exterior coating of the region where the project is located. If the user has more specific VOC content limit on the coating being applied the default can be overridden but the user is expected to explain and justify the change in the "Remarks" box at the bottom of the screen.

4.8 Asphalt Paving Off-Gassing Emissions

While there is no specific screen associated with asphalt paving emissions, CalEEMod estimates VOC off-gassing emissions associated with asphalt paving of parking lots using the following equation:

$$E_{AP} = EF_{AP} \times A_{Parking}$$

Where:

E = emissions (lb)

EF = emission factor (lb/acre). The SMAQMD default emission factor is 2.62 lb/acre.[17]

A = area of the parking lot (acre)

The size (acre) of the parking lot is calculated by multiplying the paved area associated with each parking stall with the capacity of the parking lot, or the number of parking stalls.

$$A_{Parking_lot} = A_{Parking_Stall} \times Capacity$$

Where the paved area associated with parking stall includes the area of the parking stall and that of the immediate access road, or aisle.

$$A_{Parking_Stall} = W_{Stall} \times D_{Stall} + W_{Stall} \times W_{Aisle}$$

Where:

A = area (sqft)

W = width (ft)

D = depth (ft)

[17] Sacramento Metropolitan Air Quality Management District. 1994. Air quality thresholds of significance, first edition. Sacramento, CA.

The dimensions (i.e., width and depth) of a parking stall and the aisle width vary depending on the local government planning guidance. The program conservatively assumes 400 square feet (0.009 acre) of paved area per parking stall as default based on the city guidance or municipal code of the following cities in the State of California and a one-way aisle:

Table 4.4 Parking Stall Size Estimate

Location	Dimensions									
	Compact					Full Size				
	Width (ft)	Depth (ft)	Aisle Width (ft)	Area (two-way) (sqft)	Area (one-way) (sqft)	Width	Depth	Aisle	Area (two-way) (sqft)	Area (one-way) (sqft)
City of San Jose[18]	8	16	20	208	288	9	18	26	279	396
Menlo Park[19]	8	16.5	23	224	316	9	18	23	265.5	369
Escondido Municipal Code[20]	8.5	16	24	238	340	8.5	18	24	255	357
Davis[21]	8	16	20	208	288	9	18	20	252	342

The program allows the end user to override the total acres assumed in the land use screen.

4.9 Maximum Daily Construction Emissions

Since construction phases may or may not overlap in time, the maximum daily construction emissions will not necessarily be the sum of all possible daily emissions. CalEEMod therefore calculates the maximum daily emissions for each construction phase. The program will then add together the maximum daily emissions for each construction phase that overlaps in time. Finally the program will report the highest of these combined overlapping phases as a daily maximum. For fugitive dust calculations during grading, the maximum amount of acres graded in a day is determined by the number of grading equipment which is assumed to operate for 8 hours.

[18] Available at: http://www.sanjoseca.gov/planning/pdf/Off-Street_Parking_Design_Standards.pdf

[19] Available at: http://www.ci.menlo-park.ca.us/departments/trn/park_guide.pdf

[20] Available at: http://www.qcode.us/codes/escondido/view.php?topic=33-39-33_768&frames=on

[21] Available at: http://cityofdavis.org/cmo/citycode/detail.cfm?p=40&q=1890

5 Operational Mobile

CalEEMod calculates the emissions associated with on-road mobile sources. These are associated with residents, workers, customers, and delivery vehicles visiting the land use types in the project. The emissions associated with on-road mobile sources includes running and starting exhaust emissions, evaporative emissions, brake and tire wear, and fugitive dust from paved and unpaved roads. Starting and evaporative emissions are associated with the number of starts or time between vehicle uses and the assumptions used in determining these values are described below. All of the other emissions are dependent on vehicle miles traveled (VMT). The methods and assumptions used by the program are described in the following sections.

5.1 Vehicle Trips

The first step in determining the number of starts and vehicle miles traveled is to determine the number of trips associated with the various project land uses. These trips are calculated based on either an average daily or a peak daily. The average daily is used when calculating annual emissions from a project, and peak daily is used when calculating peak daily summer or winter emissions. Since CalEEMod has different trip rates for different days of the week, the daily maximum will be determined based on the highest total of either weekday, Saturday, or Sunday trip emissions. To calculate average daily trips, the weekday trips are multiplied by five and added to the Saturday and Sunday trips, then divided by 7. The average daily trip rates for the individual land uses being modeled are used by CalEEMod in the calculation of a project's annual vehicle miles traveled and as just described are determined from the following equation:

$$\text{Average Daily Trip Rate}_i =$$

$$(Triprate_{Weekday} \times 5 + Triprate_{Sat} + Triprate_{Sun})_i / 7 \times LandUse_i$$

Where

Trip Rate = Weekday, Saturday, or Sunday daily trip generation rate

Land Use = Size metric for a land use type (e.g., number of dwelling units)

i = Land use type

For peak daily trips, CalEEMod chooses the highest trip rate amongst weekday, Saturday and Sunday data, and multiplies by the size metric to get total peak daily trips.

Trip rate describes the amount of trips generated by each land use. Multiplying trip rate per unit size of land use (e.g., per dwelling unit, per 1,000 sqft, etc.) by land use size yields total daily trips generated by each land use. The Institute of Transportation Engineers (ITE) trip

generation rate[22] are used as default in the program except for an interim warehouse trip rate which is based on an analysis by SCAQMD staff presented in Appendix E. Like all standard references, it should be noted that ITE has guidance about how their trip rates should be used. For example, some land uses (e.g., electronic superstore, fast food without drive-thru, general heavy industrial, government (civic center), hardware/paint store, movie theater without a matinee) are based on a limited number of survey samples so the user might consider gaining more refined trip rate information for their project. If the user needs more specific information than the default trip rates provided by CalEEMod, they are encouraged to consult with licensed traffic engineers. If more accurate trip rate information is available, the user has the ability to override the default Trip Rate. The end user will be required to provide justification from alternative sources of data (e.g., project-specific traffic study) that demonstrate that a different trip rate is appropriate for their project. Metropolitan Planning Organizations (MPOs) may be another source of trip generation rates specific for the given region.

Trip Type

Once the total number of trips for a land use type is determined, the next step is to determine the trip type. The trip type breakdown describes the purpose of the trip generated at each land use. For example, the trip type breakdown indicates the percentage of trips generated at single family home for work, for shopping, and for other purposes. Multiplying the total trips for a land use by trip type breakdown percentage yields trips of a given trip type. Two sets of trip type breakdown are used in CalEEMod– residential breakdown and commercial breakdown.

Residential trip type: These include home-work (H-W), home-shop (H-S), or home-other (H-O). A home-work trip represents the trip from the home to the workplace. A home-shop trip represents the trip from the home to a land use where shopping takes place (generally retail). A home-other represents all other types of trips generated from the resident such as school, entertainment, etc. The trip type breakdown is from district supplied information or the 1999 Caltrans Statewide Travel Survey is used as default or specific information obtained from the various Districts. It is recommended that the District or Project Applicant go to accredited sources such as the regional Metropolitan Planning Organization (MPO) to obtain trip type breakdown specific for the given region. The trip type breakdown can be overwritten if users can provide sufficient justification for alternative sources of data (e.g., project-specific traffic study) that demonstrate a different breakdown.

Commercial trip type: These include commercial-customer (C-C), commercial-work (C-W) and commercial-nonwork (C-NW). A commercial-customer trip represents a trip made by someone who is visiting the commercial land use to partake in the services offered by the site. The commercial-work trip represents a trip made by someone who is employed by the commercial land use sector. The commercial-nonwork trip represents a trip associated with the commercial land use other than by customers or workers. An example of C-NW trips includes trips made by delivery vehicles of goods associated with the land use. The trip type breakdown from the

[22] ITE. 2008. Trip Generation 8th Edition. In September 2012, ITE published the 9th edition that updated some of the trip rates from the 8th edition. The updates are not yet incorporated into CalEEMod but the user has the ability to override the trip rate default.

number or workers and or truck trips from ITE and an analysis of information provided for the SCAB was used as default to assign the trip type breakdowns for all land uses. If an exact match to a land use was not available, data from a similar land use was used as a surrogate. Trip type breakdown can be overwritten if users can provide justification for alternative sources of data (e.g., project-specific traffic study) that demonstrates different breakdown.

Primary Trip Lengths

Each trip type has a primary trip length associated with it. These trip lengths are based on the location and urbanization selected on the project characteristic screen. These values were supplied by the districts or use a default average for the state. Each district (or county) also assigns trip lengths for urban and rural settings. For residential projects, average primary trip lengths of all trip types are determined with the below equation. Commercial and industrial land use types use a similar equation based on their trip types.

$$\text{Average Primary Trip Length}_i = H\text{-}W_{miles} \times H\text{-}W_{trip\%} + H\text{-}S_{miles} \times H\text{-}S_{trip\%} + H\text{-}O_{miles} \times H\text{-}O_{trip\%}$$

Where

$H\text{-}W_{miles}$	= Home to Work trip length
$H\text{-}W_{trip\%}$	= % of the total primary trips that are Home to Work trips
$H\text{-}S_{miles}$	= Home to Shopping trip length
$H\text{-}S_{trip\%}$	= % of the total primary trips that are Home to Shopping trips
$H\text{-}O_{miles}$	= Home to Other trip length
$H\text{-}O_{trip\%}$	= % of the total primary trips that are Home to Other trips
i	= land use type.

Primary, Pass-by and Diverted Trip Links

Trip link types further describe the characteristics of the trip attracted to each land use, whether it's a primary trip, a diverted link trip, or a pass-by trip. For example, a commercial customer pass-by trip could be a person going from home to shop on his/her way to work. In addition, a commercial customer diverted-link trip could be a person going from home to work, and on its way making a diversion to shop. Pass-by trips generate virtually no additional running emissions but could generate additional resting and startup emissions. Diverted trips generate less running emissions compared to primary trips, and can also generate additional resting and startup emissions. The average VMT associated with a trip is adjusted by modifying the primary

trip length to account for reductions from pass-by and diverted trips. The trip lengths mentioned above are for primary trip links. For pass-by trip links the trip length will be 0.1 miles and diverted trip links the trip length will be 25% of the primary trip length.

An average overall trip length can be calculated as follows:

$$\text{Average Overall Trip Length}_i = Link\%_{primary} \times TripLength_{Avg\,Primary} + Link\%_{diverted} \times 0.25 \times TripLength_{Avg\,Primary} + Link\%_{passby} \times 0.1mile$$

Where

Link % = percentage of link types

Trip Length $_{AvgPrimary}$ = Average primary trip length for each trip type

i = land use type

The trip link percentage from the ITE Generation book and SANDAG are used as default. The trip link percentage can be overwritten if users can provide justification for alternative sources of data (e.g., project-specific traffic study) that demonstrate different breakdown. If diverted or pass-by trips are not desired, the end user can change the default percentages to zero for these and have primary equal 100%.

Vehicle Miles Traveled

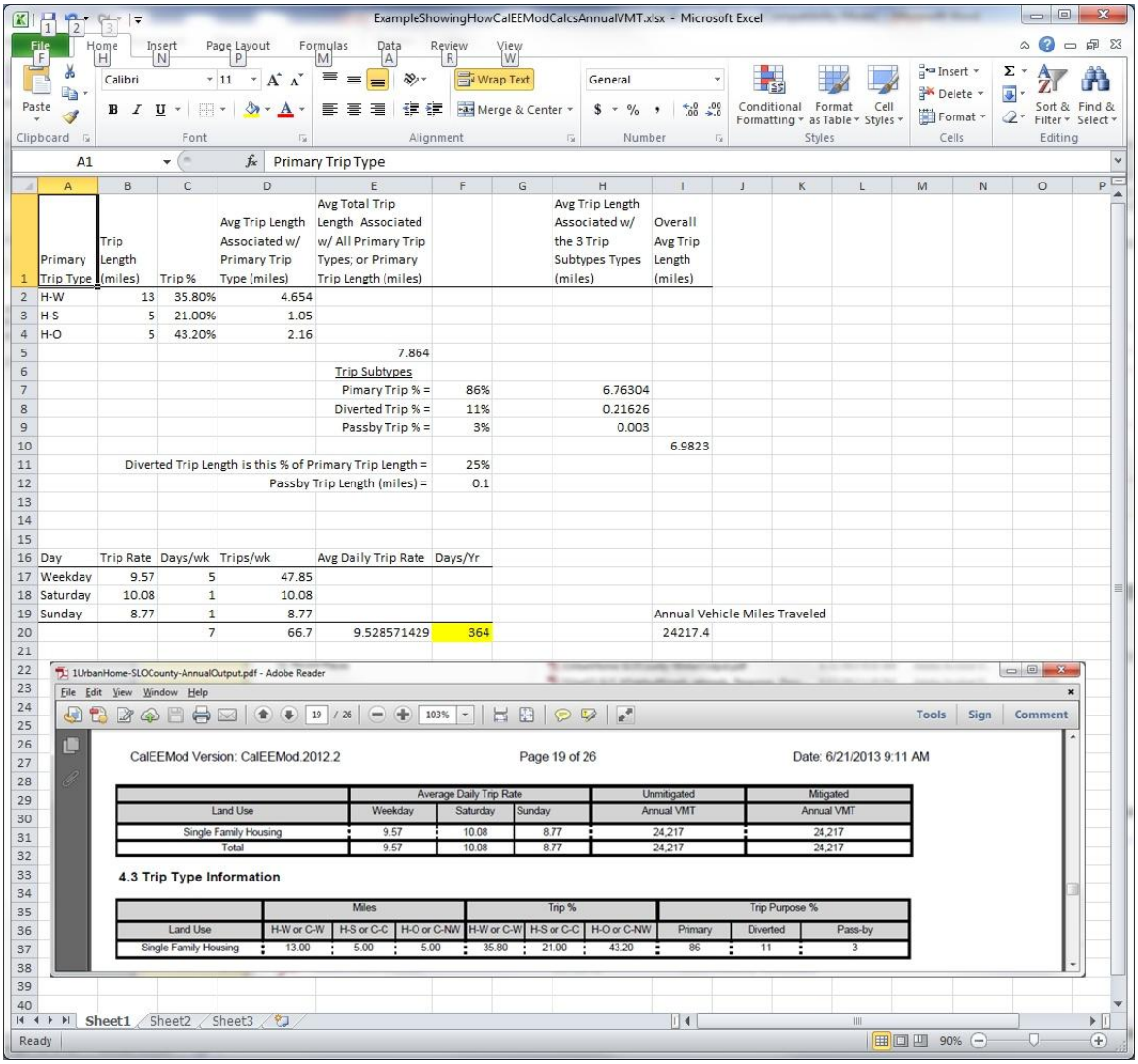
The daily vehicle miles traveled (VMT_d) for a modeled project is calculated with the below equation using average daily trip rates and lengths calculated from equations above. CalEEMod calculates Annual VMT by multiplying VMT_d by 365 days/year.

VMT_d = Σ(Average Daily Trip Rate $_i$ * Average Overall Trip Length $_i$) $_n$

Where:

n = Number of land uses being modeled.

The following screen shot shows an example of how CalEEMod calculated the Annual VMT for a single residential dwelling in an urban setting.



ExampleShowingHowCalEEModCalcsAnnualVMT.xlsx - Microsoft Excel

Primary Trip Type	Trip Length (miles)	Trip %	Avg Trip Length Associated w/ Primary Trip Type (miles)	Avg Total Trip Length Associated w/ All Primary Trip Types; or Primary Trip Length (miles)			Avg Trip Length Associated w/ the 3 Trip Subtypes Types (miles)	Overall Avg Trip Length (miles)
H-W	13	35.80%	4.654					
H-S	5	21.00%	1.05					
H-O	5	43.20%	2.16					
				7.864				
				Trip Subtypes				
				Pimary Trip % =	86%		6.76304	
				Diverted Trip % =	11%		0.21626	
				Passby Trip % =	3%		0.003	
								6.9823
	Diverted Trip Length is this % of Primary Trip Length =				25%			
			Passby Trip Length (miles) =		0.1			

Day	Trip Rate	Days/wk	Trips/wk	Avg Daily Trip Rate	Days/Yr
Weekday	9.57	5	47.85		
Saturday	10.08	1	10.08		
Sunday	8.77	1	8.77		
		7	66.7	9.528571429	364

Annual Vehicle Miles Traveled: 24217.4

1UrbanHome-SLOCounty-AnnualOutput.pdf - Adobe Reader

CalEEMod Version: CalEEMod.2012.2 Page 19 of 26 Date: 6/21/2013 9:11 AM

Land Use	Average Daily Trip Rate: Weekday	Saturday	Sunday	Unmitigated: Annual VMT	Mitigated: Annual VMT
Single Family Housing	9.57	10.08	8.77	24,217	24,217
Total	9.57	10.08	8.77	24,217	24,217

4.3 Trip Type Information

Land Use	Miles: H-W or C-W	H-S or C-C	H-O or C-NW	Trip %: H-W or C-W	H-S or C-C	H-O or C-NW	Trip Purpose %: Primary	Diverted	Pass-by
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3

Sheet1 Sheet2 Sheet3 Ready

5.2 Vehicle Emissions

The emissions from mobile sources were calculated with the trip rates, trip lengths and emission factors for running from EMFAC2011 as follows:

$$Emissions_{pollutant} = VMT * EF_{running,pollutant}$$

Where:

$Emissions_{pollutant}$ = emissions from vehicle running for each pollutant

VMT = vehicle miles traveled

$EF_{running,pollutant}$ = emission factor for running emissions

In order to obtain the emission factor for running emissions, EMFAC2011 was run in Burden mode with model year breakdown for all counties, air basins, air districts and statewide average

with default settings for 22 scenario years each.[23] All scenarios were run for three seasons – Annual, Summer, and Winter. Running emissions for all pollutants and PM emissions from tire and brake wear were divided by the VMT of each respective vehicle class from each scenario year and adjusted for unit conversion to derive emission factors in units of grams per VMT. For all CO_2 emissions (running, startup, and idling), emission reductions due to Pavley I were applied to LDA, LDT1, LDT2, and MDV for each vehicle model year, and summed to arrive at the total CO_2 emissions for each scenario year. Reductions from Low Carbon Fuel Standards and Pavley I are reflected in CO_2 emissions for scenario years 2011 and after. VMT fractions, calculated as the ratio of VMT for each vehicle class to total VMT for all vehicles were also derived for each scenario year.

Similarly, evaporative, starting, and idling emissions were divided by the number of trips to derive emission factors in units of grams per trip. Evaporative emissions, starting and idling emissions are multiplied by the number of trips times the respective emission factor for each pollutant.

Brake Wear and Tire Wear Emissions

As vehicles are driven, particulate matter is generated from degradation of brakes and tires. This is calculated based on the EMFAC emission factors for each vehicle class and the total VMT traveled by that vehicle class according to the following equation:

$$Emission_{brakewear\ or\ tirewear} = \sum_{class} (E.F._{brakewear\ or\ tirewear,class} \times VMT_{class})$$

5.3 Road Dust

Vehicles that drive on both paved and unpaved roads generate fugitive dust by dispersing the silt from the roads. The following equation is used to calculate the fugitive dust emissions associated with paved roads:

$$E_{ext} = [\ k\ (sL)^{0.91} \times (W)^{1.02}\ ]\ (1 - P/4N)$$

Where:

Eext = annual or other long-term average emission factor in the same units as k,

k = particle size multiplier for particle size range and units of interest (see below),

sL = road surface silt loading (grams per square meter) (g/m^2),

W = average weight (tons) of *all the vehicles* traveling the road (2.4 tons)

[23] 1990, 2000, 2005, 2010 to 2025 inclusive, 2030, 2035, and 2040

P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period, and

N = number of days in the averaging period (e.g., 365 for annual, 91 for seasonal, 30 for monthly).

The above is the average emission factor by land use for paved roads. The default values for the required parameters are based on recommendations in AP-42. For daily emissions it is assumed to have no precipitation.

The following equation is used to calculate the fugitive dust emissions associated with unpaved roads:

$$E.F._{dust,i} = \left(\frac{k(s/12)^1 (S/30)^{0.5}}{(M/0.5)^{0.2}} - C \right) (1 - \frac{P}{365})$$

Where:

k = particle size multiplier for particle size range and units of interest (see below)

s = surface material silt content (%)

M = surface material moisture content (%)

S = mean vehicle speed (mph)

C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear, and

P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation

The above is the average emission factor by land use for unpaved roads. For daily emissions it is assumed to have no precipitation.

By default, CalEEMod assumes the percentage of paved and unpaved roads for each district as provided by the district. The end user is allowed to modify the percentage of unpaved roads if specific information is available.

Once emission factors are determined, dust emissions can be calculated by

$$Emissions_{dust} = \sum_i (E.F._{dust,i} \times VMT)$$

The VMT is the same used in vehicle trips.

5.4 Operational Off-Road Equipment

CalEEMod also calculates emissions from off-road equipment (e.g., forklifts, cranes, loaders, generator sets, etc.) used during the operation of the land use being analyzed. This is an optional calculation so the user would need to provide the type and number of off-road equipment being used during operation. From that information, CalEEMod provides horsepower, load factor, hours of operation and fuel type, The user has the ability to override the defaults. The emission factors are from OFFROAD2011. Please refer to section 4.2 for the equations in calculating emissions from off-road equipment.

6 Area Sources

The area source module is used to calculate direct sources of air emissions located at the project site. This includes hearths, consumer product use, architectural coatings, and landscape maintenance equipment. This does not include the emissions associated with natural gas usage in space heating, water heating, and stoves as these are calculated in the building energy use module.

6.1 Hearths

GHG emissions from the combustion of wood or biomass are calculated and are considered biogenic emissions of CO_2. Some protocols do not consider these emissions to be a part of the emission inventory. Therefore, these CO_2 emissions will be kept distinct from the anthropogenic GHG emissions. The method to calculate the criteria and biogenic GHG emissions associated with wood stoves is shown. Emissions from wood stoves are calculated using the formula below for each wood stove type:

$$\textit{Wood hearth emissions (MT/year)} = \textit{Emission Rate (g } CO_2 \textit{ per kg wood burned)} \times \textit{Wood Burned (tons per year)} \times \textit{907,185 g/ton} \times \textit{number of stoves} \times \textit{1 MT CO2 / } 1x10^6 \textit{ g CO2}$$

where:

Emission Rate = Based on AP-42[24].

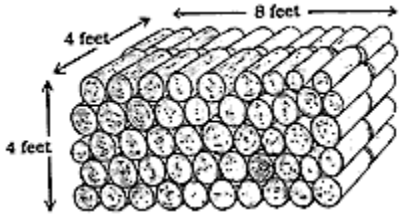
Wood Burned = Weight of wood burned per year per residential unit.

Number of stoves = Number of this type of stove in the project.

Using the formula above and the number of residential units with wood stoves, it is possible to estimate the GHG emissions from wood stoves. Default values for the emission factors and the amount of wood burned by different hearth types and the percentage of different hearths in various areas of California are based on ARB, USEPA, and district supplied emission factor values for hearths and woodstoves. The number of wood stoves or hearths is based on percentages supplied by districts or state defaults. If applicable, CalEEMod incorporates the restrictions on the number of wood burning fireplaces and stoves from SJVUAPCD Rule 4901

[24] US EPA AP-42, Chapter 1.9 (http://www.epa.gov/ttnchie1/ap42/ch01/bgdocs/b01s09.pdf) and Chapter 1.10 (http://www.epa.gov/ttnchie1/ap42/ch01/bgdocs/b01s10.pdf)

Amended 10/16/2008. For projects in the San Luis Obispo region, the wood burned per year is 2,016.5 lbs/year (3,081 lbs/cord X 0.6545 cords/year). For visual clarification, a standard cord of wood is defined as a stack of wood with a volume of 128 cubic feet (4 ft. x 4 ft. x 8 ft.)



Criteria pollutant emissions from wood stoves or hearths are computed by CalEEMod in a similar manner with emission factors also coming from AP-42[25].

6.1.1.1 Natural Gas Fireplaces/Stoves

GHG emissions associated with natural gas fired fireplaces are calculated using emission factors from the California Climate Action Registry (CCAR). The criteria pollutant emission factors are based on AP-42. The average heating rate in British Thermal Units (BTU) per hour for fireplaces in homes is 60,000 BTU/hr[26]. Default values for annual fireplace usage needs to be determined for each county. Natural gas is assumed to have 1,020 BTU per standard cubic foot[27]. Criteria pollutant emissions from natural gas fireplaces/stoves are computed by CalEEMod in a similar manner with emission factors also coming from AP-42[27].

6.2 Consumer Products

Consumer products are chemically formulated products used by household and institutional consumers, including, but not limited to, detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products; but does not include other paint products, furniture coatings, or architectural coatings. SCAQMD did an evaluation of consumer product use compared to the total square footage of buildings using data from ARB consumer product Emission Inventory. This analysis can be found in Appendix E. To calculate the ROG emissions from consumer product use, the following equation is used:

$$Emissions = EF \cdot BuildingArea$$

Where:

EF = pounds of VOC per building square foot per day

[25] US EPA AP-42, Chapter 1.9. Page 3, Table 1.9-1 (http://www.epa.gov/ttnchie1/ap42/ch01/bgdocs/b01s09.pdf) and Chapter 1.10 (http://www.epa.gov/ttnchie1/ap42/ch01/bgdocs/b01s10.pdf)

[26] SCAQMD Rule 445 Staff Report - http://www.aqmd.gov/hb/2008/March/080337a.html and SCAQMD Final EA - http://www.aqmd.gov/ceqa/documents/2008/aqmd/finalEA/FEA445.pdf.

[27] USEPA. 1998. AP-42 Emission Factors. Chapter 1.4 Natural Gas Combustion, Pages 5-6, Tables 1.4-1 and 1.4-2, http://www.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf.

The factor is 2.14 x 10^{-5} lbs/sqft/day for everyplace except SCAQMD

The factor is 2.04 x 10^{-5} lbs/sqft/day for SCAQMD areas.

Building Area = The total square footage of all buildings including residential square footage.

6.3 Architectural Coatings

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers. The program calculates the VOC evaporative emissions from application of residential and non-residential surface coatings using the following equation:

$$E_{AC} = EF_{AC} \times F \cdot A_{paint} \times Reapplication$$

Where:

E = emissions (lb)

EF = emission factor (lb/sqft)

F = fraction of surface area. The default values based on SCAQMD are 25% for the exterior surface and 75% for the interior.

A = building surface area (sqft). The program assumes the total surface area for painting equals 2.7 times the floor square footage for residential land use and 2 times the floor square footage for nonresidential land use.[28] All land use information provided by a metric other than square footage will be converted to square footage using the default conversions or user-defined equivalence.

Reapplication = Rate at which surfaces are repainted.

The emission factor is based on the VOC content of the surface coatings and is calculated estimated using the equation below:

$$EF_{AC} = C_{VOC} / 454(g/lb) \times 3.785(L/Gal) / 180(sqft)$$

Where:

EF = emission factor (lb/sqft)

C = VOC content (g/L). This is anticipated to vary by district and year.

Reapplication rate

All land use buildings are assumed to be repainted at a rate of 10% of area per year. This is based on the assumptions used by SCAQMD.

6.4 Landscape Equipment

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, roto tillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers, as

[28] The factors 2.7 and 2 are based on page A9-124 of SCAQMD's 1993 CEQA Guide.

well as air compressors, generators, and pumps. The emissions associated from landscape equipment use were processed using OFFROAD 2011 and ARB's Technical Memo: Change in Population and Activity Factors for Lawn and Garden Equipment (6/13/2003[29]). The information was used along with the total building square footage and dwelling units in California to determine two emission factors. The first is for the commercial landscape equipment which is in terms of grams per square foot of non-residential building space per day. The second is the for the residential landscape equipment which is in terms of grams per dwelling unit per day. These emission factors are multiplied by the number of summer days or winter days that represent the number of operational days. For example, pieces of equipment that would typically be used in snow conditions were used with winter days this includes equipment such as snow blowers while all others were used with summer days. For those regions with 365 or 330 summer days (South Coast, Sacramento, San Joaquin Valley), it is assumed non-residential (e.g., commercial land uses) landscaping equipment would likely only operate during the week (not weekends) so operational days are 250 days per year.

[29] http://www.arb.ca.gov/msei/offroad/techmemo/Lawn_and_Garden_Activity.doc

7 Energy Use

GHGs are emitted as a result of activities in buildings for which electricity and natural gas are used as energy sources. Combustion of any type of fuel emits criteria pollutants and GHGs directly into the atmosphere; when this occurs in a building this is a direct emission source[30] associated with that building and the program will include all of the criteria and GHG pollutants. GHGs are also emitted during the generation of electricity from fossil fuels. When electricity is used in a non-residential building, the electricity generation typically takes place offsite at the power plant; electricity use in a non-residential building generally causes emissions in an indirect manner and therefore only GHG emissions will be calculated from electricity generation.

Fuel oil, kerosene, liquefied petroleum gas, and wood can also be used as fuels, but generally contribute only in small amounts as combustion sources within buildings. As such, these minor emissions are not accounted for in the program.

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as in plug-in appliances. In California, Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting.[31] Non-building energy use, or "plug-in" energy use can be further subdivided by specific end-use (refrigeration, cooking, office equipment, etc.). The program will calculate the non-residential energy use by:

1. Calculating energy use from systems covered by Title 24 (HVAC system, water heating system, and the lighting system).
2. Calculating energy use from lighting.
3. Calculating energy use from office equipment, appliances, plug-ins, and other sources not covered by Title 24 or lighting.

The program will convert the resulting energy use quantities to GHG emissions by multiplying by the appropriate emission factors obtained by incorporating information on local electricity production. The following sections describe the methodologies employed to estimate GHG emissions.

Estimate of Non-residential Energy Use Intensity

The program uses the California Commercial End Use Survey (CEUS)[32] database to develop energy intensity values (electricity or natural gas usage per square feet per year) for non-residential buildings. The methods used to estimate energy use are described below.

[30] California Climate Action Registry (CCAR) General Reporting Protocol (GRP), Version 3.1 (January). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf Chapter 8

[31] Title 24, Part 6, of the California Code of Regulations: California's Energy Efficiency Standards for Residential and Nonresidential Buildings. http://www.energy.ca.gov/title24/

[32] California Energy Commission (CEC). California Commercial End-Use Survey Results. Data available from Itron Inc. at http://capabilities.itron.com/CeusWeb/Chart.aspx

7.1.1.1 CEUS Database

The CEUS data from the CEC[33] lists energy use intensity by CEUS building type, CEUS end-use, and CEC forecasting climate zone[34]. Each default land use in the program is mapped to an appropriate CEUS building type. The list of end uses from CEUS was grouped to some general end-use categories and distinguishes if the end use is related to Title-24 building systems.

Since 1978, the CEC has established building energy efficiency standards to conserve electricity and natural gas and prevent the state from having to build more power plants. The standards are updated periodically. As noted in User's Guide, the 2005 standards were used in CARB's Scoping Plan and are based on average savings for improvements from 2002 to 2005 ("Impact Analysis for 2005 Energy Efficiency Standards"). More recently, the 2008 standards[35] are based on improvements from 2005 to 2008 ("Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings"). The energy efficiency standards (part 6) are currently being considered in 2013 but not yet approved[36]. Thus, the 2013 standards are yet to be included in CalEEMod. Because the CEUS data uses 2002 survey data, the tool adjusts CEUS baseline Title 24 usage rates to reflect the 2008 Title 24 improvements. The default energy intensities reported are adjusted to 2008 Title 24 part 6. Adjustments for 2005 Title 24 part 6 are available by checking the "using historical data" box to incorporate Title 24 2005 in calculations. The 2005 Title 24 standard (part 6) were in effect when CARB developed its Scoping Plan 2020 No Action Taken predictions. Once the box is clicked, hit the "Default" button to download the historical (2005) data. Appendix E describes in detail the method used to analyze the CEUS data.

7.1.1.2 Residential Energy Use

The energy use from residential land uses is calculated based on the Residential Appliance Saturation Survey (RASS). Similar to CEUS, this is a comprehensive energy use assessment that includes the end use for various climate zones in California. Detailed discussions of processing the RASS data to obtain the lookup tables is described in Appendix E.

7.1.1.3 Other Land Use Energy Use

There are a few remaining land use categories that have not been included in the CEUS or RASS data. These include golf courses, parks, and recreational pools. These do not currently have default energy use values listed in the program. However, there have been published studies regarding the energy use from lighting, ventilation and elevators in parking lots and structures. From the parking lot land use category, the user has the option to choose parking lot, unenclosed parking structure, unenclosed parking structure with elevators, enclosed parking structure, or enclosed parking structure with elevators. CalEEMod calculates the energy use from lighting in open parking lots and unenclosed (no walls) parking structures; lighting and

[33] Workbooks downloaded from http://capabilities.itron.com/CeusWeb/Chart.aspx for all building categories

[34] A few climate zones were not included in the CEUS study. These climate zones will be mapped to another related climate zone that was included in the study.

[35] http://www.energy.ca.gov/2008publications/CEC-400-2008-001/CEC-400-2008-001-CMF.PDF

[36] http://www.energy.ca.gov/title24/2013standards/index.html

ventilation in enclosed parking structures; and elevators in those parking structures with them. With the energy use (kWh) amount, CalEEMod is able to calculate the corresponding criteria and GHG emissions. Refer to Appendix E for the details on the assessment of the various studies conducted on energy use rates and energy consumption from operation of car parking facilities in California. In addition, Appendix E provides the reasoning as to which references are used as default values in determining energy use. Appendix E also provides guidance if the user wants to override the default (e.g., the number of elevators is known). The following table provides a summary of the energy use factors included in CalEEMod. Depending on the type of parking land use description, the model uses the appropriate factor (or factors if structure with elevator).

Type of Parking	Energy Use	Total Annual (kWh per sq ft)
Open parking lot	Lighting	0.876
Unenclosed parking structure	Lighting	2.63
Enclosed parking structure	Lighting, ventilation	6.55
Parking structure with elevators	Elevators	0.19

7.2 Emissions from Energy use

The natural gas energy use will contribute both criteria and GHG emissions. The emission factors for natural gas combustion are based on AP-42 and CCAR. Electricity use will also contribute to both criteria and GHG emissions. However, the emissions from electricity use are only quantified for GHGs since criteria pollutant emissions occur at the site of the power plant which is likely to be offsite. Emissions are calculated by multiplying the energy use times the carbon intensity and other GHGs of the utility district per kilowatt hour. See section 8.2 for the electricity carbon intensity. In general:

$$\text{Emissions} = \Sigma_i (\text{EF} \times \text{Energy Intensity} \times \text{Size})$$

Where:

EF	= emission factor based on AP-42 or CCAR (kW-hr/sq ft or /DU)
Energy Intensity	= energy intensity for a land use (CO_2e/kW-hr)
Size	= size of the building or Dwelling units (sq ft or DU)
i	= land use type

8 Water and Wastewater

The amount of water used and wastewater generated by a project has indirect GHG emissions associated with it. These emissions are a result of the energy used to supply, distribute, and treat the water and wastewater. It will often be the case that the water treatment and wastewater treatment occur outside of the project area. In this case, it is still important to quantify the energy and associated GHG emissions attributable to the water use. In addition to the indirect GHG emissions associated with energy use, wastewater treatment can directly emit both methane and nitrous oxide.

8.1 Annual Indoor and Outdoor Water Use by Land Use Category

Total residential indoor and outdoor water use for all of California for the year 2000 is reported in Table ES-1 of the Pacific Institute "Waste Not Want Not" report.[37] These values were divided by the total number of occupied households in California in the year 2000[38] to give water demand per dwelling unit. It is assumed that these water use values are representative of all residential dwelling unit types (single-family, apartment, condo, etc.) and will be used unless alternate values are supplied by the air districts or the end user.

Data for most commercial and industrial land uses was obtained from Appendices E and F of the Pacific Institute's "Waste Not Want Not" report.[39] Total gallons of water used per day per metric were reported, where the metric is employee, student, room, acre, or square foot, depending on the land use. For example, water use at office and retail land uses was reported in a metric of gallons per employee per day, while water use at hotels and motels was reported in a metric of gallons per room per day. The total daily water use was converted to annual water use based on the number of days of operation for that land use. For example, it was assumed that schools operate for 180 days per year while offices operate for 225 days per year (excluding weekends and holidays). Figures in Appendices E and F of the Pacific Institute report shows the percent of water use dedicated to landscape irrigation; this percent was multiplied by the total water use to obtain the outdoor water use. The remainder was assigned to indoor water use.

For a few land uses (library, place of worship, movie theater, arena, and civic center), The Pacific Institute report did not provide sufficient data and so the American Water Works Association Research Foundation's Commercial and Institutional End Uses of Water report[40]

[37] Gleick, P.H.; Haasz, D.; Henges-Jeck, C.; Srinivasan, V.; Cushing, K.K.; Mann, A. 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California. Published by the Pacific Institute for Studies in Development, Environment, and Security. Full report available online at: http://www.pacinst.org/reports/urban_usage/waste_not_want_not_full_report.pdf. Appendices available online at: http://www.pacinst.org/reports/urban_usage/appendices.htm

[38] US Census Bureau. 2000 Census. Table QT-H1: General Housing Characteristics 2000. Available online at: http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=04000US06&-qr_name=DEC_2000_SF1_U_QTH1&-ds_name=DEC_2000_SF1_U&-redoLog=false.

[39] Gleick et al. 2003. Appendices E and F.

[40] Dziegielewski; B.; Kiefer, J.C.; Optiz, E.M.; Porter, G.A.; Lantz, G.L.; DeOreo, W.B.; Mayer, P.W.; Nelson, J.O. 2000. Commercial and Institutional End Uses of Water. Published by the American Water Works Association Research Foundation.

was used. This data is specific to Southern California and was obtained from sample sizes ranging from 1 to 26. In all cases, the total gallons of water used per employee per day was reported.

Specifically for industrial land use categories, the default indoor water use rate is 231,250 gallons/work-year/ thousand square feet. This value was computed by dividing the annual water use in California industry (Table ES-6 in Gleick et al. 2002; 963,071,916 gallons/industrial work day) by the industrial work area in California (Dun & Bradstreet, Business Population Report aggregated by Standard Industrial Classification (SIC) and Census Block, May 2002; 1,041,386 thousand square feet). This yields 925 gallons/work-day/thousand square feet and the annual value is derived using 250 workdays in a year. For those industrial projects where the anticipated water use rate is known or can be estimated from similar projects, the project specific indoor water use rate should overwrite the default value and specific rationale needs to be entered in the Remarks section of the Water and Wastewater CalEEMod input page.

Indoor water end-use intensities were also obtained from the Pacific Institute report.[41] End-use categories include toilets, showerheads, bathroom faucets, kitchen faucets, dishwashers, clothes washers, and leaks. End-use intensity is given in terms of percent of total indoor water use. For example, The Pacific Institute estimates that toilets contribute to 33% of indoor residential water use. Water end-use intensity must be known in order to calculate the expected water and GHG savings from installing low-flow or high-efficiency water fixtures.

8.2 Electricity Intensity Factors

Electricity intensity factors were obtained from the 2006 CEC report, "Refining Estimates of Water-Related Energy Use in California." The electricity intensity factors are reported in units of kWh per million gallons (MG) of water used, and represent the amount of electricity needed to (1) supply and convey the water from the source, (2) treat the water to usable standards, and (3) distribute the water to individual users. The sum of these factors gives the total electricity required to supply, treat, and distribute water for outdoor uses. For indoor uses, the electricity needed to process the resulting wastewater is also included. The program will allow the end user to specify project specific electricity intensity factors if they are available for the project.

CO_2e emissions associated with *indoor water use* are calculated according to the following equation:

$$\text{GHG emissions} = \text{Water}_{\text{indoor}} \times \text{Electricity}_{\text{indoor}} \times \text{Utility}$$

Where:

GHG emissions = Tonnes CO_2e

$\text{Water}_{\text{indoor}}$ = Total volume of water used indoors (million gallons)

$\text{Electricity}_{\text{indoor}}$ = Electricity required to supply, treat, and distribute water and the resulting wastewater (kWh/million gallons)

This is assigned for each location.

[41] Gleick et al. 2003. Residential end-use intensities found in Figure 2-4c of main report. Commercial end-use intensities found in Appendix E.

Utility = Carbon intensity of Local Utility (CO_2e/kWh)

CO_2e emissions associated with *outdoor water use* are calculated according to the following equation:

$$\text{GHG emissions} = \text{Water}_{\text{outdoor}} \times \text{Electricity}_{\text{outdoor}} \times \text{Utility}$$

Where:

GHG emissions = Tonnes CO_2e

$\text{Water}_{\text{outdoor}}$ = Total volume of water used outdoors (million gallons)

$\text{Electricity}_{\text{outdoor}}$ = Electricity required to supply, treat, and distribute water (kWh/million gallons)
This is assigned for each location.

Utility = Carbon intensity of Local Utility (CO_2e/kWh)

The sum of emissions from indoor and outdoor water use for each land use category gives the total CO_2e emissions associated with water use at the Project.

8.3 Wastewater Treatment Methods by County and Air District

Depending on the method, the treatment of wastewater can produce methane (CH_4), nitrous oxide (N_2O), and carbon dioxide (CO_2) emissions, which are all greenhouse gases. Methane and nitrous oxide emissions are converted to carbon dioxide equivalent (CO_2e) emissions based on their GWP. When a development generates waste and wastewater, the waste is typically either treated on-site in septic tanks or sent to a centralized wastewater treatment plant to be treated by one of several possible methods. The various wastewater treatment methods employed by each county or air district and the percent of total wastewater treated by each method was used if provided, otherwise the default percentage used in ARB's GHG emission inventories was used. Wastewater treatment methods include on-site septic tanks and centralized wastewater treatment plants which may be composed of aerobic processes, or facultative lagoons. The solids from the latter two treatments could be digested anaerobically to produce digester gas. In some cases, the combusted digester gas may be part of a cogeneration system which recovers the heat generated from combustion and generates electricity which is used for on-site processes. Thus, for aerobic and facultative lagoons wastewater treatment, digestion (*listed in the last two column on the wastewater screen*) should equal 100% percent. For septic systems, the digestion could be zero percent or 100 percent.

The majority of nitrous oxide emissions are generated when treated wastewater is discharged to water bodies as effluent. The default assumption is for non-recycled water. The program calculates total GHG emissions from wastewater treatment based on the region-specific distribution of wastewater treatment methods which the end user can modify with project specific data.

8.4 Wastewater Treatment Methods – Calculation of Greenhouse Gas Emissions

The GHGs emitted from each type of wastewater treatment are based on the ARB's Local Government Operations Protocol (LGOP)[42], which are in turn based on USEPA methodologies.[43] The methodologies are summarized below.

Wastewater (or sewage) treatment can occur one of three ways - aerobically, in septic tanks or in facultative lagoons, specifically described below. In CalEEMod, the following defaults for sewage treatment options were used unless an air district provided an alternative percentage of treatment appropriate to the particular project region. The user has the ability to override the defaults but the total percentage must equal 100% and must justify the reason for the change in the "Remarks" box at the bottom of the screen.

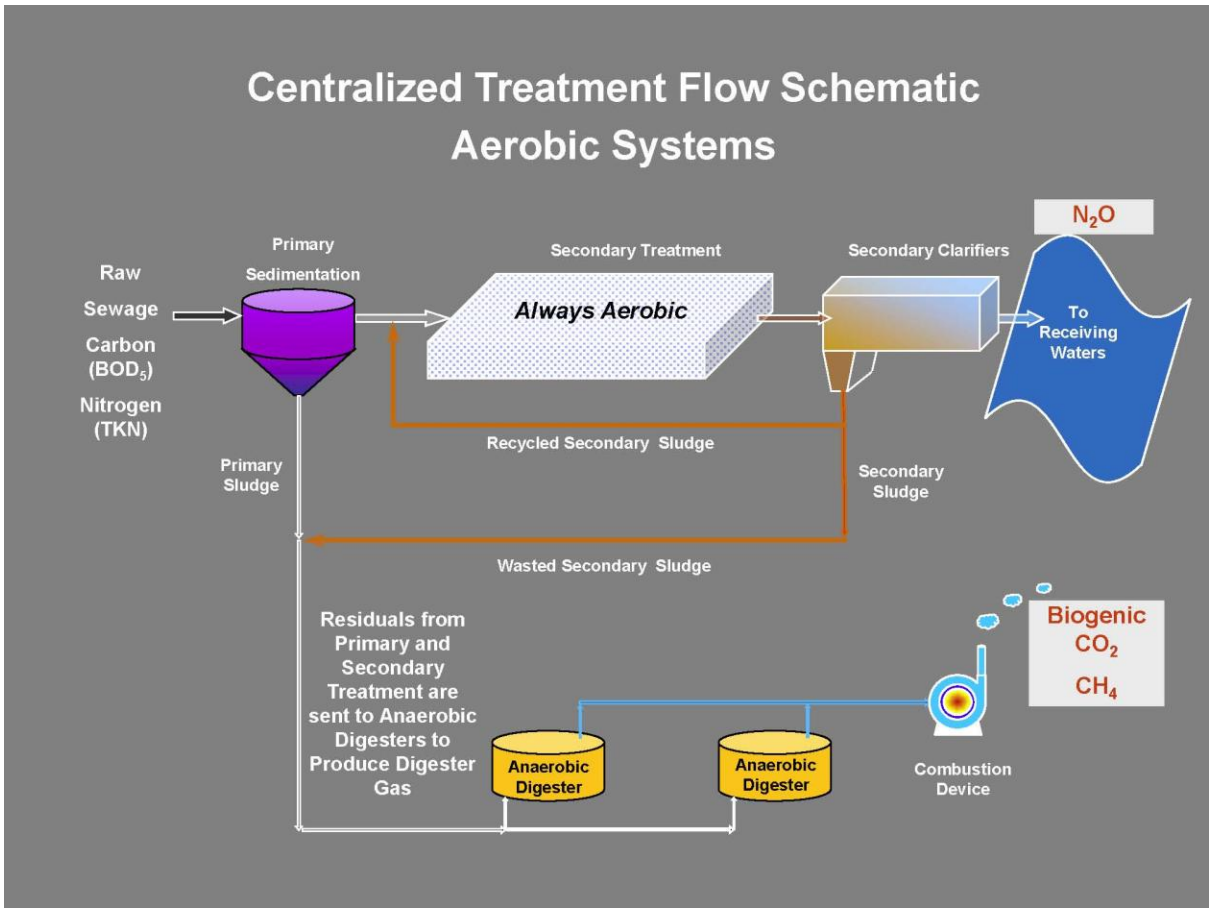
Statewide Default Treatment Distribution		
Septic Tank (%)	Aerobic (%)	Facultative Lagoons (%)
10.33	87.46	2.21

Solids produced from primary treatment, aerobic processes, or facultative lagoons are typically digested in anaerobic digesters. The gas produced by these digesters may be flared or burned in some other simple device, or sent to a cogeneration process for heat recovery and/or electrical generation. The default condition is to assume no cogeneration; however, the user has the ability to input an estimate of the percentage of the digester gas combusted in such systems ranging from 0% to 100%.

Anaerobic decomposition in septic tanks and facultative lagoons can produce fugitive emissions of methane. The following figure provides an example of the process flow for a centralized wastewater treatment facility that treats the sewage aerobically, produces digester gas in anaerobic digesters and combusts the gas. The figure also shows where the GHG emissions are occurring in the process.

[42] CARB. 2008. Local Government Operations Protocol. Chapter 10: Wastewater Treatment Facilities. Available online at: http://www.arb.ca.gov/cc/protocols/localgov/pubs/final_lgo_protocol_2008-09-25.pdf

[43] USEPA. 2008. Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006. Chapter 8: Waste. Available online at: http://www.epa.gov/climatechange/emissions/downloads/08_CR.pdf



As depicted in the figure above, nitrous oxide is produced when treated wastewater is released as effluent into aquatic environments such as rivers and estuaries. Although nitrification/denitrification processes within the wastewater treatment plant may also produce nitrous oxide, the USEPA estimated that this contributed to less than 3% of national N_2O emissions associated with wastewater in 2005.[44] Therefore, the program assumes that all N_2O emissions are generated from effluent discharged into aquatic environments.

CO_2 emissions are generated from both aerobic and anaerobic processes, as well as from the combustion of digester gas, but CalEEMod only calculates combustion emissions because there are currently no authoritative emission factors for process CO_2 emissions. When digester gas is combusted to generate electricity, fossil fuel emissions are offset by this renewable power generation. CalEEMod allows the user to provide an estimate of how much renewable power is expected from the project and will debit the biogenic combustion CO_2 with the CO_2 that would otherwise have been sourced from fossil fuel combustion.

[44] USEPA. 2008. Page 8-7.

Septic Systems

Developments may use *septic systems* to treat wastewater on-site. These systems utilize microbes to decompose wastewater anaerobically. A by-product of this anaerobic decomposition is methane, which is quantified using **Equation 10.5** from LGOP:

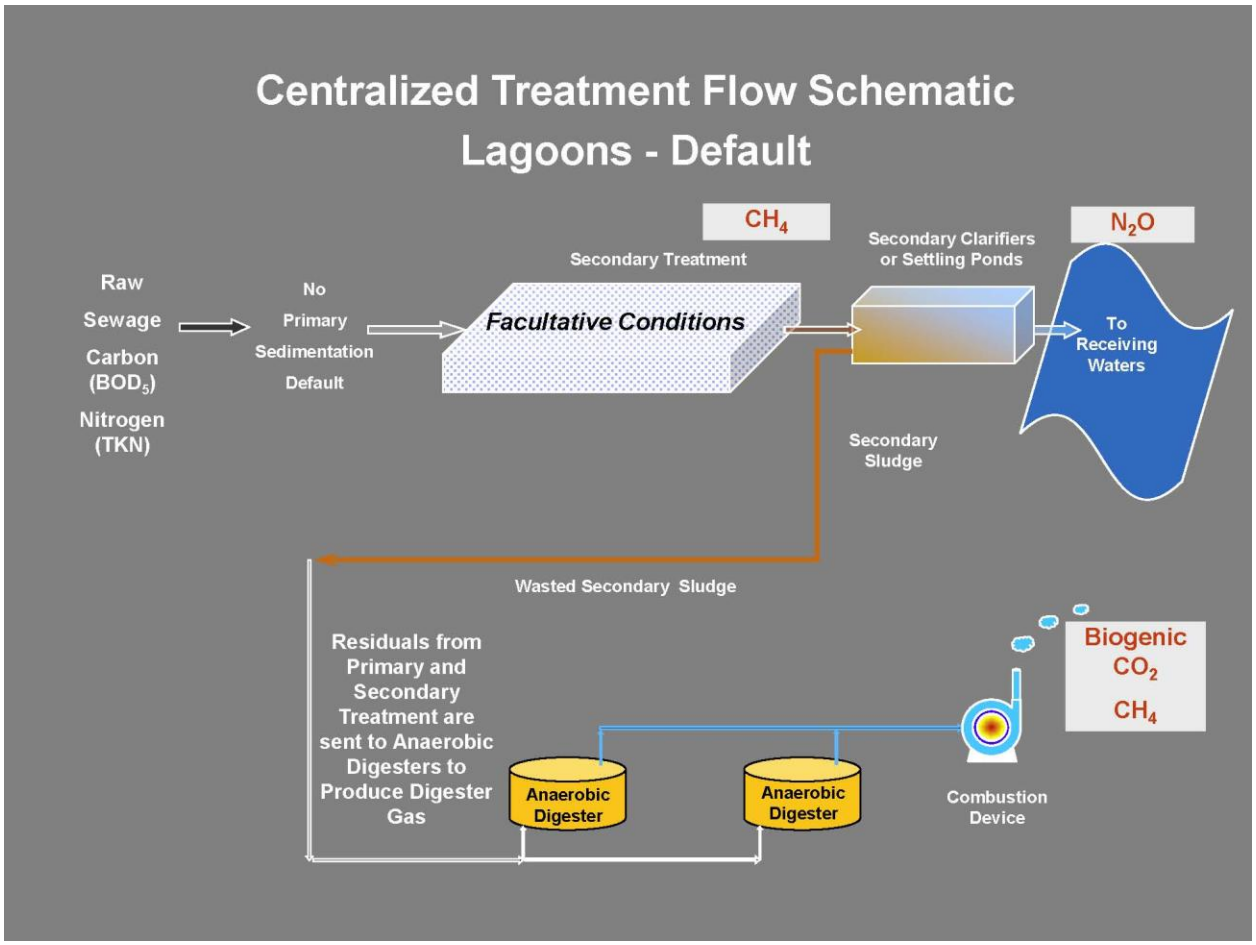
$$CH_4 \text{ emissions (MT)} = \text{Wastewater} \times BOD_5 \text{ load} \times 10^{-6} \times Bo \times MCF_{septic} \times 10^{-3}$$

Term		Description	Value	Unit	Reference
Wastewater	=	volume of wastewater	INPUT	liters	User
BOD_5 load	=	concentration of BOD_5 in wastewater	200	mg / liter wastewater	
10^{-6}	=	conversion factor	--	kg / mg	--
Bo	=	maximum CH4-producing capacity for domestic wastewater	0.6	kg CH_4 / kg BOD_5 removed	LGOP default
MCF_{septic}	=	CH_4 correction factor for septic systems	0.5	--	LGOP default
10^{-3}	=	conversion factor	--	MT / kg	--

The LGOP provides default values for all terms in the equation except BOD_5 load, which is the amount of BOD_5 sent to these decentralized systems per day. BOD, or Biochemical Oxygen Demand, measures the degradable organic component of the wastewater that could deplete dissolved oxygen in receiving waters if left untreated (BOD_5 is the measurement of dissolved oxygen depletion from a liquid sample held for a 5-day test). The program assumes a default BOD_5 load value of 200 mg per liter of wastewater. This value is typical for residential and commercial wastewater. A higher value is typically associated with certain types of industrial wastewater.

Facultative Lagoons

Centralized wastewater treatment facilities may use *facultative lagoons* to treat wastewater. The following figure is an example of the treatment process if facultative lagoons provide the secondary treatment assuming process solids are sent to anaerobic digesters and the digester gas is combusted. In addition, the figure shows where the GHG emissions are occurring in the process.



The methane emissions expected from facultative lagoons are calculated using **Equation 10.3** from LGOP:

$$CH_4 \text{ emissions (MT)} = \text{Wastewater} \times BOD_5 \text{ load} \times 10^{-6} \times (1-F_P) \times Bo \times MCF_{anaerobic} \times F_{removed} \times 10^{-3}$$

Term		Description	Value	Unit	Reference
Wastewater	=	volume of wastewater	INPUT	liters	User
BOD_5 load	=	concentration of BOD_5 in wastewater	200	mg / liter wastewater	
10^{-6}	=	conversion factor	--	kg / mg	--
F_P	=	fraction of BOD_5 removed in primary treatment	0	--	no primary treatment
Bo	=	maximum CH_4-producing capacity for domestic wastewater	0.6	kg CH_4 / kg BOD_5 removed	LGOP default
$MCF_{anaerobic}$	=	CH_4 correction factor for anaerobic systems	0.8	--	LGOP default

$F_{removed}$	=	fraction of overall lagoon BOD_5 removal performance	1	--	LGOP default (see Eq. 10.4)
10^{-3}	=	conversion factor	--	MT / kg	--

The LGOP provides default values for all terms in the equation except BOD_5 load and F_P, the fraction of BOD_5 removed in primary treatment, if present. As before, the program assumes a default BOD_5 load value of 200 mg per liter of wastewater. The program assumes $F_P = 0$, indicating no primary treatment.

Anaerobic Digestion

Anaerobic digesters produce methane-rich biogas which is typically combusted on-site. In some cases the biogas is combusted simply for the purpose of converting methane to CO_2, which has a lower global warming potential than methane. In many cases, a cogeneration system is used to harvest the heat from combustion and use it to generate electricity for on-site energy needs. In both cases, inherent inefficiencies in the system result in incomplete combustion of the biogas, which results in remaining methane emissions. The methane emissions from incomplete combustion of digester gas are quantified using **Equation 10.1** from LGOP:

$$CH_4 \text{ emissions (MT)} = \text{Wastewater} \times \text{Digester Gas} \times F_{CH4} \times \rho_{CH4} \times (1\text{-DE}) \times 0.0283 \times 10^{-3} \times 10^{-3}$$

Term		Description	Value	Unit	Reference
Wastewater	=	volume of wastewater	INPUT	gallons	User
Digester Gas	=	volume of biogas generated per volume of wastewater treated	0.01	ft^3 biogas / gallon wastewater	USEPA 2008
F_{CH4}	=	fraction of CH_4 in biogas	0.65	--	USEPA 2008
ρ_{CH4}	=	density of CH_4 at standard conditions	662.00	g / m^3	LGOP default
DE	=	CH_4 destruction efficiency	0.99	--	LGOP default
0.0283	=	conversion factor	--	m^3 / ft^3	LGOP default
10^{-3}	=	conversion factor	--	MT / kg	--
10^{-3}	=	conversion factor	--	kg / g	--

The LGOP provides default values for all terms in the equation except the volume of digester gas produced per day (Digester Gas), and the fraction of methane in the biogas (F_{CH4}). The program assumes a digester gas production of 0.01 cubic feet of biogas per gallon of

wastewater treated based on USEPA methodology.[45,46] The program assumes F_{CH4}= 0.65 based on the USEPA methodology.[47]

The amount of biogenic CO_2 produced from the combustion of biogas is calculated using the following equation based on flow sent to centralized systems (i.e., not sent to septic tanks):

Biogenic CO_2 emissions (MT CO_2) = Wastewater x Digester Gas x F_{CH4} x EF / 2204.623

Where:

Wastewater	=	Volume of Wastewater sent to centralized systems (gallons)
Digester Gas	=	Volume of biogas produced from wastewater treatment 0.01 ft^3 biogas / gallon wastewater treated
F_{CH4}	=	Fraction of CH_4 in biogas 0.65
EF	=	Emission factor for methane combustion[48] 0.120 lb CO_2 / ft^3 CH_4
2204.623	=	Conversion factor from lb CO_2 to MT CO_2

If a *cogeneration system* is used to generate electricity from the combusted biogas, the following equation derived from USEPA's Solid Waste Management and Greenhouse Gases report[49] is used to calculate the amount of electricity generated based on flow sent to centralized systems.

Electricity Generated (kWh) = Wastewater x Digester Gas x F_{CH4} x HHV_{CH4} x ECF x EFF

Where:

Wastewater	=	Volume of Wastewater sent to centralized systems (gallons)
Digester Gas	=	Volume of biogas produced from wastewater treatment

[45] USEPA 2008. Page 8-9. USEPA estimates 1.0 cubic feet of digester gas per person per day and 100 gallons of wastewater per person per day.

[46] USEPA reports 1.0 cubic feet of digester gas per person per day based on Metcalf & Eddy, Inc., 1991, "Wastewater Engineering: Treatment, Disposal, and Reuse," 3rd Ed. McGraw Hill Publishing. USEPA reports 100 gallons of wastewater per person per day based on Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 2004, "Recommended Standards for Wastewater Facilities (Ten-State Standards)." USEPA also reports 100 gallons of wastewater per person per day on the USEPA Water & Wastewater Pricing website, based on the U.S. Geological Survey Circular 1200, 1995, "Estimated Use of Water in the United States in 1995." Available online at: http://www.epa.gov/waterinfrastructure/pricing/. Accessed May 2010.

[47] USEPA. 2008. Page 8-9. USEPA cites Metcalf & Eddy, Inc., 1991, "Wastewater Engineering: Treatment, Disposal, and Reuse," 3rd Ed. McGraw Hill Publishing.

[48] USDOE. 2005. Form EIA-1605: Long Form for Voluntary Reporting of Greenhouse Gases. Available online at: ftp://ftp.eia.doe.gov/pub/oiaf/1605/cdrom/pdf/FormEIA-1605_2004_Instructions.pdf

[49] USEPA. 2006. Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks, 3rd Ed. Sections 6.2-6.5. Available online at: http://www.epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf

0.01 ft^3 biogas / gallon wastewater treated

F_{CH4} = Fraction of CH_4 in biogas
0.65
HHV = Heating value of methane
1,012 BTU / ft^3 CH_4
ECF = Energy conversion factor
0.00009 kWh/BTU
EFF = Efficiency Factor[50]
0.85

Since this amount of electricity is generated on-site and no longer needs to be supplied by the local electricity utility, the indirect CO_2e emissions associated with that utility electricity generation are also avoided. The avoided CO_2e emissions are calculated by multiplying the amount of electricity generated (in kWh) by the local utility carbon-intensity factor from Table 2.8.

Net CO_2 emissions are then the difference between the CO_2 produced from the combustion of digester gas and the CO_2 avoided by generating renewable energy, thus:

Net CO_2 Emissions = $CO_{2\ (digester\ gas\ combustion)} - CO_{2\ (avoided\ emissions)}$

Nitrous oxide is produced when treated wastewater is discharged to aquatic environments such as rivers or estuaries. The nitrogen which remains in treated wastewater effluent is converted to nitrous oxide in a multi-step process accomplished by bacteria which is present in soil and aquatic environments. The nitrous oxide emissions are quantified using **Equation 10.9** from the LGOP:

$$N_2O\ emissions\ (MT) = Wastewater \times 10^{-6} \times N\ Load \times 44/28 \times EF\ effluent \times 10^{-3}$$

Term		Description	Value	Unit	Reference
Wastewater	=	volume of wastewater	INPUT	liters	User
10^{-6}	=	conversion factor	--	kg / mg	--
N Load	=	mass of nitrogen discharged per volume of wastewater	26	mg / liter of wastewater	USEPA 2013 *(CA Statewide Average)*
44/28	=	Ratio of molecular weights for N_2O and N_2			USEPA 2008

[50] Ibid. USEPA assumes a 15% system efficiency loss, to account for system down-time. USEPA assumes that methane is flared during down-time.

EF effluent	=	N_2O effluent emission factor	0.005	kg N_2O / kg N	LGOP default
10^{-3}	=	conversion factor	--	MT / kg	--

The LGOP provides default values for all terms in the equation except N Load, the total mass of nitrogen discharged in the wastewater effluent per day. CalEEMod assumes N Load = 26 mg N per liter of wastewater effluent based on the USEPA methodology.[51] This value is appropriate for residential and commercial wastewater. A higher value may be more appropriate for certain types of industrial wastewater.

Methane and nitrous oxide emissions are converted to carbon dioxide equivalent emissions by multiplying by their GWPs. The GWPs for methane and nitrous oxide are 21 and 310, respectively.[52]

9 Solid Waste

Municipal solid waste (MSW) is the amount of material that is disposed of by land filling, recycling, or composting. CalEEMod calculates the indirect GHG emissions associated with waste that is disposed of at a landfill. The program uses annual waste disposal rates from the California Department of Resources Recycling and Recovery (CalRecycle) data for individual land uses. If waste disposal information was not available, waste generation data was used. CalEEMod uses the overall California Waste Stream composition to generate the necessary types of different waste disposed into landfills. The program quantifies the GHG emissions associated with the decomposition of the waste which generates methane based on the total amount of degradable organic carbon.[53] The program will also quantify the CO_2 emissions associated with the combustion of methane, if applicable. Default landfill gas concentrations were used as reported in Section 2.4 of AP-42. The IPCC has a similar method to calculate GHG emissions from MSW in its 2006 Guidelines for National Greenhouse Gas Inventories.

The amount of methane and CO_2 generated is calculated as:

$$Gen = DOC \cdot DANF \cdot 0.5$$

Where:

[51] USEPA. 2013. California Statewide average. USEPA Database at http://cfpub.epa.gov/dmr/ez_search.cfm

[52] Provided in Appendix E, Table E.1 of CARB's LGOP. As specified in Appendix E, Second Assessment Report (SAR) GWPs are still used by international convention and the United States.

[53] Landfill gas generation is dependent upon the amount, type, age and moisture content of the disposed waste. The United States Environmental Protection Agency (USEPA) has developed emission factors for landfill gas as specified in Section 2.4 of AP-42 which are incorporated in the LANDGEM model. This model uses a first order decay equation that will vary with time. However, there is no need to use a time-varying emissions model, as we are interested in total emissions of gases that could be emitted from a ton of waste. Therefore, instead of using the LANDGEM model, the volume of landfill gas from solid waste will be based on the total amount of degradable organic carbon.

Gen = Amount of CO_2 or methane generated

DOC = Degradable organic carbon

DANF = Degradable anaerobic fraction (0.5)

0.5 = Assumes half anaerobic carbon is methane and other half is CO_2.

IPCC lists default values for the DOC in its 2006 Guidelines in Table 2.4.

The amount of methane and CO_2 emitted is calculated by assuming collection and destruction efficiencies. The end user will be able to select if the landfill the waste is sent to has a landfill gas collection system. The collection efficiency will be assumed to be 75% if this is selected otherwise it will be 0%. The destruction efficiency is assumed to be 98%. The calculations take into account the oxidation of methane to CO_2 as it rises through the landfill. The methane and CO_2 emitted are described as:

$$Emit_{methane} = Gen \cdot [Collect \cdot (1 - destruct) + (1 - Collect) \cdot (1 - ox)]$$

$$Emit_{CO2} = Gen \cdot [Collect \cdot destruct + (1 - Collect) \cdot (ox) + 1]$$

Where

$Emit_{methane}$ = Methane emitted per ton of green waste

$Emit_{CO2}$ = Carbon dioxide emitted per ton of green waste

Gen = Amount of CO_2 or methane generated

Collect = Collection efficiency of landfill gas (75%)

Destruct = Destruction efficiency of landfill gas (98%)

Ox = Oxidation efficiency of methane (10%)

The CO_2 emissions will be classified as biogenic emissions. The amount of methane emitted will be multiplied by its GWP to convert to CO_2e.

10 Vegetation

The program calculates GHG emissions associated with the vegetation activities of land use change and the planting of new trees.

The program calculates GHG emissions from vegetation activities according to the IPCC protocol for vegetation since it has default values that work well with the information typically available for development projects. This method is similar to the CAR Forest Protocol[54] and the Center for Urban Forest Research Tree Carbon Calculator[55], but it has more general default values available that will generally apply to all areas of California without requiring detailed site-specific information[56].

10.1 Land Use Change

A development which changes land use type results in changes in CO_2 sequestration from the atmosphere which would not have been captured had there been no land-type change.

Overall Change in Sequestered CO_2 [MT CO_2]

$$= \sum_i \left(SeqCO_2\right)_i \times \left(area\right)_i - \sum_j \left(SeqCO_2\right)_j \times \left(area\right)_j$$

Where:

$SeqCO_2$	=	mass of sequestered CO_2 per unit area [MT CO_2/acre]
area	=	area of land for specific land use type [acre]
i	=	index for final land use type
j	=	index for initial land use type

Overall change in sequestered CO_2 is the summation of sequestered CO_2 from initial land use type multiplied by area of land for initial land use type subtracted by the summation of sequestered CO_2 from final land use type multiplied by area of land for final land use type. There is no reduction in GHG emissions associated with preservation of a land.

$SeqCO_2$

The mass of sequestered CO_2 per unit area [MT CO_2/acre] is dependent on the specific land use type. The program uses default CO_2 sequestration values from CCAR for each land use that will be preserved or created:

[54] CCAR. 2007. Forest Sector Protocol Version 2.1. September. Available at: http://www.climateregistry.org/resources/docs/protocols/industry/forest/forest_sector_protocol_version_2.1_sept2007.pdf

[55] Available at: http://www.fs.fed.us/ccrc/topics/urban-forests/ctcc/

[56] The CAR Forest Protocol and Urban Forest Research Tree Carbon Calculator are not used since their main focus is annual emissions for carbon offset considerations. As such they are designed to work with very specific details of the vegetation that is not available at a CEQA level of analysis.

Land Use	Sub-Category	Default CO_2 accumulation per acre (MT CO_2/ acre)
Forest Land	Scrub	14.3
	Trees	111
Cropland	--	6.20
Grassland	--	4.31
Wetlands	--	0

The default annual CO_2 is calculated by multiplying total biomass (MT dry matter/acre) from IPCC data by the carbon fraction in plant material (0.47), then using the ratio of molecular weights (44/12) to convert from MT of carbon (C) to MT of carbon dioxide (CO_2).

Vegetation Type

Vegetation types are defined by IPCC as follows:

(i) Forest Land

This category includes all land with woody vegetation consistent with thresholds used to define Forest Land in the national greenhouse gas inventory. It also includes systems with a vegetation structure that currently fall below, but *in situ* could potentially reach the threshold values used by a country to define the Forest Land category.

(ii) Cropland

This category includes cropped land, including rice fields, and agro-forestry systems where the vegetation structure falls below the thresholds used for the Forest Land category.

(iii) Grassland

This category includes rangelands and pasture land that are not considered Cropland. It also includes systems with woody vegetation and other non-grass vegetation such as herbs and brushes that fall below the threshold values used in the Forest Land category. The category also includes all grassland from wild lands to recreational areas as well as agricultural and silvi-pastural systems, consistent with national definitions.

(iv) Wetlands

This category includes areas of peat extraction and land that is covered or saturated by water for all or part of the year (e.g., peatlands) and that does not fall into the Forest Land, Cropland, Grassland or Settlements categories. It includes reservoirs as a managed sub-division and natural rivers and lakes as unmanaged sub-divisions.

Area

The user must specify area of land in acres for specific final and initial land use types. These area changes include not only the area of land that will be converted to buildings, but also areas disrupted by the construction of utility corridors, water tank sites, and associated borrow and

grading areas. Areas temporarily disturbed that will eventually recover to become vegetated will not be counted as vegetation removed as there is no net change in vegetation or land use.[57]

10.2 Sequestration

Planting trees will sequester CO_2 and is considered to result in a one-time carbon-stock change. Trees sequester CO_2 while they are actively growing. The amount of CO_2 sequestered depends on the type of tree.

$$\text{Total Sequestered } CO_2 = (\text{Growing Period} \times \sum_{i=1}^{n} [\text{ Sequestration } i \times \text{Trees } i \text{ }])$$

Where:

Growing Period = Growing period for all trees, expressed in years (20).
n = Number of broad species classes.
Sequestration *i* = Default annual CO_2 accumulation per tree for broad species class *i.*
Trees *i* = Number of net new trees of broad species class *i.*

Total Sequestered CO_2 is the growing period for all trees multiplied by the summation of annual CO_2 accumulation multiplied by the number of new trees per broad species class.

Growing Period

The program assumes the IPCC active growing period of 20 years. Thereafter, the accumulation of carbon in biomass slows with age, and will be completely offset by losses from clipping, pruning, and occasional death. Actual active growing periods are subject to, among other things, species, climate regime, and planting density. Note that trees may also be replaced at the end of the 20-year cycle, which would result in additional years of carbon sequestration. However, this would be offset by the potential net release of carbon from the removal of the replaced tree.

[57] This assumption facilitates the calculation as a yearly growth rate and CO_2 removal rate does not have to be calculated. As long as the disturbed land will indeed return to its original state, this assumption is valid for time periods over 20 years.

Sequestration

The program uses default annual CO_2 accumulation per tree for broad species class as follows:

Broad species class	**Default annual CO_2 accumulation per tree[1] (MT CO_2/ year)**
Aspen	0.0352
Soft maple	0.0433
Mixed hardwood	0.0367
Hardwood maple	0.0521
Juniper	0.0121
Cedar/larch	0.0264
Douglas fir	0.0447
True fir/Hemlock	0.0381
Pine	0.0319
Spruce	0.0337
Miscellaneous[2]	0.0354

1. IPCC's carbon (C) values converted to carbon dioxide (CO_2) using ratio of molecular weights (44/12).
2. Average of all other broad species classes. To be assumed if tree type is not known.

11 Mitigation

11.1 Construction Mitigation Measures and Regulatory Adjustments

The section below describes the types of reduction in emissions that CalEEMod incorporates. All end user information required in this section will require the end user to supply a source to support the parameter they select. This source will be displayed in the result output to enhance the communication of the assumptions used in determining the final mitigated emissions reported.

Mitigation Measures for Onsite Off-Road Construction Diesel Equipment

The emissions mitigation measures for onsite off-road construction diesel equipment include use of alternative fuel, electric equipment, diesel particulate filter (DPF), oxidant catalyst, newer tier engines, and dust suppression. The program has options allowing the user to apply mitigation measures to single piece of equipment or the entire fleet.

Exhaust Emissions Reduction

Alternative Fuel: The use of alternative fuels (i.e., biodiesel, compressed natural gas, propane, etc.) can change the emissions for both criteria and GHG emissions. Alternative fuels can change emissions (increase or decrease) for each pollutant. These values are based on values for alternative fuels in OFFROAD2011. Therefore they may not be available for all pieces of equipment. The biodiesel emissions are based on a report from NREL[58]. Biodiesel emissions are separated into both biogenic and non-biogenic CO_2 emissions. These values may be a slight under estimation since no starting or evaporative emissions are calculated in the program.

Electric Equipment: The use of electric equipment reduces emissions by 100% for all criteria pollutants. However, there are indirect GHG emissions associated with the electricity use. This is calculated by converting the horsepower to kilowatts and multiplying by the electricity carbon intensity factor. This is only available for those pieces of equipment where values have been identified as listed in the CAPCOA's Quantification of Greenhouse Gas Mitigation Measures.

DPF: The use of DPFs reduces the emissions of PM_{10} and $PM_{2.5}$. The program allows the end user to choose filters that meet different ARB standardized abatement and certification levels as needed[59]. The program also allows the end user to enter filter specification in case a filter with higher abatement level becomes available.

Diesel Oxidation Catalyst: The use of an oxidation catalyst assumes the combination operation of a selective catalytic reduction (SCR) that reduces NOx emissions by 0 to 40% percent[60]. Minor PM emissions reductions are also achieved.

Newer Tier Engines: The program allows the end user to choose newer engines that meet more stringent USEPA tier emissions standards than is anticipated from the statewide fleet mix.

[58] http://www.nrel.gov/docs/fy06osti/37508.pdf (see Table 2)

[59] http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

[60] www.aqmd.gov/ceqa/handbook/mitigation/offroad/TableIII.doc

If this option is checked, user will be required to enter the expected tier level, and CalEEMod will use the emission standard of the selected tier for the emissions calculation[61].

The mitigation measure-pollutant applicability matrix presented in the table below:

Mitigation Measure	Applicability						
	VOC	SOx	NOx	PM_{10}	$PM_{2.5}$	GHG Anthropogenic	GHG Biogenic
Alternative Fuel		x	x	x	x	x	x
Electric Equipment	x	x	x	x	x	x	x
DPF				x	x		
Diesel Oxidation Catalyst/SCR			x	x	x		
Newer Tier Engines	x	x	x	x	x		
User Input	x	x	x	x	x	x	x

Fugitive Dust Emissions Reduction

The mitigation measures in this section apply the specified percent reduction in PM_{10} or $PM_{2.5}$ to the applicable fugitive dust calculations. Watering of unpaved roads recalculates the unpaved road equations using the updated values supplied by the user in this section. These are based on mitigation measures described by SCAQMD[62].

11.2 Mobile Mitigation

All mitigation associated with mobile sources is consistent with the methods described in CAPCOA's Quantification of GHG Mitigation Measures.

11.3 Hearths Mitigation Measures

The end user will be able to change the default percentage of hearths including no hearths or all natural gas hearths. This will recalculate the number of hearths and the corresponding emissions.

11.4 Architectural Coating Mitigation

The end user can select lower VOC content in paints than required by regulation. This value will be used instead of the usual emission factor.

11.5 Landscape Equipment Mitigation

The end user will be able to specify the percentage of landscape equipment that will be electric. This will be incorporated consistent with CAPCOA Mitigation Measures methodology.

[61] ARB and USEPA Off-Road Compression-Ignition (Diesel) Engine Standard available here: http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls

[62] http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html

11.6 Improve Building Envelope Beyond Title 24 part 6

The end user will enter their commitment to improve building envelope related systems (space heating, space cooling, water heating, and ventilation) beyond current Title 24 regulations. The end user will enter the percentage improvement.

11.7 Install Energy Efficient Appliances

The end user can designate the appliances that they will install that meet USEPAs Energy Star criteria. In order to meet CEQA enforceability criteria, these appliances need to be supplied by the builder. The program will use the average savings for an Energy Star appliance as reported in the Energy Star's most recent annual report. The following appliances will be available: refrigerators, dish washers, fans, and clothes washers. The reduction will only apply to these end uses.

11.8 Install Renewable or Alternative Energy systems

The end user will be able to specify the percentage of the electricity use that will be supplied from renewable or alternative energy systems. This includes energy from sources such as photovoltaic cells, wind turbines, geothermal sources, and fuel cells. The end user will enter the total annual kilowatt-hours anticipated to be generated or the percentage of the annual building energy that will be supplied by the alternative energy systems. Information on how to calculate these can be found in CAPCOA's Quantification of Greenhouse Gas Mitigation Measures.

11.9 Water Mitigation

All water mitigation methods are consistent with those described in the CAPCOA Quantifying GHG Mitigation Measures document.

11.10 Waste Mitigation

The amount of waste disposed will be reduced by the percentage entered by the user. There is no reallocation of the type of material disposed.

Table 1.1: Weather Data

LocationType	DisplayName	Number Precipitation Days >0.1 inches		WindSpeed		Evapotranspiration	
		Days	Source	meter/second	Source	inches/year	Source
Counties	Alameda	63	1	2.2	4	44.33	5
	Alpine	74	1	2.2	4	40.60	5
	Amador	63	1	2.2	4	48.85	5
	Butte	71	1	2.2	4	51.55	5
	Calaveras	61	1	2.2	4	48.80	5
	Colusa	56	1	2.2	4	51.80	5
	Contra Costa	58	1	2.2	4	44.79	5
	Del Norte	113	1	2.2	4	27.70	5
	El Dorado-Lake Tahoe	70	1	2.7	3. South Lake Tahoe	47.30	5
	El Dorado-Mountain County	70	1	2.7	3. South Lake Tahoe	47.30	5
	Fresno	45	1	2.2	4	54.31	5
	Glenn	61	1	2.2	4	51.70	5
	Humboldt	103	1	2.2	4	31.38	5
	Imperial	12	1	3.4	2	75.50	5
	Inyo	34	1	2.2	4	72.66	5
	Kern-Mojave Desert	32	1	2.7	3. Bakersfield	55.91	5
	Kern-San Joaquin	32	1	2.7	3. Bakersfield	55.91	5
	Kings	37	1	2.2	4	56.98	5
	Lake	67	1	2.2	4	44.10	5
	Lassen	56	1	2.2	4	46.90	5
	Los Angeles-Mojave Desert	33	1	2.2	4	52.03	5
	Los Angeles-South Coast	33	1	2.2	4	52.03	5
	Madera	51	1	2.9	3. Madera	51.13	5
	Marin	69	1	2.2	4	40.40	5
	Mariposa	58	1	2.2	4	46.40	5
	Mendocino-Coastal	86	1	2.7	2	37.90	5
	Mendocino-Inland	86	1	2.2	2	37.90	5
	Mendocino-Rural Inland North	86	1	2.2	2	37.90	5
	Mendocino-Rural Inland South	86	1	2.2	2	37.90	5
	Merced	49	1	2.2	4	52.20	5
	Modoc	78	1	2.5	3. Alturas	43.20	5
	Mono	54	1	2.2	4	43.00	5
	Monterey	55	2	2.8	3. Monterey	45.31	5
	Napa	64	1	3.6	3. Napa	47.36	5
	Nevada	80	1	2.2	4	47.70	5
	Orange	30	1	2.2	4	47.00	5
	Placer-Lake Tahoe	74	1	2.2	4	42.61	5
	Placer-Mountain Counties	74	1	2.2	4	42.61	5
	Placer-San Joaquin	74	1	2.2	4	42.61	5
	Plumas	73	1	2.2	4	39.80	5
	Riverside-Mojave Desert MDAQMD	28	1	2.6	3. Riverside	68.49	5
	Riverside-Mojave Desert SCAQMD	28	1	2.6	3. Riverside	68.49	5
	Riverside-Salton Sea	28	1	2.4	3. Riverside	68.49	5
	Riverside-South Coast	28	1	2.4	3. Riverside	68.49	5
	Sacramento	58	1	3.5	2	53.43	5
	San Benito	50	2	2.2	4	47.13	5
	San Bernardino-Mojave Desert	32	1	2.6	2	69.27	5
	San Bernardino-South Coast	32	1	2.2	4	69.27	5
	San Diego	40	1	2.6	3. San Diego	48.96	5
	San Francisco	64	1	4.6	3. San Francisco	35.10	5
	San Joaquin	51	1	2.7	3. Fresno	49.44	5
	San Luis Obispo	44	1	3.2	3. San Luis Obispo	44.45	5
	San Mateo	70	1	2.2	4	42.00	5
	Santa Barbara-North of Santa Ynez	37	1	3.13	2	46.90	5
	Santa Barbara-South of Santa Ynez Range	37	1	2.73	2	46.90	5
	Santa Clara	58	1	2.2	4	44.86	5
	Santa Cruz	61	1	2.2	4	40.38	5
	Shasta	82	1	2.7	3. Redding	44.08	5
	Sierra	64	1	2.2	4	40.45	5
	Siskiyou	85	1	2.2	4	39.52	5
	Solano-San Francisco	56	1	2.2	4	50.24	5
	Solano-San Joaquin	56	1	6.8	2	50.24	5
	Sonoma-North Coast	75	1	2.2	4	42.40	5
	Sonoma-San Francisco	75	1	2.2	4	42.40	5
	Stanislaus	46	1	2.2	4	51.34	5
	Sutter	61	1	2.2	4	48.45	5
	Tehama	68	1	3.13	2	53.00	5
	Trinity	88	1	2.2	4	40.05	5
	Tulare	51	1	2.2	4	50.99	5
	Tuolumne	66	1	2.2	4	47.55	5
	Ventura	31	1	2.6	2	47.98	5
	Yolo	54	1	6.8	2	52.18	5
	Yuba	72	1	3.4	3. Marysville-Yuba City	50.15	5

Table 1.1: Weather Data

LocationType	DisplayName	Number Precipitation Days >0.1 inches		WindSpeed		Evapotranspiration	
		Days	Source	meter/second	Source	inches/year	Source
Air Basins	Great Basin Valleys	54	1	2.2	4	52.09	5
	Lake County	67	1	2.2	4	44.10	5
	Lake Tahoe	72	1	2.7	3. South Lake Tahoe	44.96	5
	Mojave Desert	31	1	2.6	2	61.42	5
	Mountain Counties	8	1	2.2	4	45.50	5
	North Central Coast	53	1	2.8	3 average	44.28	5
	North Coast	93	1	2.2	4	35.89	5
	Northeast Plateau	73	1	2.5	3 average	43.21	5
	Sacramento Valley	65	1	3.5	2	49.93	5
	Salton Sea	20	1	3.4	3 average	71.99	5
	San Diego	40	1	2.6	3. San Diego	48.96	5
	San Francisco Bay Area	64	1	2.2	4	43.64	5
	San Joaquin Valley	45	1	2.7	3 average	53.05	5
	South Central Coast	37	1	2.9	3 average	46.44	5
	South Coast	31	1	2.2	4	59.20	5
Air Districts	Amador County APCD	63	1	2.2	4	48.85	5
	Antelope Valley APCD	33	1	2.2	4	52.03	5
	Bay Area AQMD	64	1	2.2	4	43.64	5
	Butte County AQMD	71	1	2.2	4	51.55	5
	Calaveras County AQMD	61	1	2.2	4	48.80	5
	Colusa County APCD	56	1	2.2	4	51.80	5
	El Dorado County APCD	70	1	2.7	3 average	47.30	5
	Feather River AQMD	67	1	3.4	3 average	49.30	5
	Glenn County APCD	61	1	2.2	4	51.70	5
	Great Basin UAPCD	54	1	2.2	4	52.09	5
	Imperial County APCD	12	1	3.4	2	75.50	5
	Kern County APCD	32	1	2.7	3. Bakersfield	55.91	5
	Lake County AQMD	67	1	2.2	4	44.10	5
	Lassen County APCD	56	1	2.2	4	46.90	5
	Mariposa County APCD	58	1	2.2	4	46.40	5
	Mendocino County AQMD	86	1	2.2	4	37.90	5
	Modoc County APCD	78	1	2.5	3 average	43.20	5
	Mojave Desert AQMD	30	1	2.6	2	68.88	5
	Monterey Bay Unified APCD	53	1	2.8	3 average	44.28	5
	North Coast Unified APCD	101	1	2.2	4	33.04	5
	Northern Sierra AQMD	72	1	2.2	4	42.65	5
	Northern Sonoma County APCD	75	1	2.2	4	42.40	5
	Placer County APCD	74	1	2.2	4	42.61	5
	Sacramento Metropolitan AQMD	58	1	3.5	2	53.43	5
	San Diego County APCD	40	1	2.6	3. San Diego	48.96	5
	San Joaquin Valley Unified APCD	45	1	2.7	3 average	53.05	5
	San Luis Obispo County APCD	44	1	3.2	3. San Luis Obispo	44.45	5
	Santa Barbara County APCD	37	1	2.9	3 average	46.90	5
	Shasta County AQMD	82	1	2.7	3 average	44.08	5
	Siskiyou County APCD	85	1	2.2	4	39.52	5
	South Coast AQMD	31	1	2.2	4	59.20	5
	Tehama County APCD	68	1	3.13	2	53.00	5
	Tuolumne County APCD	66	1	2.2	4	47.55	5
	Ventura County APCD	31	1	2.6	2	47.98	5
	Yolo/Solano AQMD	55	1	6.8	2	51.21	5
State	Statewide	54	1	2.2	4	47.93	5

Notes:

1. Precipitation Data based on the average of locations in this area according to data from the Western Regional Climate Center available at http://www.wrcc.dri.edu/htmlfiles/ca/ca.01.html
2. Data based on District provided information.
3. Wind speed data based on information from the Western Regional Climate Center available at: http://www.wrcc.dri.edu/htmlfiles/westwind.final.html
4. The statewide default windspeed is 2.2 meters per second.
5. Evapotranspiration rates from Appendix A of Model Water Efficient Landscape Ordinance from the California Department of Water Resources Available online at: http://www.water.ca.gov/wateruseefficiency/docs/MWELO09-10-09.pdf

Table 1.2: Electrical Utility Emission Factors of Greenhouse Gases

Utility Company	CO_2 Intensity Factor	CH_4 Intensity Factor[a]	N_2O Intensity Factor[a]	Reporting Year for CO2[b] EF
	lb/MWhr			
Statewide Average	1,002	0.029	0.00617	2009
Anaheim Public Utilities	1,543	0.029	0.00617	2007
Austin Energy	1,083	0.029	0.00617	2008
Burbank Water & Power	1,096	0.029	0.00617	2007
City and County of San Francisco	76	0.029	0.00617	2005
City of Palo Alto Public Utilities	354	0.029	0.00617	2009
Glendale Water & Power	1,115	0.029	0.00617	2009
Imperial Irrigation District	1,271	0.029	0.00617	2008
Los Angeles Department of Water & Power	1,228	0.029	0.00617	2007
Martines Cogen Ltd. Partnership	945	0.029	0.00617	2008
Modesto Irrigation District	833	0.029	0.00617	2007
Pacific Gas & Electric Company	641	0.029	0.00617	2008
PacifiCorp	1,656	0.029	0.00617	2009
Pasadena Water & Power	1,664	0.029	0.00617	2006
Platte River Power Authority	1,848	0.029	0.00617	2007
Riverside Public Utilities	1,326	0.029	0.00617	2007
Roseville Electric	794	0.029	0.00617	2007
Sacramento Municipal Utility District	590	0.029	0.00617	2009
Salt River Project	1,470	0.029	0.00617	2007
San Diego Gas & Electric	720	0.029	0.00617	2009
Seattle City Light	31	0.029	0.00617	2009
Sierra Pacific Resources	1,328	0.029	0.00617	2008
Southern California Edison	631	0.029	0.00617	2007
Turlock Irrigation District	790	0.029	0.00617	2008

Notes:

a. Methane and Nitrous Oxide Intensity Factors based on 2012 E-Grid for California (2009 inventory)
b. Emission Factors from May 2010 Local Government Operations Protocol

Table 2.1 Land Use Size Comparisons

LandUseType	LandUseSubType	Acres Per Dwelling Unit[1]	Square Feet Per Dwelling Unit[2]
Residential	Single Family Housing	0.32	1800
	Apartments low rise	0.063	1000
	Apartments mid rise	0.026	1000
	Apartments high rise	0.016	1000
	Condo/townhouse	0.063	1000
	Condo/townhouse high rise	0.016	1000
	Mobile Home Park	0.13	1200
	Retirement Community	0.20	1000
	Congregate care (Assisted Living)	0.063	1000

LandUseType	LandUseSubType	LandUseSizeMetric	Acres Per Size Metric	SquareFeet	Other Per 1000 SQFT	
					Value	Metric
Educational	Day-Care Center	1000sqft	0.023	1000	18	Student
					2.8	Employee[3]
Educational	Elementary School	1000sqft	0.023	1000	12	Student
					1.0	Employee[3]
Educational	Junior High School	1000sqft	0.023	1000	8.5	Student
					0.8	Employee[3]
Educational	High School	1000sqft	0.023	1000	7.5	Student
					0.8	Employee[3]
Educational	Junior College (2yr)	1000sqft	0.023	1000	23	Student
					0.8	Employee[3]
Educational	University/College (4yr)	Student	0.0042	184	1.4	Employee[3]
Educational	Library	1000sqft	0.023	1000	1.1	Employee[3]
Educational	Place of Worship	1000sqft	0.023	1000	20	Seat
Recreational	City Park	Acre	1	43560		
Recreational	Golf Course	Acre	1	43560		
Recreational	Recreational Swimming Pool	1000sqft	0.023	1000	143	Hole
Recreational	Racquet Club	1000sqft	0.023	1000		
Recreational	Health Club	1000sqft	0.023	1000		
Recreational	Movie Theater (No Matinee)	1000sqft	0.023	1000	0.36	Screen
					44	Seat
Recreational	Arena	1000sqft	0.32	1000	0.023	Acre
Recreational	Quality Restaurant	1000sqft	0.023	1000		
Recreational	High Turnover (Sit Down Restaurant)	1000sqft	0.023	1000		
Recreational	Fast Food Restaurant with Drive Thru	1000sqft	0.023	1000		
Recreational	Fast Food Restaurant w/o Drive Thru	1000sqft	0.023	1000		
Recreational	Hotel	Room	0.033	1452		
Recreational	Motel	Room	0.045	1960		
Parking	Parking Lot	1000sqft	0.023	1000	0.023	Acre
					2.5	Space
Parking	Unenclosed Parking Structure	1000sqft	0.023	1000	0.02	Acre
					2.5	Space
Parking	Enclosed Parking Structure	1000sqft	0.023	1000	0.02	Acre
					2.5	Space
Parking	Unenclosed Parking with Elevator	1000sqft	0.023	1000	0.02	Acre
					2.5	Space
Parking	Enclosed Parking with Elevator	1000sqft	0.023	1000	0.02	Acre
					2.5	Space
Parking	Other Non-Asphalt Surfaces	1000sqft	0.023	1000	0.02	Acre
Parking	Other Asphalt Surfaces	1000sqft	0.023	1000	0.02	Acre
Retail	Free-Standing Discount store	1000sqft	0.023	1000		
Retail	Free-Standing Discount Superstore	1000sqft	0.023	1000		
Retail	Discount Club	1000sqft	0.023	1000		
Retail	Regional Shopping Center	1000sqft	0.023	1000		
Retail	Electronic Superstore	1000sqft	0.023	1000		
Retail	Home Improvement Superstore	1000sqft	0.023	1000		
Retail	Strip Mall	1000sqft	0.023	1000		
Retail	Hardware/Paint Store	1000sqft	0.023	1000		
Retail	Supermarket	1000sqft	0.023	1000		
Retail	Convenience Market (24 hour)	1000sqft	0.023	1000		
Retail	Convenience Market with Gas Pumps	1000sqft	0.023	1000	7.1	Pump
Retail	Automobile Care Center	1000sqft	0.023	1000		
Retail	Gasoline/Service Station	Pump	0.003	141		
Commercial	Bank (with Drive-Through)	1000sqft	0.023	1000		
Commercial	General Office Building	1000sqft	0.023	1000		
Commercial	Office Park	1000sqft	0.023	1000		
Commercial	Research & Development	1000sqft	0.023	1000		
Commercial	Government Office Building	1000sqft	0.023	1000		
Commercial	Government (Civic Center)	1000sqft	0.023	1000		
Commercial	Pharmacy/Drugstore with Drive Thru	1000sqft	0.023	1000		
Commercial	Pharmacy/Drugstore w/o Drive Thru	1000sqft	0.023	1000		
Commercial	Medical Office Building	1000sqft	0.023	1000		
Commercial	Hospital	1000sqft	0.023	1000	1.40	Bed
Industrial	Unrefrigerated Warehouse-No Rail	1000sqft	0.023	1000		
Industrial	Unrefrigerated Warehouse-Rail	1000sqft	0.023	1000		
Industrial	Refrigerated Warehouse-No Rail	1000sqft	0.023	1000		
Industrial	Refrigerated Warehouse-Rail	1000sqft	0.023	1000		
Industrial	General Light Industry	1000sqft	0.023	1000		
Industrial	General Heavy Industry	1000sqft	0.023	1000		
Industrial	Industrial Park	1000sqft	0.023	1000		
Industrial	Manufacturing	1000sqft	0.023	1000		

Notes:

1. Based on ratio of trip rates for the same land uses in the ITE Trip Generation Manual.
2. The value for average dwelling unit square footage is rounded based on the average square footage reported in the RASS.
3. Values based on SCAB survey information of employees per square foot of buildings.

Table 2.2 Population per Dwelling Unit

LocationType	DisplayName	Single Family Homes	Multi-Family Homes	Source
Counties	Alameda	2.86	2.86	1
	Alpine	2.86	2.86	1
	Amador	2.86	2.86	1
	Butte	2.86	2.86	1
	Calaveras	2.86	2.86	1
	Colusa	2.86	2.86	1
	Contra Costa	2.86	2.86	1
	Del Norte	2.86	2.86	1
	El Dorado-Lake Tahoe	2.86	2.86	1
	El Dorado-Mountain County	2.86	2.86	1
	Fresno	2.86	2.86	1
	Glenn	2.86	2.86	1
	Humboldt	2.86	2.86	1
	Imperial	3.23	3.23	2
	Inyo	2.86	2.86	1
	Kern-Mojave Desert	2.86	2.86	1
	Kern-San Joaquin	2.86	2.86	1
	Kings	2.86	2.86	1
	Lake	2.86	2.86	1
	Lassen	2.86	2.86	1
	Los Angeles-Mojave Desert	2.86	2.86	1
	Los Angeles-South Coast	2.86	2.86	1
	Madera	2.86	2.86	1
	Marin	2.86	2.86	1
	Mariposa	2.86	2.86	1
	Mendocino-Coastal	2.86	2.86	1
	Mendocino-Inland	2.86	2.86	1
	Mendocino-Rural Inland North	2.86	2.86	1
	Mendocino-Rural Inland South	2.86	2.86	1
	Merced	2.86	2.86	1
	Modoc	2.86	2.86	1
	Mono	2.86	2.86	1
	Monterey	2.86	2.86	1
	Napa	2.86	2.86	1
	Nevada	2.86	2.86	1
	Orange	2.86	2.86	1
	Placer-Lake Tahoe	2.86	2.86	1
	Placer-Mountain Counties	2.86	2.86	1
	Placer-Sacramento	2.86	2.86	1
	Plumas	2.86	2.86	1
	Riverside-Mojave Desert MDAQMD	2.86	2.86	1
	Riverside-Mojave Desert SCAQMD	2.86	2.86	1
	Riverside-Salton Sea	2.86	2.86	1
	Riverside-South Coast	2.86	2.86	1
	Sacramento	2.67	2.67	2
	San Benito	2.86	2.86	1
	San Bernardino-Mojave Desert	2.86	2.86	1
	San Bernardino-South Coast	2.86	2.86	1
	San Diego	2.86	2.86	1
	San Francisco	2.86	2.86	1
	San Joaquin	3.172	3.172	2
	San Luis Obispo	2.86	2.86	1
	San Mateo	2.86	2.86	1
	Santa Barbara-North of Santa Ynez	2.72	2.72	2
	Santa Barbara-South of Santa Ynez Range	2.72	2.72	2
	Santa Clara	2.86	2.86	1
	Santa Cruz	2.86	2.86	1
	Shasta	2.86	2.86	1
	Sierra	2.86	2.86	1
	Siskiyou	2.86	2.86	1
	Solano-San Francisco	2.86	2.86	1
	Solano-San Joaquin	2.86	2.86	1
	Sonoma-North Coast	2.86	2.86	1
	Sonoma-San Francisco	2.86	2.86	1
	Stanislaus	2.86	2.86	1
	Sutter	2.86	2.86	1
	Tehama	2.6	2.6	2
	Trinity	2.86	2.86	1
	Tulare	2.86	2.86	1
	Tuolumne	2.86	2.86	1
	Ventura	3.06	3.06	2
	Yolo	2.86	2.86	1
	Yuba	2.86	2.86	1

Table 2.2 Population per Dwelling Unit

LocationType	DisplayName	Single Family Homes	Multi-Family Homes	Source
Air Basin	Great Basin Valleys	2.86	2.86	1
	Lake County	2.86	2.86	1
	Lake Tahoe	2.86	2.86	1
	Mojave Desert	2.86	2.86	1
	Mountain Counties	2.86	2.86	1
	North Central Coast	2.86	2.86	1
	North Coast	2.86	2.86	1
	Northeast Plateau	2.86	2.86	1
	Sacramento Valley	2.86	2.86	1
	Salton Sea	3.23	3.23	2
	San Diego	2.86	2.86	1
	San Francisco Bay Area	2.86	2.86	1
	San Joaquin Valley	2.86	2.86	1
	South Central Coast	2.86	2.86	1
	South Coast	2.86	2.86	1
Air District	Amador County APCD	2.86	2.86	1
	Antelope Valley APCD	2.86	2.86	1
	Bay Area AQMD	2.86	2.86	1
	Butte County AQMD	2.86	2.86	1
	Calaveras County AQMD	2.86	2.86	1
	Colusa County APCD	2.86	2.86	1
	El Dorado County APCD	2.86	2.86	1
	Feather River AQMD	2.86	2.86	1
	Glenn County APCD	2.86	2.86	1
	Great Basin UAPCD	2.86	2.86	1
	Imperial County APCD	3.23	3.23	2
	Kern County APCD	2.86	2.86	1
	Lake County AQMD	2.86	2.86	1
	Lassen County APCD	2.86	2.86	1
	Mariposa County APCD	2.86	2.86	1
	Mendocino County AQMD	2.86	2.86	1
	Modoc County APCD	2.86	2.86	1
	Mojave Desert AQMD	2.86	2.86	1
	Monterey Bay Unified APCD	2.86	2.86	1
	North Coast Unified APCD	2.86	2.86	1
	Northern Sierra AQMD	2.86	2.86	1
	Northern Sonoma County APCD	2.86	2.86	1
	Placer County APCD	2.86	2.86	1
	Sacramento Metropolitan AQMD	2.67	2.67	2
	San Diego County APCD	2.86	2.86	1
	San Joaquin Valley Unified APCD	3.172	3.172	2
	San Luis Obispo County APCD	2.86	2.86	1
	Santa Barbara County APCD	2.72	2.72	2
	Shasta County AQMD	2.86	2.86	1
	Siskiyou County APCD	2.86	2.86	1
	South Coast AQMD	2.86	2.86	1
	Tehama County APCD	2.6	2.6	2
	Tuolumne County APCD	2.86	2.86	1
	Ventura County APCD	3.06	3.06	2
	Yolo/Solano AQMD	2.86	2.86	1
Statewide	Statewide	2.86	2.86	1

Notes:

1. Based on statewide default of 2.86 people per dwelling unit.
2. Based on district supplied information.

Table 3.1 Phase Length

Project Acres	Demolition Days	Grading Days	Building Construction Days	Architectural Coating Days	Site Preparation Days	Paving Days
≥ 0	10	2	100	5	1	5
≥ 1	20	4	200	10	2	10
≥ 2	20	6	220	10	3	10
≥ 3	20	8	230	18	5	18
≥ 5	20	20	230	20	10	20
≥ 10	20	30	300	20	10	20
≥ 15	20	30	300	20	10	20
≥ 20	20	35	370	20	10	20
≥ 25	30	45	440	35	20	35
≥ 30	30	45	500	35	20	35
≥ 34	50	75	740	55	30	55
≥ 50	70	110	1110	75	40	75
≥ 75	100	155	1550	110	60	110
≥ 100	200	310	3100	220	120	220
≥ 200	300	465	4650	330	180	330
≥ 300	400	620	6200	440	240	440
≥ 400	500	775	7750	550	300	550
≥ 500	600	930	9300	660	360	660
≥ 600	700	1085	10850	770	420	770
≥ 700	800	1240	12400	880	480	880
≥ 800	900	1395	13950	990	540	990
≥ 900	1000	1550	15500	1100	600	1100
≥ 1000	10000	15500	155000	11000	6000	11000

Notes:

1. Based on construction survey performed by SCAQMD and included in Appendix E. For larger sites beyond the survey size, the number of days from several sites were added together.

Table 3.2 Equipment Lists Based on Project Acreage

PhaseType	EquipmentType	Number of Equipment																							
		≥1	≥2	≥3	≥5	≥10	≥15	≥20	≥25	≥30	≥34	≥50	≥75	≥100	≥200	≥300	≥400	≥500	≥600	≥700	≥800	≥900	≥1000	≥10000
Demolition	Excavators				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Rubber Tired Dozers	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Concrete/Industrial Saws	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Tractors/Loaders/Backhoes	2	3	3																				
Site Preparation	Graders	1	1	1																				
	Tractors/Loaders/Backhoes	1	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Rubber Tired Dozers		1		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Scrapers			1																				
Grading	Rubber Tired Dozers	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Concrete/Industrial Saws	1																						
	Tractors/Loaders/Backhoes	2	1	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Graders		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Excavators				1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Scrapers						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Building Construction	Cranes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Forklifts	2	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Tractors/Loaders/Backhoes	2	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Welders		3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Generator Sets		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Architectural Coating	Air Compressors	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Paving	Pavers	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Cement and Mortar Mixers	4	1	1	2																			
	Rollers	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Tractors/Loaders/Backhoes	1	1	1	1																			
	Paving Equipment		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Table 3.2 Equipment Lists Based on Project Acreage

PhaseType	EquipmentType	Hours per Day per Equipment																						
		≥1	≥2	≥3	≥5	≥10	≥15	≥20	≥25	≥30	≥34	≥50	≥75	≥100	≥200	≥300	≥400	≥500	≥600	≥700	≥800	≥900	≥1000	≥10000
Demolition	Excavators				8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Rubber Tired Dozers	1	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Concrete/Industrial Saws	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Tractors/Loaders/Backhoes	6	8	8																				
Site Preparation	Graders	8	8	8																				
	Tractors/Loaders/Backhoes	8	8	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Rubber Tired Dozers		7		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Scrapers			8																				
Grading	Rubber Tired Dozers	1	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Concrete/Industrial Saws	8																						
	Tractors/Loaders/Backhoes	6	7	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Graders		6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Excavators				8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Scrapers						8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Building Construction	Cranes	4	6	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	Forklifts	6	6	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Tractors/Loaders/Backhoes	8	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	Welders		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Generator Sets		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Architectural Coating	Air Compressors	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Paving	Pavers	7	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Cement and Mortar Mixers	6	6	8	6																			
	Rollers	7	7	8	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	Tractors/Loaders/Backhoes	7	8	8	8																			
	Paving Equipment		8	8	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Notes:

1. Based on construction survey performed by SCAQMD and included in Appendix E. For acreage beyond the survey size, equipment lists were kept the same.
2. An air compressor for architectural coating phases has been added to reflect the use of such equipment in many architectural coating operations.

Table 3.3 OFFROAD Default Horsepower and Load Factors

OFFROAD Equipment Type	Horsepower	Load Factor
Aerial Lifts	63	0.31
Air Compressors	78	0.48
Bore/Drill Rigs	206	0.50
Cement and Mortar Mixers	9	0.56
Concrete/Industrial Saws	81	0.73
Cranes	226	0.29
Crawler Tractors	208	0.43
Crushing/Proc. Equipment	85	0.78
Dumpers/Tenders	16	0.38
Excavators	163	0.38
Forklifts	89	0.20
Generator Sets	84	0.74
Graders	175	0.41
Off-Highway Tractors	123	0.44
Off-Highway Trucks	400	0.38
Other Construction Equipment	172	0.42
Other General Industrial Equipment	88	0.34
Other Material Handling Equipment	167	0.40
Pavers	126	0.42
Paving Equipment	131	0.36
Plate Compactors	8	0.43
Pressure Washers	13	0.30
Pumps	84	0.74
Rollers	81	0.38
Rough Terrain Forklifts	100	0.40
Rubber Tired Dozers	255	0.40
Rubber Tired Loaders	200	0.36
Scrapers	362	0.48
Signal Boards	6	0.82
Skid Steer Loaders	65	0.37
Surfacing Equipment	254	0.30
Sweepers/Scrubbers	64	0.46
Tractors/Loaders/Backhoes	98	0.37
Trenchers	81	0.50
Welders	46	0.45

Notes:

1. Based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in 2011 OFFROAD

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Aerial Lifts	1990	6	15	5.436	1.804	4.999	9.999	0.833	0.968	0.968	568.299	0.162
Aerial Lifts	1990	16	25	8.446	2.213	5	6.92	0.679	0.735	0.735	568.299	0.199
Aerial Lifts	1990	26	50	22.237	3.256	6.91	7.372	0.692	0.948	0.948	568.299	0.293
Aerial Lifts	1990	51	120	25.547	1.927	5.026	13.323	0.628	1.005	1.005	568.299	0.173
Aerial Lifts	1990	251	500	90.051	1.214	6.888	11.7	0.525	0.605	0.605	568.299	0.109
Aerial Lifts	1990	501	750	162.768	1.214	6.887	11.7	0.538	0.605	0.605	568.299	0.109
Aerial Lifts	2000	6	15	4.911	1.629	4.729	8.804	0.079	0.737	0.737	568.299	0.147
Aerial Lifts	2000	16	25	7.927	2.077	4.749	6.401	0.064	0.569	0.569	568.299	0.187
Aerial Lifts	2000	26	50	21.066	3.084	6.643	6.596	0.065	0.711	0.711	568.3	0.278
Aerial Lifts	2000	51	120	20.809	1.569	4.216	9.602	0.059	0.705	0.705	568.299	0.141
Aerial Lifts	2000	251	500	60.706	0.819	3.931	8.191	0.049	0.31	0.31	568.3	0.073
Aerial Lifts	2000	501	750	109.732	0.819	3.931	8.191	0.051	0.31	0.31	568.299	0.073
Aerial Lifts	2005	6	15	2.733	0.907	3.649	5.927	0.079	0.424	0.424	568.3	0.081
Aerial Lifts	2005	16	25	5.948	1.558	3.804	5.978	0.064	0.474	0.474	568.299	0.14
Aerial Lifts	2005	26	50	18.56	2.717	6.122	6.139	0.065	0.657	0.657	568.299	0.245
Aerial Lifts	2005	51	120	17.765	1.34	3.898	8.079	0.059	0.651	0.651	568.299	0.12
Aerial Lifts	2005	251	500	41.275	0.556	2.307	6.521	0.049	0.217	0.217	568.299	0.05
Aerial Lifts	2005	501	750	76.693	0.572	2.307	6.666	0.051	0.219	0.219	568.299	0.051
Aerial Lifts	2010	6	15	0.646663	0.5434	3.62771	4.927	0.0054	0.3219	0.2961	583.4159	0.1698
Aerial Lifts	2010	16	25	0.646663	0.5434	3.62771	4.927	0.0054	0.3219	0.2961	583.4159	0.1698
Aerial Lifts	2010	26	50	0.646663	0.5434	3.62771	4.927	0.0054	0.3219	0.2961	583.4159	0.1698
Aerial Lifts	2010	51	120	0.478206	0.4018	3.35167	5.13121	0.0049	0.3293	0.303	524.5713	0.1527
Aerial Lifts	2010	251	500	0.542967	0.4562	1.70527	7.02372	0.0049	0.2198	0.2022	524.505	0.1527
Aerial Lifts	2010	501	750	54.853	0.409	1.535	5.216	0.005	0.16	0.16	568.299	0.036
Aerial Lifts	2011	6	15	0.492997	0.4143	3.43961	4.84101	0.0054	0.2745	0.2525	581.9574	0.1698
Aerial Lifts	2011	16	25	0.492997	0.4143	3.43961	4.84101	0.0054	0.2745	0.2525	581.9574	0.1698
Aerial Lifts	2011	26	50	0.492997	0.4143	3.43961	4.84101	0.0054	0.2745	0.2525	581.9574	0.1698
Aerial Lifts	2011	51	120	0.406188	0.3413	3.31532	4.72007	0.0049	0.2874	0.2644	523.2599	0.1527
Aerial Lifts	2011	251	500	0.547278	0.4599	1.71344	7.05257	0.0049	0.2223	0.2045	523.1938	0.1527
Aerial Lifts	2011	501	750	50.06	0.373	1.402	4.839	0.005	0.144	0.144	568.299	0.033
Aerial Lifts	2012	6	15	0.448839	0.3771	3.41137	4.66755	0.0054	0.2468	0.2271	580.4989	0.1698
Aerial Lifts	2012	16	25	0.448839	0.3771	3.41137	4.66755	0.0054	0.2468	0.2271	580.4989	0.1698
Aerial Lifts	2012	26	50	0.448839	0.3771	3.41137	4.66755	0.0054	0.2468	0.2271	580.4989	0.1698
Aerial Lifts	2012	51	120	0.348327	0.2927	3.28979	4.38748	0.0049	0.2511	0.231	521.9485	0.1527
Aerial Lifts	2012	251	500	0.551589	0.4635	1.72161	7.08141	0.0049	0.2247	0.2067	521.8825	0.1527
Aerial Lifts	2012	501	750	46.364	0.346	1.307	4.488	0.005	0.131	0.131	568.299	0.031
Aerial Lifts	2013	6	15	0.365114	0.3068	3.29997	4.33199	0.0054	0.1958	0.1801	577.5818	0.1698
Aerial Lifts	2013	16	25	0.365114	0.3068	3.29997	4.33199	0.0054	0.1958	0.1801	577.5818	0.1698
Aerial Lifts	2013	26	50	0.365114	0.3068	3.29997	4.33199	0.0054	0.1958	0.1801	577.5818	0.1698
Aerial Lifts	2013	51	120	0.288639	0.2425	3.25075	3.92887	0.0049	0.2017	0.1856	519.3256	0.1527
Aerial Lifts	2013	251	500	0.277309	0.233	0.97787	4.58384	0.0049	0.1001	0.0921	519.26	0.1527
Aerial Lifts	2013	501	750	43.268	0.322	1.237	4.155	0.005	0.119	0.119	568.299	0.029
Aerial Lifts	2014	6	15	0.309966	0.2605	3.23337	4.09559	0.0054	0.1577	0.1451	574.6647	0.1698
Aerial Lifts	2014	16	25	0.309966	0.2605	3.23337	4.09559	0.0054	0.1577	0.1451	574.6647	0.1698
Aerial Lifts	2014	26	50	0.309966	0.2605	3.23337	4.09559	0.0054	0.1577	0.1451	574.6647	0.1698
Aerial Lifts	2014	51	120	0.240786	0.2023	3.2195	3.37278	0.0049	0.1608	0.1479	516.7028	0.1527
Aerial Lifts	2014	251	500	0.281092	0.2362	0.98271	4.60231	0.0049	0.1012	0.0931	516.6375	0.1527
Aerial Lifts	2014	501	750	40.165	0.299	1.178	3.761	0.005	0.109	0.109	568.299	0.027
Aerial Lifts	2015	6	15	0.295589	0.2484	3.23342	3.93284	0.0054	0.136	0.1251	568.8305	0.1698
Aerial Lifts	2015	16	25	0.295589	0.2484	3.23342	3.93284	0.0054	0.136	0.1251	568.8305	0.1698
Aerial Lifts	2015	26	50	0.295589	0.2484	3.23342	3.93284	0.0054	0.136	0.1251	568.8305	0.1698
Aerial Lifts	2015	51	120	0.226785	0.1906	3.21782	3.1134	0.0049	0.1431	0.1316	511.457	0.1527
Aerial Lifts	2015	251	500	0.284874	0.2394	0.98755	4.62077	0.0049	0.1023	0.0941	511.3924	0.1527
Aerial Lifts	2015	501	750	37.246	0.278	1.13	3.38	0.005	0.098	0.098	568.299	0.025
Aerial Lifts	2016	6	15	0.271111	0.2278	3.19737	3.67571	0.0054	0.1046	0.0963	562.9964	0.1698
Aerial Lifts	2016	16	25	0.271111	0.2278	3.19737	3.67571	0.0054	0.1046	0.0963	562.9964	0.1698
Aerial Lifts	2016	26	50	0.271111	0.2278	3.19737	3.67571	0.0054	0.1046	0.0963	562.9964	0.1698
Aerial Lifts	2016	51	120	0.196986	0.1655	3.20103	2.72218	0.0049	0.1119	0.103	506.2113	0.1527
Aerial Lifts	2016	251	500	0.288656	0.2426	0.99238	4.63924	0.0049	0.1034	0.0952	506.1474	0.1527
Aerial Lifts	2016	501	750	34.529	0.257	1.089	3.015	0.005	0.088	0.088	568.299	0.023
Aerial Lifts	2017	6	15	0.248829	0.2091	3.16913	3.46956	0.0054	0.0789	0.0726	554.2451	0.1698
Aerial Lifts	2017	16	25	0.248829	0.2091	3.16913	3.46956	0.0054	0.0789	0.0726	554.2451	0.1698
Aerial Lifts	2017	26	50	0.248829	0.2091	3.16913	3.46956	0.0054	0.0789	0.0726	554.2451	0.1698
Aerial Lifts	2017	51	120	0.169799	0.1427	3.18429	2.36368	0.0049	0.0834	0.0768	498.3428	0.1527
Aerial Lifts	2017	251	500	0.292438	0.2457	0.99722	4.6577	0.0049	0.1046	0.0962	498.2798	0.1527
Aerial Lifts	2017	501	750	32.148	0.239	1.059	2.68	0.005	0.079	0.079	568.299	0.021
Aerial Lifts	2018	6	15	0.216292	0.1817	3.11639	3.2101	0.0054	0.0542	0.0499	545.4939	0.1698
Aerial Lifts	2018	16	25	0.216292	0.1817	3.11639	3.2101	0.0054	0.0542	0.0499	545.4939	0.1698
Aerial Lifts	2018	26	50	0.216292	0.1817	3.11639	3.2101	0.0054	0.0542	0.0499	545.4939	0.1698
Aerial Lifts	2018	51	120	0.145088	0.1219	3.16685	2.0636	0.0049	0.0571	0.0525	490.4742	0.1527
Aerial Lifts	2018	251	500	0.074117	0.0623	0.93655	0.63368	0.0049	0.0088	0.0081	490.4122	0.1527
Aerial Lifts	2018	501	750	30.169	0.225	1.037	2.385	0.005	0.071	0.071	568.299	0.02
Aerial Lifts	2019	6	15	0.204518	0.1719	3.11451	3.07945	0.0054	0.0417	0.0384	536.7427	0.1698

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Aerial Lifts	2019	16	25	0.204518	0.1719	3.11451	3.07945	0.0054	0.0417	0.0384	536.7427	0.1698
Aerial Lifts	2019	26	50	0.204518	0.1719	3.11451	3.07945	0.0054	0.0417	0.0384	536.7427	0.1698
Aerial Lifts	2019	51	120	0.14071	0.1182	3.17254	1.97658	0.0049	0.0485	0.0446	482.6056	0.1527
Aerial Lifts	2019	251	500	0.077988	0.0655	0.94139	0.63586	0.0049	0.0089	0.0082	482.5446	0.1527
Aerial Lifts	2019	501	750	28.429	0.212	1.023	2.117	0.005	0.064	0.064	568.299	0.019
Aerial Lifts	2020	6	15	0.199447	0.1676	3.09942	2.95486	0.0054	0.0309	0.0284	525.0743	0.1698
Aerial Lifts	2020	16	25	0.199447	0.1676	3.09942	2.95486	0.0054	0.0309	0.0284	525.0743	0.1698
Aerial Lifts	2020	26	50	0.199447	0.1676	3.09942	2.95486	0.0054	0.0309	0.0284	525.0743	0.1698
Aerial Lifts	2020	51	120	0.136778	0.1149	3.1768	1.86859	0.0049	0.0416	0.0382	472.1142	0.1527
Aerial Lifts	2020	251	500	0.081859	0.0688	0.94623	0.63803	0.0049	0.009	0.0083	472.0545	0.1527
Aerial Lifts	2020	501	750	26.846	0.2	1.013	1.868	0.005	0.057	0.057	568.299	0.018
Aerial Lifts	2021	6	15	0.196174	0.1648	3.11369	2.92238	0.0054	0.0265	0.0244	525.0743	0.1698
Aerial Lifts	2021	16	25	0.196174	0.1648	3.11369	2.92238	0.0054	0.0265	0.0244	525.0743	0.1698
Aerial Lifts	2021	26	50	0.196174	0.1648	3.11369	2.92238	0.0054	0.0265	0.0244	525.0743	0.1698
Aerial Lifts	2021	51	120	0.129509	0.1088	3.17624	1.74368	0.0049	0.0333	0.0306	472.1142	0.1527
Aerial Lifts	2021	251	500	0.08573	0.072	0.95107	0.64021	0.0049	0.0091	0.0083	472.0545	0.1527
Aerial Lifts	2021	501	750	25.065	0.187	1.004	1.61	0.005	0.05	0.05	568.299	0.016
Aerial Lifts	2022	6	15	0.192664	0.1619	3.11231	2.90676	0.0054	0.0243	0.0223	525.0743	0.1698
Aerial Lifts	2022	16	25	0.192664	0.1619	3.11231	2.90676	0.0054	0.0243	0.0223	525.0743	0.1698
Aerial Lifts	2022	26	50	0.192664	0.1619	3.11231	2.90676	0.0054	0.0243	0.0223	525.0743	0.1698
Aerial Lifts	2022	51	120	0.124613	0.1047	3.17602	1.62659	0.0049	0.0302	0.0278	472.1142	0.1527
Aerial Lifts	2022	251	500	0.089601	0.0753	0.95591	0.64238	0.0049	0.0092	0.0084	472.0545	0.1527
Aerial Lifts	2022	501	750	23.788	0.177	0.998	1.424	0.005	0.044	0.044	568.299	0.016
Aerial Lifts	2023	6	15	0.19346	0.1626	3.12196	2.89722	0.0054	0.0231	0.0213	525.0743	0.1698
Aerial Lifts	2023	16	25	0.19346	0.1626	3.12196	2.89722	0.0054	0.0231	0.0213	525.0743	0.1698
Aerial Lifts	2023	26	50	0.19346	0.1626	3.12196	2.89722	0.0054	0.0231	0.0213	525.0743	0.1698
Aerial Lifts	2023	51	120	0.119594	0.1005	3.17029	1.5481	0.0049	0.0267	0.0246	472.1142	0.1527
Aerial Lifts	2023	251	500	0.093472	0.0785	0.96074	0.64456	0.0049	0.0092	0.0085	472.0545	0.1527
Aerial Lifts	2023	501	750	22.675	0.169	0.995	1.265	0.005	0.038	0.038	568.299	0.015
Aerial Lifts	2024	6	15	0.188737	0.1586	3.11285	2.88821	0.0054	0.0217	0.0199	525.0743	0.1698
Aerial Lifts	2024	16	25	0.188737	0.1586	3.11285	2.88821	0.0054	0.0217	0.0199	525.0743	0.1698
Aerial Lifts	2024	26	50	0.188737	0.1586	3.11285	2.88821	0.0054	0.0217	0.0199	525.0743	0.1698
Aerial Lifts	2024	51	120	0.119572	0.1005	3.17255	1.52789	0.0049	0.0265	0.0244	472.1142	0.1527
Aerial Lifts	2024	251	500	0.097343	0.0818	0.96558	0.64674	0.0049	0.0093	0.0086	472.0545	0.1527
Aerial Lifts	2024	501	750	21.618	0.161	0.991	1.115	0.005	0.033	0.033	568.299	0.014
Aerial Lifts	2025	6	15	0.182854	0.1536	3.08837	2.87882	0.0054	0.0207	0.019	525.0743	0.1698
Aerial Lifts	2025	16	25	0.182854	0.1536	3.08837	2.87882	0.0054	0.0207	0.019	525.0743	0.1698
Aerial Lifts	2025	26	50	0.182854	0.1536	3.08837	2.87882	0.0054	0.0207	0.019	525.0743	0.1698
Aerial Lifts	2025	51	120	0.117586	0.0988	3.16742	1.51077	0.0049	0.0259	0.0238	472.1142	0.1527
Aerial Lifts	2025	251	500	0.101214	0.085	0.97042	0.64891	0.0049	0.0094	0.0087	472.0545	0.1527
Aerial Lifts	2025	501	750	20.597	0.153	0.989	0.974	0.005	0.028	0.028	568.299	0.013
Aerial Lifts	2030	6	15	1.993	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Aerial Lifts	2030	16	25	2.616	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
Aerial Lifts	2030	26	50	2.317	0.339	3.764	3.135	0.007	0.04	0.04	568.3	0.03
Aerial Lifts	2030	51	120	2.504	0.188	3.352	1.657	0.006	0.036	0.036	568.299	0.017
Aerial Lifts	2030	251	500	9.37	0.126	0.986	0.479	0.005	0.016	0.016	568.299	0.011
Aerial Lifts	2030	501	750	16.962	0.126	0.986	0.485	0.005	0.016	0.016	568.299	0.011
Aerial Lifts	2035	6	15	1.993	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Aerial Lifts	2035	16	25	2.616	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Aerial Lifts	2035	26	50	2.033	0.297	3.726	3.017	0.007	0.019	0.019	568.299	0.026
Aerial Lifts	2035	51	120	2.202	0.166	3.345	1.466	0.006	0.017	0.017	568.299	0.014
Aerial Lifts	2035	251	500	8.659	0.116	0.986	0.33	0.005	0.011	0.011	568.299	0.01
Aerial Lifts	2035	501	750	15.653	0.116	0.986	0.33	0.005	0.011	0.011	568.299	0.01
Aerial Lifts	2040	6	15	1.993	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Aerial Lifts	2040	16	25	2.616	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Aerial Lifts	2040	26	50	2.015	0.295	3.723	2.966	0.007	0.013	0.013	568.299	0.026
Aerial Lifts	2040	51	120	2.141	0.161	3.344	1.407	0.006	0.012	0.012	568.299	0.014
Aerial Lifts	2040	251	500	8.324	0.112	0.986	0.279	0.005	0.009	0.009	568.299	0.01
Aerial Lifts	2040	501	750	15.046	0.112	0.986	0.279	0.005	0.009	0.009	568.299	0.01
Air Compressors	1990	6	15	4.702	1.804	4.999	9.999	1.018	0.974	0.974	568.299	0.162
Air Compressors	1990	16	25	11.537	2.213	4.999	6.919	0.83	0.74	0.74	568.299	0.199
Air Compressors	1990	26	50	34.016	4.232	8.684	7.735	0.846	1.152	1.152	568.3	0.381
Air Compressors	1990	51	120	37.275	2.2	5.46	14.348	0.768	1.216	1.216	568.299	0.198
Air Compressors	1990	121	175	48.032	1.504	4.835	12.906	0.736	0.806	0.806	568.299	0.135
Air Compressors	1990	176	250	71.231	1.504	4.835	12.906	0.736	0.806	0.806	568.299	0.135
Air Compressors	1990	251	500	112.803	1.348	9.633	12.363	0.642	0.704	0.704	568.299	0.121
Air Compressors	1990	501	750	174.334	1.348	9.633	12.363	0.658	0.704	0.704	568.299	0.121
Air Compressors	1990	751	1000	235.953	1.344	9.633	12.363	0.658	0.699	0.699	568.3	0.121
Air Compressors	2000	6	15	4.493	1.723	4.875	9.08	0.079	0.747	0.747	568.299	0.155
Air Compressors	2000	16	25	10.924	2.095	4.783	6.405	0.065	0.569	0.569	568.299	0.189
Air Compressors	2000	26	50	31.858	3.963	8.261	6.902	0.066	0.851	0.851	568.299	0.357
Air Compressors	2000	51	120	30.02	1.771	4.544	10.276	0.06	0.835	0.835	568.3	0.159
Air Compressors	2000	121	175	37.86	1.185	3.7	9.332	0.057	0.494	0.494	568.299	0.106

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Air Compressors	2000	176	250	47.101	0.994	2.949	8.985	0.057	0.406	0.406	568.299	0.089
Air Compressors	2000	251	500	76.009	0.908	5.008	8.611	0.05	0.36	0.36	568.299	0.082
Air Compressors	2000	501	750	117.469	0.908	5.008	8.611	0.051	0.36	0.36	568.299	0.082
Air Compressors	2000	751	1000	176.359	1.004	5.6	9.212	0.051	0.379	0.379	568.299	0.09
Air Compressors	2005	6	15	3.634	1.394	4.38	7.817	0.079	0.621	0.621	568.299	0.125
Air Compressors	2005	16	25	8.461	1.622	3.922	6.014	0.065	0.483	0.483	568.299	0.146
Air Compressors	2005	26	50	28.493	3.545	7.671	6.447	0.066	0.792	0.792	568.299	0.319
Air Compressors	2005	51	120	25.731	1.518	4.196	8.646	0.06	0.775	0.775	568.299	0.137
Air Compressors	2005	121	175	31.762	0.994	3.339	7.911	0.057	0.428	0.428	568.299	0.089
Air Compressors	2005	176	250	33.701	0.711	1.989	7.465	0.057	0.281	0.281	568.299	0.064
Air Compressors	2005	251	500	52.734	0.63	2.602	6.868	0.05	0.252	0.252	568.299	0.056
Air Compressors	2005	501	750	83.252	0.644	2.602	7.019	0.051	0.255	0.255	568.299	0.058
Air Compressors	2005	751	1000	135.834	0.773	3.154	8.036	0.051	0.271	0.271	568.299	0.069
Air Compressors	2010	6	15	2.931	1.124	4.027	6.554	0.008	0.473	0.473	568.299	0.101
Air Compressors	2010	16	25	6.607	1.267	3.309	5.477	0.007	0.384	0.384	568.299	0.114
Air Compressors	2010	26	50	23.546	2.929	7.121	6.067	0.007	0.669	0.669	568.299	0.264
Air Compressors	2010	51	120	20.566	1.213	4.044	7.183	0.006	0.653	0.653	568.299	0.109
Air Compressors	2010	121	175	25.827	0.808	3.277	6.422	0.006	0.361	0.361	568.299	0.072
Air Compressors	2010	176	250	24.871	0.525	1.468	6.008	0.006	0.198	0.198	568.299	0.047
Air Compressors	2010	251	500	39.447	0.471	1.648	5.363	0.005	0.182	0.182	568.299	0.042
Air Compressors	2010	501	750	62.011	0.479	1.648	5.507	0.005	0.185	0.185	568.299	0.043
Air Compressors	2010	751	1000	105.623	0.601	2.147	6.994	0.005	0.209	0.209	568.299	0.054
Air Compressors	2011	6	15	2.782	1.067	3.952	6.283	0.008	0.441	0.441	568.299	0.096
Air Compressors	2011	16	25	6.215	1.192	3.179	5.36	0.007	0.361	0.361	568.299	0.107
Air Compressors	2011	26	50	22.03	2.741	6.919	5.972	0.007	0.636	0.636	568.299	0.247
Air Compressors	2011	51	120	19.321	1.14	4.005	6.805	0.006	0.626	0.626	568.299	0.102
Air Compressors	2011	121	175	24.432	0.765	3.264	6.065	0.006	0.347	0.347	568.299	0.069
Air Compressors	2011	176	250	22.999	0.485	1.372	5.603	0.006	0.177	0.177	568.299	0.043
Air Compressors	2011	251	500	36.661	0.438	1.497	4.981	0.005	0.165	0.165	568.299	0.039
Air Compressors	2011	501	750	57.58	0.445	1.497	5.123	0.005	0.167	0.167	568.299	0.04
Air Compressors	2011	751	1000	98.738	0.562	1.971	6.637	0.005	0.196	0.196	568.299	0.05
Air Compressors	2012	6	15	2.626	1.007	3.874	5.999	0.008	0.407	0.407	568.299	0.09
Air Compressors	2012	16	25	5.803	1.113	3.043	5.239	0.007	0.337	0.337	568.299	0.1
Air Compressors	2012	26	50	20.318	2.527	6.682	5.869	0.007	0.6	0.6	568.299	0.228
Air Compressors	2012	51	120	17.991	1.061	3.964	6.39	0.006	0.587	0.587	568.299	0.095
Air Compressors	2012	121	175	22.92	0.717	3.251	5.684	0.006	0.324	0.324	568.299	0.064
Air Compressors	2012	176	250	21.576	0.455	1.312	5.216	0.006	0.161	0.161	568.299	0.041
Air Compressors	2012	251	500	34.608	0.413	1.392	4.618	0.005	0.15	0.15	568.299	0.037
Air Compressors	2012	501	750	54.283	0.419	1.392	4.758	0.005	0.153	0.153	568.299	0.037
Air Compressors	2012	751	1000	91.671	0.522	1.8	6.263	0.005	0.183	0.183	568.299	0.047
Air Compressors	2013	6	15	2.471	0.948	3.796	5.716	0.008	0.373	0.373	568.299	0.085
Air Compressors	2013	16	25	5.393	1.034	2.907	5.117	0.007	0.314	0.314	568.299	0.093
Air Compressors	2013	26	50	18.508	2.302	6.43	5.643	0.007	0.553	0.553	568.299	0.207
Air Compressors	2013	51	120	16.632	0.981	3.921	5.978	0.006	0.543	0.543	568.299	0.088
Air Compressors	2013	121	175	21.377	0.669	3.238	5.321	0.006	0.298	0.298	568.299	0.06
Air Compressors	2013	176	250	20.386	0.43	1.271	4.839	0.006	0.147	0.147	568.299	0.038
Air Compressors	2013	251	500	32.936	0.393	1.313	4.268	0.005	0.137	0.137	568.3	0.035
Air Compressors	2013	501	750	51.584	0.399	1.313	4.406	0.005	0.14	0.14	568.299	0.036
Air Compressors	2013	751	1000	84.725	0.482	1.639	5.883	0.005	0.17	0.17	568.299	0.043
Air Compressors	2014	6	15	2.324	0.891	3.723	5.445	0.008	0.341	0.341	568.3	0.08
Air Compressors	2014	16	25	5.008	0.96	2.78	5	0.007	0.291	0.291	568.299	0.086
Air Compressors	2014	26	50	16.691	2.076	6.181	5.421	0.007	0.505	0.505	568.299	0.187
Air Compressors	2014	51	120	15.28	0.901	3.88	5.608	0.006	0.495	0.495	568.299	0.081
Air Compressors	2014	121	175	19.856	0.621	3.227	4.973	0.006	0.272	0.272	568.299	0.056
Air Compressors	2014	176	250	19.194	0.405	1.237	4.399	0.006	0.134	0.134	568.299	0.036
Air Compressors	2014	251	500	31.25	0.373	1.249	3.855	0.005	0.125	0.125	568.299	0.033
Air Compressors	2014	501	750	48.868	0.378	1.249	3.991	0.005	0.128	0.128	568.299	0.034
Air Compressors	2014	751	1000	78.19	0.445	1.493	5.512	0.005	0.157	0.157	568.3	0.04
Air Compressors	2015	6	15	2.191	0.84	3.658	5.196	0.008	0.311	0.311	568.299	0.075
Air Compressors	2015	16	25	4.662	0.894	2.666	4.89	0.007	0.27	0.27	568.299	0.08
Air Compressors	2015	26	50	15.015	1.868	5.968	5.223	0.007	0.459	0.459	568.299	0.168
Air Compressors	2015	51	120	13.925	0.821	3.84	5.19	0.006	0.446	0.446	568.299	0.074
Air Compressors	2015	121	175	18.243	0.571	3.218	4.504	0.006	0.245	0.245	568.299	0.051
Air Compressors	2015	176	250	18.067	0.381	1.207	3.967	0.006	0.121	0.121	568.299	0.034
Air Compressors	2015	251	500	29.662	0.354	1.198	3.455	0.005	0.113	0.113	568.3	0.032
Air Compressors	2015	501	750	46.316	0.358	1.198	3.586	0.005	0.116	0.116	568.299	0.032
Air Compressors	2015	751	1000	71.885	0.409	1.37	5.157	0.005	0.142	0.142	568.299	0.036
Air Compressors	2016	6	15	2.109	0.809	3.622	5.023	0.008	0.289	0.289	568.299	0.073
Air Compressors	2016	16	25	4.462	0.855	2.604	4.803	0.007	0.255	0.255	568.299	0.077
Air Compressors	2016	26	50	13.429	1.67	5.779	5.042	0.007	0.415	0.415	568.299	0.15
Air Compressors	2016	51	120	12.618	0.744	3.804	4.79	0.006	0.397	0.397	568.299	0.067
Air Compressors	2016	121	175	16.69	0.522	3.211	4.052	0.006	0.219	0.219	568.299	0.047
Air Compressors	2016	176	250	17.023	0.359	1.182	3.553	0.006	0.109	0.109	568.299	0.032

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Air Compressors	2016	251	500	28.188	0.337	1.155	3.08	0.005	0.102	0.102	568.299	0.03
Air Compressors	2016	501	750	43.972	0.34	1.155	3.201	0.005	0.104	0.104	568.299	0.03
Air Compressors	2016	751	1000	67.278	0.383	1.295	4.854	0.005	0.131	0.131	568.299	0.034
Air Compressors	2017	6	15	2.05	0.786	3.599	4.887	0.008	0.272	0.272	568.299	0.07
Air Compressors	2017	16	25	4.327	0.83	2.564	4.729	0.007	0.243	0.243	568.299	0.074
Air Compressors	2017	26	50	11.908	1.481	5.604	4.871	0.007	0.371	0.371	568.299	0.133
Air Compressors	2017	51	120	11.385	0.671	3.772	4.412	0.006	0.35	0.35	568.299	0.06
Air Compressors	2017	121	175	15.244	0.477	3.207	3.627	0.006	0.194	0.194	568.299	0.043
Air Compressors	2017	176	250	16.09	0.339	1.162	3.163	0.006	0.098	0.098	568.299	0.03
Air Compressors	2017	251	500	26.901	0.321	1.123	2.755	0.005	0.092	0.092	568.299	0.029
Air Compressors	2017	501	750	41.87	0.323	1.123	2.845	0.005	0.094	0.094	568.299	0.029
Air Compressors	2017	751	1000	63.572	0.362	1.246	4.583	0.005	0.121	0.121	568.299	0.032
Air Compressors	2018	6	15	1.998	0.766	3.58	4.762	0.008	0.256	0.256	568.299	0.069
Air Compressors	2018	16	25	4.211	0.807	2.531	4.661	0.007	0.232	0.232	568.3	0.072
Air Compressors	2018	26	50	10.449	1.3	5.439	4.707	0.007	0.329	0.329	568.299	0.117
Air Compressors	2018	51	120	10.218	0.603	3.744	4.05	0.006	0.304	0.304	568.3	0.054
Air Compressors	2018	121	175	13.906	0.435	3.205	3.228	0.006	0.17	0.17	568.299	0.039
Air Compressors	2018	176	250	15.223	0.321	1.146	2.797	0.006	0.087	0.087	568.3	0.029
Air Compressors	2018	251	500	25.723	0.307	1.101	2.465	0.005	0.083	0.083	568.299	0.027
Air Compressors	2018	501	750	39.953	0.309	1.101	2.533	0.005	0.084	0.084	568.299	0.027
Air Compressors	2018	751	1000	60.205	0.343	1.21	4.325	0.005	0.111	0.111	568.299	0.03
Air Compressors	2019	6	15	1.951	0.748	3.562	4.647	0.008	0.241	0.241	568.299	0.067
Air Compressors	2019	16	25	4.106	0.787	2.501	4.596	0.007	0.222	0.222	568.299	0.071
Air Compressors	2019	26	50	9.076	1.129	5.283	4.546	0.007	0.287	0.287	568.299	0.101
Air Compressors	2019	51	120	9.123	0.538	3.718	3.706	0.006	0.26	0.26	568.299	0.048
Air Compressors	2019	121	175	12.833	0.401	3.204	2.874	0.006	0.15	0.15	568.299	0.036
Air Compressors	2019	176	250	14.416	0.304	1.132	2.469	0.006	0.078	0.078	568.299	0.027
Air Compressors	2019	251	500	24.559	0.293	1.086	2.193	0.005	0.075	0.075	568.299	0.026
Air Compressors	2019	501	750	38.104	0.294	1.086	2.247	0.005	0.076	0.076	568.299	0.026
Air Compressors	2019	751	1000	56.984	0.324	1.182	4.073	0.005	0.102	0.102	568.299	0.029
Air Compressors	2020	6	15	1.907	0.731	3.546	4.542	0.008	0.227	0.227	568.299	0.066
Air Compressors	2020	16	25	4.009	0.769	2.473	4.538	0.007	0.212	0.212	568.3	0.069
Air Compressors	2020	26	50	8.048	1.001	5.164	4.397	0.007	0.25	0.25	568.299	0.09
Air Compressors	2020	51	120	8.287	0.489	3.698	3.4	0.006	0.224	0.224	568.299	0.044
Air Compressors	2020	121	175	11.957	0.374	3.203	2.558	0.006	0.133	0.133	568.299	0.033
Air Compressors	2020	176	250	13.668	0.288	1.121	2.172	0.006	0.069	0.069	568.299	0.026
Air Compressors	2020	251	500	23.406	0.279	1.076	1.935	0.005	0.067	0.067	568.299	0.025
Air Compressors	2020	501	750	36.303	0.28	1.076	1.982	0.005	0.067	0.067	568.299	0.025
Air Compressors	2020	751	1000	53.87	0.306	1.158	3.828	0.005	0.093	0.093	568.3	0.027
Air Compressors	2021	6	15	1.87	0.717	3.531	4.462	0.008	0.214	0.214	568.299	0.064
Air Compressors	2021	16	25	3.923	0.752	2.446	4.497	0.007	0.201	0.201	568.299	0.067
Air Compressors	2021	26	50	7.136	0.887	5.021	4.221	0.007	0.212	0.212	568.299	0.08
Air Compressors	2021	51	120	7.502	0.442	3.67	3.083	0.006	0.19	0.19	568.299	0.039
Air Compressors	2021	121	175	10.967	0.343	3.192	2.218	0.006	0.115	0.115	568.299	0.03
Air Compressors	2021	176	250	12.728	0.268	1.108	1.859	0.006	0.06	0.06	568.299	0.024
Air Compressors	2021	251	500	21.887	0.261	1.064	1.663	0.005	0.058	0.058	568.299	0.023
Air Compressors	2021	501	750	33.933	0.262	1.064	1.699	0.005	0.058	0.058	568.299	0.023
Air Compressors	2021	751	1000	49.951	0.284	1.134	3.565	0.005	0.082	0.082	568.3	0.025
Air Compressors	2022	6	15	1.844	0.707	3.519	4.408	0.008	0.203	0.203	568.299	0.063
Air Compressors	2022	16	25	3.857	0.739	2.426	4.47	0.007	0.193	0.193	568.299	0.066
Air Compressors	2022	26	50	6.549	0.814	4.959	4.093	0.007	0.183	0.183	568.299	0.073
Air Compressors	2022	51	120	7.001	0.413	3.662	2.844	0.006	0.165	0.165	568.299	0.037
Air Compressors	2022	121	175	10.29	0.322	3.194	1.959	0.006	0.101	0.101	568.299	0.029
Air Compressors	2022	176	250	12.099	0.255	1.102	1.617	0.006	0.052	0.052	568.3	0.023
Air Compressors	2022	251	500	20.881	0.249	1.059	1.472	0.005	0.051	0.051	568.299	0.022
Air Compressors	2022	501	750	32.363	0.25	1.059	1.502	0.005	0.051	0.051	568.299	0.022
Air Compressors	2022	751	1000	47.338	0.269	1.117	3.378	0.005	0.075	0.075	568.3	0.024
Air Compressors	2023	6	15	1.82	0.698	3.508	4.359	0.008	0.194	0.194	568.299	0.063
Air Compressors	2023	16	25	3.798	0.728	2.407	4.447	0.007	0.186	0.186	568.299	0.065
Air Compressors	2023	26	50	6.056	0.753	4.913	3.975	0.007	0.156	0.156	568.299	0.067
Air Compressors	2023	51	120	6.568	0.387	3.657	2.631	0.006	0.143	0.143	568.299	0.034
Air Compressors	2023	121	175	9.693	0.303	3.197	1.748	0.006	0.089	0.089	568.299	0.027
Air Compressors	2023	176	250	11.532	0.243	1.099	1.42	0.006	0.045	0.045	568.299	0.021
Air Compressors	2023	251	500	19.964	0.238	1.055	1.305	0.005	0.044	0.044	568.299	0.021
Air Compressors	2023	501	750	30.933	0.239	1.055	1.331	0.005	0.044	0.044	568.299	0.021
Air Compressors	2023	751	1000	44.985	0.256	1.102	3.221	0.005	0.068	0.068	568.299	0.023
Air Compressors	2024	6	15	1.799	0.69	3.499	4.316	0.008	0.188	0.188	568.3	0.062
Air Compressors	2024	16	25	3.746	0.718	2.39	4.426	0.007	0.181	0.181	568.3	0.064
Air Compressors	2024	26	50	5.647	0.702	4.88	3.864	0.007	0.135	0.135	568.299	0.063
Air Compressors	2024	51	120	6.194	0.365	3.655	2.461	0.006	0.123	0.123	568.299	0.032
Air Compressors	2024	121	175	9.143	0.286	3.202	1.561	0.006	0.077	0.077	568.299	0.025
Air Compressors	2024	176	250	10.986	0.232	1.096	1.247	0.006	0.039	0.039	568.299	0.02
Air Compressors	2024	251	500	19.07	0.228	1.053	1.148	0.005	0.038	0.038	568.299	0.02

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Air Compressors	2024	501	750	29.542	0.228	1.053	1.171	0.005	0.038	0.038	568.299	0.02
Air Compressors	2024	751	1000	42.762	0.243	1.09	3.082	0.005	0.061	0.061	568.299	0.021
Air Compressors	2025	6	15	1.781	0.683	3.491	4.278	0.008	0.183	0.183	568.3	0.061
Air Compressors	2025	16	25	3.701	0.709	2.376	4.407	0.007	0.177	0.177	568.299	0.064
Air Compressors	2025	26	50	5.297	0.659	4.851	3.755	0.007	0.116	0.116	568.299	0.059
Air Compressors	2025	51	120	5.855	0.345	3.653	2.313	0.006	0.104	0.104	568.299	0.031
Air Compressors	2025	121	175	8.602	0.269	3.205	1.383	0.006	0.065	0.065	568.299	0.024
Air Compressors	2025	176	250	10.451	0.22	1.094	1.086	0.006	0.033	0.033	568.299	0.019
Air Compressors	2025	251	500	18.188	0.217	1.051	1.001	0.005	0.032	0.032	568.299	0.019
Air Compressors	2025	501	750	28.169	0.217	1.051	1.021	0.005	0.032	0.032	568.299	0.019
Air Compressors	2025	751	1000	40.592	0.231	1.079	2.954	0.005	0.055	0.055	568.299	0.02
Air Compressors	2030	6	15	1.73	0.663	3.47	4.164	0.008	0.166	0.166	568.299	0.059
Air Compressors	2030	16	25	3.582	0.687	2.34	4.347	0.007	0.165	0.165	568.299	0.061
Air Compressors	2030	26	50	4.073	0.506	4.712	3.34	0.007	0.046	0.046	568.299	0.045
Air Compressors	2030	51	120	4.485	0.264	3.63	1.729	0.006	0.041	0.041	568.299	0.023
Air Compressors	2030	121	175	6.186	0.193	3.205	0.633	0.006	0.027	0.027	568.299	0.017
Air Compressors	2030	176	250	8.495	0.179	1.092	0.529	0.006	0.018	0.018	568.299	0.016
Air Compressors	2030	251	500	14.937	0.178	1.048	0.499	0.005	0.017	0.017	568.299	0.016
Air Compressors	2030	501	750	23.104	0.178	1.048	0.505	0.005	0.017	0.017	568.3	0.016
Air Compressors	2030	751	1000	32.103	0.182	1.049	2.6	0.005	0.033	0.033	568.299	0.016
Air Compressors	2035	6	15	1.724	0.661	3.469	4.143	0.008	0.162	0.162	568.3	0.059
Air Compressors	2035	16	25	3.574	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
Air Compressors	2035	26	50	3.722	0.463	4.674	3.215	0.007	0.023	0.023	568.299	0.041
Air Compressors	2035	51	120	4.047	0.238	3.623	1.53	0.006	0.02	0.02	568.299	0.021
Air Compressors	2035	121	175	5.429	0.17	3.205	0.391	0.006	0.015	0.015	568.3	0.015
Air Compressors	2035	176	250	7.862	0.166	1.091	0.347	0.006	0.012	0.012	568.299	0.014
Air Compressors	2035	251	500	13.882	0.166	1.048	0.343	0.005	0.012	0.012	568.299	0.014
Air Compressors	2035	501	750	21.455	0.166	1.048	0.344	0.005	0.012	0.012	568.299	0.014
Air Compressors	2035	751	1000	29.363	0.167	1.048	2.473	0.005	0.026	0.026	568.299	0.015
Air Compressors	2040	6	15	1.724	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Air Compressors	2040	16	25	3.574	0.685	2.339	4.332	0.007	0.161	0.161	568.3	0.061
Air Compressors	2040	26	50	3.683	0.458	4.659	3.159	0.007	0.016	0.016	568.3	0.041
Air Compressors	2040	51	120	3.94	0.232	3.619	1.468	0.006	0.015	0.015	568.299	0.02
Air Compressors	2040	121	175	5.155	0.161	3.201	0.307	0.006	0.012	0.012	568.299	0.014
Air Compressors	2040	176	250	7.58	0.16	1.09	0.291	0.006	0.01	0.01	568.299	0.014
Air Compressors	2040	251	500	13.386	0.16	1.047	0.291	0.005	0.01	0.01	568.3	0.014
Air Compressors	2040	501	750	20.688	0.16	1.047	0.291	0.005	0.01	0.01	568.299	0.014
Air Compressors	2040	751	1000	28.179	0.16	1.047	2.439	0.005	0.023	0.023	568.299	0.014
Bore/Drill Rigs	1990	6	15	4.968	1.804	4.999	9.999	1.049	0.975	0.975	568.299	0.162
Bore/Drill Rigs	1990	16	25	9.418	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Bore/Drill Rigs	1990	26	50	34.076	4.124	8.505	7.685	0.871	1.134	1.134	568.299	0.372
Bore/Drill Rigs	1990	51	120	42.911	2.09	5.23	13.647	0.791	1.172	1.172	568.299	0.188
Bore/Drill Rigs	1990	121	175	53.24	1.417	4.578	12.365	0.758	0.749	0.749	568.299	0.127
Bore/Drill Rigs	1990	176	250	70.987	1.417	4.578	12.365	0.758	0.749	0.749	568.299	0.127
Bore/Drill Rigs	1990	251	500	105.966	1.278	8.788	11.861	0.662	0.658	0.658	568.299	0.115
Bore/Drill Rigs	1990	501	750	209.372	1.278	8.788	11.861	1.018	0.67	0.67	568.3	0.115
Bore/Drill Rigs	1990	751	1000	313.129	1.267	8.788	11.861	1.018	0.656	0.656	568.3	0.114
Bore/Drill Rigs	2000	6	15	4.063	1.475	4.49	8.242	0.079	0.676	0.676	568.299	0.133
Bore/Drill Rigs	2000	16	25	8.334	1.958	4.53	6.358	0.065	0.563	0.563	568.299	0.176
Bore/Drill Rigs	2000	26	50	27.226	3.295	7.058	6.48	0.066	0.748	0.748	568.299	0.297
Bore/Drill Rigs	2000	51	120	30.002	1.461	3.947	8.27	0.06	0.726	0.726	568.299	0.131
Bore/Drill Rigs	2000	121	175	37.634	1.002	3.062	7.789	0.057	0.405	0.405	568.3	0.09
Bore/Drill Rigs	2000	176	250	32.523	0.649	1.698	7.203	0.057	0.238	0.238	568.3	0.058
Bore/Drill Rigs	2000	251	500	51.06	0.616	1.728	6.993	0.05	0.224	0.224	568.299	0.055
Bore/Drill Rigs	2000	501	750	100.887	0.616	1.728	6.993	0.052	0.224	0.224	568.299	0.055
Bore/Drill Rigs	2000	751	1000	199.748	0.808	2.73	8.005	0.052	0.282	0.282	568.299	0.072
Bore/Drill Rigs	2005	6	15	2.109	0.766	3.469	5.228	0.079	0.361	0.361	568.299	0.069
Bore/Drill Rigs	2005	16	25	3.913	0.919	2.642	5.412	0.065	0.347	0.347	568.299	0.082
Bore/Drill Rigs	2005	26	50	20.086	2.431	5.897	5.697	0.066	0.625	0.625	568.299	0.219
Bore/Drill Rigs	2005	51	120	24.211	1.179	3.812	6.895	0.06	0.64	0.64	568.3	0.106
Bore/Drill Rigs	2005	121	175	27.251	0.725	3.035	6.246	0.057	0.328	0.328	568.299	0.065
Bore/Drill Rigs	2005	176	250	19.806	0.395	1.094	5.8	0.057	0.145	0.145	568.299	0.035
Bore/Drill Rigs	2005	251	500	27.527	0.332	1.068	5.051	0.05	0.133	0.133	568.299	0.029
Bore/Drill Rigs	2005	501	750	58.103	0.354	1.068	5.347	0.052	0.138	0.138	568.299	0.032
Bore/Drill Rigs	2005	751	1000	132.307	0.535	1.427	6.8	0.052	0.183	0.183	568.299	0.048
Bore/Drill Rigs	2010	6	15	1.052412	0.8843	4.58435	5.42137	0.0056	0.4064	0.3739	604.3903	0.1759
Bore/Drill Rigs	2010	16	25	1.052412	0.8843	4.58435	5.42137	0.0056	0.4064	0.3739	604.3903	0.1759
Bore/Drill Rigs	2010	26	50	1.052412	0.8843	4.58435	5.42137	0.0056	0.4064	0.3739	604.3903	0.1759
Bore/Drill Rigs	2010	51	120	0.45108	0.379	3.31487	4.84273	0.0047	0.3132	0.2881	505.1218	0.147
Bore/Drill Rigs	2010	121	175	0.420915	0.3537	3.03422	4.77962	0.005	0.2313	0.2128	533.3654	0.1553
Bore/Drill Rigs	2010	176	250	0.301395	0.2533	1.2308	4.60173	0.0049	0.1386	0.1275	525.165	0.1529
Bore/Drill Rigs	2010	251	500	0.270831	0.2276	1.39755	3.90774	0.0048	0.1306	0.1201	517.3193	0.1506
Bore/Drill Rigs	2010	501	750	0.19905	0.1673	1.08296	3.03556	0.005	0.1076	0.099	533.5969	0.1553

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Bore/Drill Rigs	2010	751	1000	0.189693	0.1594	0.96001	4.32965	0.0049	0.0985	0.0906	524.3394	0.1526
Bore/Drill Rigs	2011	6	15	1.019273	0.8565	4.60411	5.41672	0.0056	0.4003	0.3683	602.9382	0.1759
Bore/Drill Rigs	2011	16	25	1.019273	0.8565	4.60411	5.41672	0.0056	0.4003	0.3683	602.9382	0.1759
Bore/Drill Rigs	2011	26	50	1.019273	0.8565	4.60411	5.41672	0.0056	0.4003	0.3683	602.9382	0.1759
Bore/Drill Rigs	2011	51	120	0.435142	0.3656	3.32121	4.72727	0.0047	0.3033	0.2791	504.2171	0.1471
Bore/Drill Rigs	2011	121	175	0.404145	0.3396	3.03462	4.59259	0.005	0.2191	0.2016	531.8097	0.1552
Bore/Drill Rigs	2011	176	250	0.289986	0.2437	1.21102	4.34748	0.0049	0.1323	0.1217	522.3643	0.1524
Bore/Drill Rigs	2011	251	500	0.264468	0.2222	1.36917	3.72448	0.0048	0.1251	0.1151	512.0559	0.1494
Bore/Drill Rigs	2011	501	750	0.195451	0.1642	1.06361	2.89424	0.005	0.098	0.0901	532.4717	0.1554
Bore/Drill Rigs	2011	751	1000	0.200744	0.1687	0.96855	4.35634	0.0049	0.1008	0.0927	523.0129	0.1526
Bore/Drill Rigs	2012	6	15	1.043679	0.877	4.70758	5.45218	0.0056	0.4064	0.3738	601.7336	0.176
Bore/Drill Rigs	2012	16	25	1.043679	0.877	4.70758	5.45218	0.0056	0.4064	0.3738	601.7336	0.176
Bore/Drill Rigs	2012	26	50	1.043679	0.877	4.70758	5.45218	0.0056	0.4064	0.3738	601.7336	0.176
Bore/Drill Rigs	2012	51	120	0.439737	0.3695	3.34211	4.70854	0.0047	0.3017	0.2775	503.4212	0.1473
Bore/Drill Rigs	2012	121	175	0.401496	0.3374	3.05178	4.52801	0.005	0.2153	0.1981	531.6414	0.1555
Bore/Drill Rigs	2012	176	250	0.299105	0.2513	1.23628	4.31574	0.0049	0.1335	0.1228	520.9621	0.1524
Bore/Drill Rigs	2012	251	500	0.271498	0.2281	1.3973	3.71268	0.0048	0.1245	0.1145	511.0099	0.1495
Bore/Drill Rigs	2012	501	750	0.195855	0.1646	1.06675	2.78397	0.005	0.0938	0.0863	530.0759	0.1551
Bore/Drill Rigs	2012	751	1000	0.210392	0.1768	0.976	4.3794	0.0049	0.1027	0.0945	521.6821	0.1526
Bore/Drill Rigs	2013	6	15	1.019153	0.8564	4.71588	5.44353	0.0056	0.3981	0.3662	598.6307	0.176
Bore/Drill Rigs	2013	16	25	1.019153	0.8564	4.71588	5.44353	0.0056	0.3981	0.3662	598.6307	0.176
Bore/Drill Rigs	2013	26	50	1.019153	0.8564	4.71588	5.44353	0.0056	0.3981	0.3662	598.6307	0.176
Bore/Drill Rigs	2013	51	120	0.417421	0.3507	3.33685	4.52552	0.0047	0.2788	0.2565	501.3795	0.1474
Bore/Drill Rigs	2013	121	175	0.380511	0.3197	3.04123	4.3027	0.005	0.1988	0.1829	527.5089	0.1551
Bore/Drill Rigs	2013	176	250	0.286183	0.2405	1.21872	4.0183	0.0049	0.1236	0.1137	517.8225	0.1522
Bore/Drill Rigs	2013	251	500	0.260559	0.2189	1.35236	3.49492	0.0048	0.1149	0.1057	507.7707	0.1493
Bore/Drill Rigs	2013	501	750	0.192576	0.1618	1.07935	2.57636	0.005	0.0878	0.0807	527.7286	0.1552
Bore/Drill Rigs	2013	751	1000	0.160352	0.1347	0.96188	3.46658	0.0049	0.082	0.0754	519.8525	0.1528
Bore/Drill Rigs	2014	6	15	0.992547	0.834	4.69064	5.33236	0.0056	0.3818	0.3513	591.4418	0.1748
Bore/Drill Rigs	2014	16	25	0.992547	0.834	4.69064	5.33236	0.0056	0.3818	0.3513	591.4418	0.1748
Bore/Drill Rigs	2014	26	50	0.992547	0.834	4.69064	5.33236	0.0056	0.3818	0.3513	591.4418	0.1748
Bore/Drill Rigs	2014	51	120	0.379477	0.3189	3.32686	4.19515	0.0047	0.2491	0.2292	501.365	0.1482
Bore/Drill Rigs	2014	121	175	0.366384	0.3079	3.04026	4.06571	0.0049	0.186	0.1711	524.0522	0.1549
Bore/Drill Rigs	2014	176	250	0.258607	0.2173	1.17442	3.52453	0.0048	0.1049	0.0965	512.3362	0.1514
Bore/Drill Rigs	2014	251	500	0.240166	0.2018	1.239	3.18617	0.0048	0.1009	0.0929	506.1536	0.1496
Bore/Drill Rigs	2014	501	750	0.186731	0.1569	1.08678	2.37324	0.005	0.0805	0.074	525.2397	0.1552
Bore/Drill Rigs	2014	751	1000	0.12496	0.105	0.95104	2.98435	0.0049	0.0583	0.0536	516.5998	0.1527
Bore/Drill Rigs	2015	6	15	1.007942	0.847	4.73461	5.30345	0.0056	0.3792	0.3489	585.1707	0.1747
Bore/Drill Rigs	2015	16	25	1.007942	0.847	4.73461	5.30345	0.0056	0.3792	0.3489	585.1707	0.1747
Bore/Drill Rigs	2015	26	50	1.007942	0.847	4.73461	5.30345	0.0056	0.3792	0.3489	585.1707	0.1747
Bore/Drill Rigs	2015	51	120	0.378573	0.3181	3.3349	4.02775	0.0047	0.2393	0.2201	496.9494	0.1484
Bore/Drill Rigs	2015	121	175	0.359562	0.3021	3.03526	3.90422	0.0049	0.1756	0.1615	517.2068	0.1544
Bore/Drill Rigs	2015	176	250	0.253803	0.2133	1.17834	3.3245	0.0048	0.0996	0.0916	506.5047	0.1512
Bore/Drill Rigs	2015	251	500	0.237097	0.1992	1.25564	3.00307	0.0048	0.0959	0.0882	499.9023	0.1492
Bore/Drill Rigs	2015	501	750	0.19253	0.1618	1.10541	2.37558	0.005	0.0807	0.0743	520.4733	0.1554
Bore/Drill Rigs	2015	751	1000	0.130029	0.1093	0.95583	2.99386	0.0049	0.0585	0.0538	511.2533	0.1526
Bore/Drill Rigs	2016	6	15	1.034535	0.8693	4.79659	5.29821	0.0056	0.3826	0.352	579.3262	0.1747
Bore/Drill Rigs	2016	16	25	1.034535	0.8693	4.79659	5.29821	0.0056	0.3826	0.352	579.3262	0.1747
Bore/Drill Rigs	2016	26	50	1.034535	0.8693	4.79659	5.29821	0.0056	0.3826	0.352	579.3262	0.1747
Bore/Drill Rigs	2016	51	120	0.365397	0.307	3.32648	3.82088	0.0047	0.2214	0.2037	491.6548	0.1483
Bore/Drill Rigs	2016	121	175	0.33987	0.2856	3.02337	3.61582	0.0049	0.1619	0.1489	511.4327	0.1543
Bore/Drill Rigs	2016	176	250	0.229144	0.1925	1.13299	2.9021	0.0048	0.0852	0.0784	502.128	0.1515
Bore/Drill Rigs	2016	251	500	0.203588	0.1711	1.13338	2.50955	0.0048	0.0774	0.0713	494.7606	0.1492
Bore/Drill Rigs	2016	501	750	0.182018	0.1529	1.11952	2.16636	0.005	0.0719	0.0661	514.8829	0.1553
Bore/Drill Rigs	2016	751	1000	0.137307	0.1154	0.96409	3.00833	0.0049	0.0593	0.0545	505.9997	0.1526
Bore/Drill Rigs	2017	6	15	0.957137	0.8043	4.65158	5.06335	0.0055	0.3508	0.3227	563.9173	0.1728
Bore/Drill Rigs	2017	16	25	0.957137	0.8043	4.65158	5.06335	0.0055	0.3508	0.3227	563.9173	0.1728
Bore/Drill Rigs	2017	26	50	0.957137	0.8043	4.65158	5.06335	0.0055	0.3508	0.3227	563.9173	0.1728
Bore/Drill Rigs	2017	51	120	0.354597	0.298	3.33142	3.68536	0.0047	0.2111	0.1942	485.322	0.1487
Bore/Drill Rigs	2017	121	175	0.290928	0.2445	3.0013	2.98245	0.0049	0.1313	0.1208	503.7704	0.1544
Bore/Drill Rigs	2017	176	250	0.20647	0.1735	1.1021	2.5215	0.0048	0.0725	0.0667	494.1381	0.1514
Bore/Drill Rigs	2017	251	500	0.197407	0.1659	1.11891	2.36747	0.0048	0.0723	0.0665	489.4612	0.15
Bore/Drill Rigs	2017	501	750	0.184153	0.1547	1.13653	2.15656	0.0049	0.0715	0.0658	505.1248	0.1548
Bore/Drill Rigs	2017	751	1000	0.143503	0.1206	0.97127	3.02051	0.0049	0.0599	0.0551	498.1225	0.1526
Bore/Drill Rigs	2018	6	15	0.9127	0.7669	4.56857	4.86917	0.0055	0.3294	0.303	554.2038	0.1725
Bore/Drill Rigs	2018	16	25	0.9127	0.7669	4.56857	4.86917	0.0055	0.3294	0.303	554.2038	0.1725
Bore/Drill Rigs	2018	26	50	0.9127	0.7669	4.56857	4.86917	0.0055	0.3294	0.303	554.2038	0.1725
Bore/Drill Rigs	2018	51	120	0.320098	0.269	3.32325	3.39962	0.0048	0.1844	0.1696	479.6719	0.1493
Bore/Drill Rigs	2018	121	175	0.241793	0.2032	2.96107	2.35662	0.0049	0.1034	0.0952	495.0734	0.1541
Bore/Drill Rigs	2018	176	250	0.183927	0.1545	1.07328	2.15308	0.0048	0.0608	0.056	484.5605	0.1509
Bore/Drill Rigs	2018	251	500	0.160513	0.1349	1.03203	1.74562	0.0048	0.0522	0.0481	485.6893	0.1512
Bore/Drill Rigs	2018	501	750	0.14994	0.126	1.00559	1.67873	0.0049	0.0545	0.0501	489.7301	0.1525
Bore/Drill Rigs	2018	751	1000	0.149052	0.1252	0.97772	3.03153	0.0049	0.0604	0.0556	490.2427	0.1526

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Bore/Drill Rigs	2019	6	15	0.858717	0.7216	4.49723	4.71795	0.0055	0.3025	0.2783	545.293	0.1725
Bore/Drill Rigs	2019	16	25	0.858717	0.7216	4.49723	4.71795	0.0055	0.3025	0.2783	545.293	0.1725
Bore/Drill Rigs	2019	26	50	0.858717	0.7216	4.49723	4.71795	0.0055	0.3025	0.2783	545.293	0.1725
Bore/Drill Rigs	2019	51	120	0.317934	0.2672	3.33202	3.32102	0.0048	0.1802	0.1658	472.4527	0.1495
Bore/Drill Rigs	2019	121	175	0.215784	0.1813	2.95563	2.01775	0.0049	0.0876	0.0806	487.3552	0.1542
Bore/Drill Rigs	2019	176	250	0.170614	0.1434	1.06058	1.8943	0.0048	0.0537	0.0494	475.7896	0.1505
Bore/Drill Rigs	2019	251	500	0.153732	0.1292	1.03449	1.55098	0.0048	0.0479	0.0441	477.0462	0.1509
Bore/Drill Rigs	2019	501	750	0.138617	0.1165	0.97074	1.44865	0.0049	0.0478	0.044	481.8363	0.1524
Bore/Drill Rigs	2019	751	1000	0.153944	0.1294	0.98342	3.04139	0.0049	0.0609	0.056	482.3593	0.1526
Bore/Drill Rigs	2020	6	15	0.851825	0.7158	4.51013	4.6451	0.0055	0.2941	0.2706	535.2948	0.1731
Bore/Drill Rigs	2020	16	25	0.851825	0.7158	4.51013	4.6451	0.0055	0.2941	0.2706	535.2948	0.1731
Bore/Drill Rigs	2020	26	50	0.851825	0.7158	4.51013	4.6451	0.0055	0.2941	0.2706	535.2948	0.1731
Bore/Drill Rigs	2020	51	120	0.292949	0.2462	3.32347	3.06601	0.0048	0.1586	0.1459	463.5827	0.1499
Bore/Drill Rigs	2020	121	175	0.207426	0.1743	2.96948	1.87149	0.0049	0.0822	0.0757	477.722	0.1545
Bore/Drill Rigs	2020	176	250	0.169462	0.1424	1.06766	1.80732	0.0048	0.0521	0.0479	466.8342	0.151
Bore/Drill Rigs	2020	251	500	0.148188	0.1245	1.01263	1.40938	0.0048	0.0446	0.041	466.8219	0.151
Bore/Drill Rigs	2020	501	750	0.129293	0.1086	0.97413	1.23085	0.0049	0.0409	0.0377	473.6679	0.1532
Bore/Drill Rigs	2020	751	1000	0.158163	0.1329	0.98839	3.05008	0.0049	0.0612	0.0563	471.8492	0.1526
Bore/Drill Rigs	2021	6	15	0.845639	0.7106	4.54836	4.63432	0.0055	0.291	0.2677	535.3782	0.1732
Bore/Drill Rigs	2021	16	25	0.845639	0.7106	4.54836	4.63432	0.0055	0.291	0.2677	535.3782	0.1732
Bore/Drill Rigs	2021	26	50	0.845639	0.7106	4.54836	4.63432	0.0055	0.291	0.2677	535.3782	0.1732
Bore/Drill Rigs	2021	51	120	0.258162	0.2169	3.30573	2.73675	0.0048	0.131	0.1205	464.9725	0.1504
Bore/Drill Rigs	2021	121	175	0.183454	0.1542	2.9614	1.5983	0.0049	0.0697	0.0641	477.0482	0.1543
Bore/Drill Rigs	2021	176	250	0.157647	0.1325	1.06418	1.55102	0.0048	0.047	0.0433	467.9916	0.1514
Bore/Drill Rigs	2021	251	500	0.139268	0.117	1.01479	1.22069	0.0049	0.0409	0.0376	469.8158	0.1519
Bore/Drill Rigs	2021	501	750	0.116134	0.0976	0.97176	0.95517	0.0049	0.0334	0.0307	474.079	0.1533
Bore/Drill Rigs	2021	751	1000	0.161679	0.1359	0.99261	3.05759	0.0049	0.0614	0.0565	471.8158	0.1526
Bore/Drill Rigs	2022	6	15	0.751445	0.6314	4.33356	4.28474	0.0055	0.2406	0.2213	529.8703	0.1714
Bore/Drill Rigs	2022	16	25	0.751445	0.6314	4.33356	4.28474	0.0055	0.2406	0.2213	529.8703	0.1714
Bore/Drill Rigs	2022	26	50	0.751445	0.6314	4.33356	4.28474	0.0055	0.2406	0.2213	529.8703	0.1714
Bore/Drill Rigs	2022	51	120	0.227425	0.1911	3.25974	2.42459	0.0048	0.1071	0.0985	462.2674	0.1495
Bore/Drill Rigs	2022	121	175	0.162807	0.1368	2.95431	1.28831	0.0049	0.0567	0.0522	477.3719	0.1544
Bore/Drill Rigs	2022	176	250	0.136848	0.115	1.04734	1.16293	0.0048	0.0373	0.0343	468.7604	0.1516
Bore/Drill Rigs	2022	251	500	0.12801	0.1076	1.00212	1.03525	0.0048	0.0352	0.0324	467.1923	0.1511
Bore/Drill Rigs	2022	501	750	0.10809	0.0908	0.97519	0.77309	0.0049	0.028	0.0258	477.141	0.1543
Bore/Drill Rigs	2022	751	1000	0.067607	0.0568	0.9452	2.27813	0.0049	0.0182	0.0167	472.9214	0.153
Bore/Drill Rigs	2023	6	15	0.721105	0.6059	4.31077	4.20831	0.0055	0.2259	0.2078	531.9856	0.1721
Bore/Drill Rigs	2023	16	25	0.721105	0.6059	4.31077	4.20831	0.0055	0.2259	0.2078	531.9856	0.1721
Bore/Drill Rigs	2023	26	50	0.721105	0.6059	4.31077	4.20831	0.0055	0.2259	0.2078	531.9856	0.1721
Bore/Drill Rigs	2023	51	120	0.222828	0.1872	3.25754	2.35656	0.0048	0.1015	0.0934	461.214	0.1492
Bore/Drill Rigs	2023	121	175	0.149078	0.1253	2.9693	1.07773	0.005	0.0478	0.044	479.6465	0.1551
Bore/Drill Rigs	2023	176	250	0.131367	0.1104	1.04309	1.04653	0.0049	0.0339	0.0312	469.7058	0.1519
Bore/Drill Rigs	2023	251	500	0.120261	0.1011	0.98883	0.89764	0.0048	0.0302	0.0278	464.0407	0.1501
Bore/Drill Rigs	2023	501	750	0.108039	0.0908	0.98235	0.71664	0.005	0.0264	0.0243	479.2199	0.155
Bore/Drill Rigs	2023	751	1000	0.062646	0.0526	0.93615	2.26246	0.0049	0.0178	0.0164	472.0201	0.1527
Bore/Drill Rigs	2024	6	15	0.724524	0.6088	4.33098	4.15902	0.0055	0.2191	0.2016	529.8661	0.1714
Bore/Drill Rigs	2024	16	25	0.724524	0.6088	4.33098	4.15902	0.0055	0.2191	0.2016	529.8661	0.1714
Bore/Drill Rigs	2024	26	50	0.724524	0.6088	4.33098	4.15902	0.0055	0.2191	0.2016	529.8661	0.1714
Bore/Drill Rigs	2024	51	120	0.211018	0.1773	3.25123	2.21634	0.0048	0.0904	0.0832	461.2076	0.1492
Bore/Drill Rigs	2024	121	175	0.148172	0.1245	2.97803	1.02855	0.0049	0.0464	0.0427	478.9441	0.1549
Bore/Drill Rigs	2024	176	250	0.128551	0.108	1.04591	0.97542	0.0049	0.0321	0.0296	470.7115	0.1522
Bore/Drill Rigs	2024	251	500	0.122153	0.1026	0.99426	0.86053	0.0048	0.0293	0.0269	464.4796	0.1502
Bore/Drill Rigs	2024	501	750	0.10623	0.0893	0.98491	0.67139	0.005	0.0257	0.0236	480.2246	0.1553
Bore/Drill Rigs	2024	751	1000	0.067347	0.0566	0.94304	2.27306	0.0049	0.0181	0.0167	471.9261	0.1526
Bore/Drill Rigs	2025	6	15	0.703036	0.5907	4.2728	3.97786	0.0055	0.1931	0.1777	532.8212	0.1723
Bore/Drill Rigs	2025	16	25	0.703036	0.5907	4.2728	3.97786	0.0055	0.1931	0.1777	532.8212	0.1723
Bore/Drill Rigs	2025	26	50	0.703036	0.5907	4.2728	3.97786	0.0055	0.1931	0.1777	532.8212	0.1723
Bore/Drill Rigs	2025	51	120	0.183914	0.1545	3.21758	1.96363	0.0048	0.0674	0.062	459.8291	0.1487
Bore/Drill Rigs	2025	121	175	0.135422	0.1138	2.9736	0.88787	0.0049	0.0388	0.0357	478.2657	0.1547
Bore/Drill Rigs	2025	176	250	0.127813	0.1074	1.04484	0.95717	0.0049	0.0314	0.0289	470.6535	0.1522
Bore/Drill Rigs	2025	251	500	0.120956	0.1016	0.99738	0.82299	0.0048	0.0281	0.0259	467.2892	0.1511
Bore/Drill Rigs	2025	501	750	0.100521	0.0845	0.98349	0.59628	0.005	0.0226	0.0208	481.2495	0.1556
Bore/Drill Rigs	2025	751	1000	0.07426	0.0624	0.95339	2.28923	0.0049	0.0186	0.0171	471.9168	0.1526
Bore/Drill Rigs	2030	6	15	1.821	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Bore/Drill Rigs	2030	16	25	2.917	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Bore/Drill Rigs	2030	26	50	2.88	0.348	4.029	3.02	0.007	0.013	0.013	568.299	0.031
Bore/Drill Rigs	2030	51	120	3.773	0.183	3.434	1.415	0.006	0.012	0.012	568.299	0.016
Bore/Drill Rigs	2030	121	175	4.786	0.127	3.038	0.279	0.006	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2030	176	250	6.363	0.127	1.035	0.274	0.006	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2030	251	500	10.531	0.127	1.006	0.274	0.005	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2030	501	750	20.808	0.127	1.006	0.274	0.005	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2030	751	1000	31.441	0.127	1.006	2.372	0.005	0.021	0.021	568.299	0.011
Bore/Drill Rigs	2035	6	15	1.821	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Bore/Drill Rigs	2035	16	25	2.917	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Bore/Drill Rigs	2035	26	50	2.881	0.348	4.03	3.019	0.007	0.013	0.013	568.299	0.031
Bore/Drill Rigs	2035	51	120	3.768	0.183	3.434	1.411	0.006	0.012	0.012	568.3	0.016
Bore/Drill Rigs	2035	121	175	4.767	0.126	3.039	0.272	0.006	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2035	176	250	6.357	0.126	1.035	0.272	0.006	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2035	251	500	10.52	0.126	1.006	0.272	0.005	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2035	501	750	20.787	0.126	1.006	0.272	0.005	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2035	751	1000	31.372	0.126	1.006	2.372	0.005	0.021	0.021	568.299	0.011
Bore/Drill Rigs	2040	6	15	1.821	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Bore/Drill Rigs	2040	16	25	2.917	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Bore/Drill Rigs	2040	26	50	2.883	0.348	4.032	3.019	0.007	0.013	0.013	568.3	0.031
Bore/Drill Rigs	2040	51	120	3.77	0.183	3.435	1.411	0.006	0.012	0.012	568.299	0.016
Bore/Drill Rigs	2040	121	175	4.77	0.127	3.039	0.272	0.006	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2040	176	250	6.36	0.127	1.035	0.272	0.006	0.01	0.01	568.3	0.011
Bore/Drill Rigs	2040	251	500	10.526	0.127	1.006	0.272	0.005	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2040	501	750	20.799	0.127	1.006	0.272	0.005	0.01	0.01	568.299	0.011
Bore/Drill Rigs	2040	751	1000	31.389	0.127	1.006	2.372	0.005	0.021	0.021	568.299	0.011
Cement and Mortar Mixers	1990	6	15	2.932	1.804	4.999	9.999	1.049	0.975	0.975	568.299	0.162
Cement and Mortar Mixers	1990	16	25	9.992	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Cement and Mortar Mixers	2000	6	15	2.702	1.662	4.78	8.911	0.079	0.745	0.745	568.299	0.15
Cement and Mortar Mixers	2000	16	25	9.397	2.081	4.757	6.401	0.065	0.569	0.569	568.299	0.187
Cement and Mortar Mixers	2005	6	15	1.628	1.001	3.791	6.3	0.079	0.465	0.465	568.299	0.09
Cement and Mortar Mixers	2005	16	25	6.992	1.548	3.786	5.963	0.065	0.471	0.471	568.299	0.139
Cement and Mortar Mixers	2010	6	15	1.153	0.709	3.492	4.545	0.008	0.26	0.26	568.299	0.064
Cement and Mortar Mixers	2010	16	25	5.056	1.119	3.049	5.286	0.007	0.346	0.346	568.299	0.101
Cement and Mortar Mixers	2011	6	15	1.114	0.685	3.479	4.351	0.008	0.231	0.231	568.299	0.061
Cement and Mortar Mixers	2011	16	25	4.656	1.031	2.897	5.144	0.007	0.319	0.319	568.299	0.093
Cement and Mortar Mixers	2012	6	15	1.096	0.674	3.472	4.272	0.008	0.209	0.209	568.299	0.06
Cement and Mortar Mixers	2012	16	25	4.288	0.949	2.757	5.012	0.007	0.293	0.293	568.299	0.085
Cement and Mortar Mixers	2013	6	15	1.087	0.669	3.469	4.223	0.008	0.191	0.191	568.299	0.06
Cement and Mortar Mixers	2013	16	25	3.952	0.875	2.63	4.887	0.007	0.269	0.269	568.299	0.078
Cement and Mortar Mixers	2014	6	15	1.082	0.666	3.469	4.191	0.008	0.177	0.177	568.299	0.06
Cement and Mortar Mixers	2014	16	25	3.783	0.837	2.57	4.793	0.007	0.253	0.253	568.299	0.075
Cement and Mortar Mixers	2015	6	15	1.079	0.663	3.469	4.168	0.008	0.171	0.171	568.3	0.059
Cement and Mortar Mixers	2015	16	25	3.664	0.811	2.531	4.712	0.007	0.24	0.24	568.299	0.073
Cement and Mortar Mixers	2016	6	15	1.076	0.662	3.469	4.153	0.008	0.167	0.167	568.3	0.059
Cement and Mortar Mixers	2016	16	25	3.558	0.788	2.496	4.636	0.007	0.227	0.227	568.299	0.071
Cement and Mortar Mixers	2017	6	15	1.075	0.661	3.469	4.145	0.008	0.165	0.165	568.299	0.059
Cement and Mortar Mixers	2017	16	25	3.466	0.767	2.466	4.567	0.007	0.216	0.216	568.299	0.069
Cement and Mortar Mixers	2018	6	15	1.075	0.661	3.469	4.142	0.008	0.163	0.163	568.299	0.059
Cement and Mortar Mixers	2018	16	25	3.384	0.749	2.44	4.504	0.007	0.205	0.205	568.299	0.067
Cement and Mortar Mixers	2019	6	15	1.075	0.661	3.469	4.142	0.008	0.162	0.162	568.299	0.059
Cement and Mortar Mixers	2019	16	25	3.321	0.735	2.417	4.469	0.007	0.196	0.196	568.299	0.066
Cement and Mortar Mixers	2020	6	15	1.075	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2020	16	25	3.265	0.723	2.397	4.442	0.007	0.187	0.187	568.299	0.065
Cement and Mortar Mixers	2021	6	15	1.075	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2021	16	25	3.219	0.712	2.381	4.419	0.007	0.18	0.18	568.299	0.064
Cement and Mortar Mixers	2022	6	15	1.075	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2022	16	25	3.182	0.704	2.367	4.399	0.007	0.175	0.175	568.299	0.063
Cement and Mortar Mixers	2023	6	15	1.075	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2023	16	25	3.151	0.697	2.356	4.382	0.007	0.172	0.172	568.299	0.062
Cement and Mortar Mixers	2024	6	15	1.075	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2024	16	25	3.129	0.693	2.349	4.369	0.007	0.17	0.17	568.299	0.062
Cement and Mortar Mixers	2025	6	15	1.075	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2025	16	25	3.113	0.689	2.344	4.357	0.007	0.168	0.168	568.299	0.062
Cement and Mortar Mixers	2030	6	15	1.075	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2030	16	25	3.095	0.685	2.339	4.333	0.007	0.162	0.162	568.299	0.061
Cement and Mortar Mixers	2035	6	15	1.075	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2035	16	25	3.095	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Cement and Mortar Mixers	2040	6	15	1.075	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
Cement and Mortar Mixers	2040	16	25	3.095	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	1990	16	25	4.947	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Concrete/Industrial Saws	1990	26	50	20.26	4.943	9.962	8.008	0.871	1.297	1.297	568.299	0.446
Concrete/Industrial Saws	1990	51	120	24.821	2.467	5.934	15.608	0.791	1.385	1.385	568.299	0.222
Concrete/Industrial Saws	1990	121	175	45.581	2.097	5.376	15.952	0.758	1.172	1.172	568.3	0.189
Concrete/Industrial Saws	2000	16	25	4.266	1.908	4.438	6.326	0.065	0.555	0.555	568.299	0.172
Concrete/Industrial Saws	2000	26	50	14.64	3.572	7.547	6.784	0.066	0.789	0.789	568.299	0.322
Concrete/Industrial Saws	2000	51	120	16.713	1.661	4.354	9.903	0.06	0.77	0.77	568.299	0.149
Concrete/Industrial Saws	2000	121	175	24.252	1.115	3.531	9.017	0.057	0.452	0.452	568.3	0.1
Concrete/Industrial Saws	2005	16	25	1.899	0.849	2.519	5.321	0.065	0.333	0.333	568.299	0.076
Concrete/Industrial Saws	2005	26	50	13.023	3.177	6.994	6.32	0.066	0.732	0.732	568.299	0.286
Concrete/Industrial Saws	2005	51	120	14.366	1.428	4.05	8.401	0.06	0.714	0.714	568.299	0.128
Concrete/Industrial Saws	2005	121	175	20.277	0.932	3.223	7.685	0.057	0.393	0.393	568.299	0.084

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Concrete/Industrial Saws	2010	16	25	1.545	0.691	2.339	4.411	0.007	0.216	0.216	568.299	0.062
Concrete/Industrial Saws	2010	26	50	9.492	2.316	6.039	5.774	0.007	0.565	0.565	568.299	0.208
Concrete/Industrial Saws	2010	51	120	10.348	1.028	3.813	6.592	0.006	0.551	0.551	568.299	0.092
Concrete/Industrial Saws	2010	121	175	14.859	0.683	3.116	5.838	0.006	0.306	0.306	568.299	0.061
Concrete/Industrial Saws	2011	16	25	1.539	0.688	2.339	4.372	0.007	0.193	0.193	568.299	0.062
Concrete/Industrial Saws	2011	26	50	8.781	2.142	5.854	5.68	0.007	0.534	0.534	568.299	0.193
Concrete/Industrial Saws	2011	51	120	9.617	0.955	3.775	6.222	0.006	0.524	0.524	568.299	0.086
Concrete/Industrial Saws	2011	121	175	13.917	0.64	3.104	5.491	0.006	0.293	0.293	568.299	0.057
Concrete/Industrial Saws	2012	16	25	1.535	0.686	2.339	4.348	0.007	0.173	0.173	568.299	0.061
Concrete/Industrial Saws	2012	26	50	8.071	1.969	5.671	5.59	0.007	0.503	0.503	568.299	0.177
Concrete/Industrial Saws	2012	51	120	8.902	0.884	3.74	5.844	0.006	0.489	0.489	568.299	0.079
Concrete/Industrial Saws	2012	121	175	12.992	0.597	3.094	5.146	0.006	0.272	0.272	568.299	0.053
Concrete/Industrial Saws	2013	16	25	1.533	0.685	2.339	4.335	0.007	0.168	0.168	568.299	0.061
Concrete/Industrial Saws	2013	26	50	7.362	1.796	5.489	5.377	0.007	0.463	0.463	568.299	0.162
Concrete/Industrial Saws	2013	51	120	8.209	0.816	3.706	5.483	0.006	0.451	0.451	568.299	0.073
Concrete/Industrial Saws	2013	121	175	12.096	0.556	3.086	4.829	0.006	0.25	0.25	568.299	0.05
Concrete/Industrial Saws	2014	16	25	1.532	0.685	2.339	4.332	0.007	0.164	0.164	568.299	0.061
Concrete/Industrial Saws	2014	26	50	6.665	1.626	5.313	5.172	0.007	0.424	0.424	568.299	0.146
Concrete/Industrial Saws	2014	51	120	7.539	0.749	3.675	5.16	0.006	0.412	0.412	568.299	0.067
Concrete/Industrial Saws	2014	121	175	11.238	0.517	3.08	4.531	0.006	0.228	0.228	568.299	0.046
Concrete/Industrial Saws	2015	16	25	1.532	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
Concrete/Industrial Saws	2015	26	50	6.027	1.47	5.165	4.989	0.007	0.386	0.386	568.299	0.132
Concrete/Industrial Saws	2015	51	120	6.878	0.683	3.647	4.789	0.006	0.372	0.372	568.3	0.061
Concrete/Industrial Saws	2015	121	175	10.333	0.475	3.077	4.112	0.006	0.207	0.207	568.299	0.042
Concrete/Industrial Saws	2016	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2016	26	50	5.419	1.322	5.029	4.818	0.007	0.35	0.35	568.3	0.119
Concrete/Industrial Saws	2016	51	120	6.237	0.62	3.62	4.432	0.006	0.333	0.333	568.3	0.055
Concrete/Industrial Saws	2016	121	175	9.455	0.435	3.074	3.708	0.006	0.186	0.186	568.299	0.039
Concrete/Industrial Saws	2017	16	25	1.532	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2017	26	50	4.816	1.175	4.894	4.652	0.007	0.313	0.313	568.299	0.106
Concrete/Industrial Saws	2017	51	120	5.61	0.557	3.595	4.086	0.006	0.294	0.294	568.299	0.05
Concrete/Industrial Saws	2017	121	175	8.602	0.395	3.073	3.316	0.006	0.165	0.165	568.299	0.035
Concrete/Industrial Saws	2018	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2018	26	50	4.233	1.032	4.766	4.492	0.007	0.277	0.277	568.299	0.093
Concrete/Industrial Saws	2018	51	120	5.014	0.498	3.571	3.754	0.006	0.256	0.256	568.299	0.044
Concrete/Industrial Saws	2018	121	175	7.805	0.359	3.072	2.945	0.006	0.145	0.145	568.299	0.032
Concrete/Industrial Saws	2019	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2019	26	50	3.686	0.899	4.645	4.338	0.007	0.242	0.242	568.299	0.081
Concrete/Industrial Saws	2019	51	120	4.463	0.443	3.55	3.441	0.006	0.22	0.22	568.3	0.04
Concrete/Industrial Saws	2019	121	175	7.177	0.33	3.072	2.618	0.006	0.128	0.128	568.299	0.029
Concrete/Industrial Saws	2020	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2020	26	50	3.271	0.798	4.552	4.196	0.007	0.212	0.212	568.299	0.072
Concrete/Industrial Saws	2020	51	120	4.042	0.401	3.535	3.163	0.006	0.19	0.19	568.299	0.036
Concrete/Industrial Saws	2020	121	175	6.669	0.306	3.072	2.324	0.006	0.114	0.114	568.299	0.027
Concrete/Industrial Saws	2021	16	25	1.532	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2021	26	50	2.959	0.722	4.481	4.063	0.007	0.184	0.184	568.3	0.065
Concrete/Industrial Saws	2021	51	120	3.721	0.369	3.523	2.913	0.006	0.166	0.166	568.299	0.033
Concrete/Industrial Saws	2021	121	175	6.227	0.286	3.072	2.055	0.006	0.101	0.101	568.299	0.025
Concrete/Industrial Saws	2022	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2022	26	50	2.705	0.66	4.422	3.936	0.007	0.158	0.158	568.3	0.059
Concrete/Industrial Saws	2022	51	120	3.457	0.343	3.514	2.686	0.006	0.144	0.144	568.299	0.031
Concrete/Industrial Saws	2022	121	175	5.819	0.267	3.072	1.806	0.006	0.089	0.089	568.3	0.024
Concrete/Industrial Saws	2023	16	25	1.532	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2023	26	50	2.484	0.606	4.372	3.815	0.007	0.134	0.134	568.299	0.054
Concrete/Industrial Saws	2023	51	120	3.223	0.32	3.507	2.478	0.006	0.123	0.123	568.3	0.028
Concrete/Industrial Saws	2023	121	175	5.453	0.25	3.072	1.599	0.006	0.077	0.077	568.299	0.022
Concrete/Industrial Saws	2024	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2024	26	50	2.303	0.561	4.33	3.701	0.007	0.115	0.115	568.3	0.05
Concrete/Industrial Saws	2024	51	120	3.023	0.3	3.5	2.315	0.006	0.106	0.106	568.299	0.027
Concrete/Industrial Saws	2024	121	175	5.117	0.235	3.072	1.418	0.006	0.067	0.067	568.299	0.021
Concrete/Industrial Saws	2025	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2025	26	50	2.153	0.525	4.297	3.592	0.007	0.099	0.099	568.299	0.047
Concrete/Industrial Saws	2025	51	120	2.849	0.283	3.495	2.176	0.006	0.089	0.089	568.3	0.025
Concrete/Industrial Saws	2025	121	175	4.8	0.22	3.073	1.249	0.006	0.056	0.056	568.3	0.019
Concrete/Industrial Saws	2030	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2030	26	50	1.679	0.409	4.199	3.222	0.007	0.041	0.041	568.299	0.036
Concrete/Industrial Saws	2030	51	120	2.226	0.221	3.48	1.667	0.006	0.036	0.036	568.299	0.019
Concrete/Industrial Saws	2030	121	175	3.551	0.163	3.074	0.59	0.006	0.025	0.025	568.299	0.014
Concrete/Industrial Saws	2035	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Concrete/Industrial Saws	2035	26	50	1.54	0.375	4.174	3.107	0.007	0.021	0.021	568.3	0.033
Concrete/Industrial Saws	2035	51	120	2.015	0.2	3.476	1.491	0.006	0.018	0.018	568.299	0.018
Concrete/Industrial Saws	2035	121	175	3.121	0.143	3.075	0.374	0.006	0.014	0.014	568.299	0.012
Concrete/Industrial Saws	2040	16	25	1.532	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Concrete/Industrial Saws	2040	26	50	1.532	0.373	4.175	3.058	0.007	0.014	0.014	568.299	0.033
Concrete/Industrial Saws	2040	51	120	1.968	0.195	3.477	1.434	0.006	0.013	0.013	568.299	0.017
Concrete/Industrial Saws	2040	121	175	2.965	0.136	3.076	0.297	0.006	0.011	0.011	568.3	0.012
Cranes	1990	26	50	13.537	5.179	10.396	8.093	0.871	1.345	1.345	568.299	0.467
Cranes	1990	51	120	14.178	2.508	5.983	15.674	0.791	1.427	1.427	568.299	0.226
Cranes	1990	121	175	18.412	2.033	5.387	15.601	0.758	1.142	1.142	568.299	0.183
Cranes	1990	176	250	25.703	2.033	5.387	15.601	0.758	1.142	1.142	568.299	0.183
Cranes	1990	251	500	36.191	1.782	12.529	14.718	0.662	0.968	0.968	568.299	0.16
Cranes	1990	501	750	60.897	1.782	12.529	14.718	1.018	0.986	0.986	568.299	0.16
Cranes	1990	1001	9999	194.538	1.778	12.529	14.718	1.018	0.98	0.98	568.299	0.16
Cranes	2000	26	50	12.119	4.636	9.507	7.163	0.066	0.958	0.958	568.3	0.418
Cranes	2000	51	120	10.887	1.926	4.81	10.905	0.06	0.93	0.93	568.299	0.173
Cranes	2000	121	175	11.77	1.299	3.932	9.929	0.057	0.552	0.552	568.299	0.117
Cranes	2000	176	250	14.291	1.13	3.285	9.635	0.057	0.47	0.47	568.299	0.101
Cranes	2000	251	500	20.704	1.019	5.545	9.139	0.05	0.411	0.411	568.299	0.092
Cranes	2000	501	750	34.838	1.019	5.545	9.139	0.052	0.411	0.411	568.299	0.092
Cranes	2000	1001	9999	116.509	1.064	6.045	9.643	0.052	0.394	0.394	568.299	0.096
Cranes	2005	26	50	10.96	4.193	8.893	6.736	0.066	0.898	0.898	568.3	0.378
Cranes	2005	51	120	9.53	1.686	4.493	9.357	0.06	0.875	0.875	568.299	0.152
Cranes	2005	121	175	10.036	1.108	3.6	8.542	0.057	0.487	0.487	568.299	0.099
Cranes	2005	176	250	10.718	0.847	2.367	8.163	0.057	0.343	0.343	568.299	0.076
Cranes	2005	251	500	15.234	0.75	3.287	7.448	0.05	0.303	0.303	568.299	0.067
Cranes	2005	501	750	25.971	0.76	3.283	7.598	0.052	0.305	0.305	568.299	0.068
Cranes	2005	1001	9999	91.74	0.838	3.718	8.503	0.052	0.293	0.293	568.299	0.075
Cranes	2010	26	50	2.786882	2.3418	7.37084	6.30432	0.0053	0.6648	0.6116	575.653	0.1676
Cranes	2010	51	120	1.626435	1.3667	5.06328	11.2099	0.0048	0.8338	0.7671	522.2692	0.152
Cranes	2010	121	175	0.999512	0.8399	3.96843	9.06236	0.0049	0.4835	0.4448	527.7153	0.1536
Cranes	2010	176	250	0.826087	0.6941	2.85637	8.39974	0.0049	0.3833	0.3526	525.6477	0.153
Cranes	2010	251	500	0.629842	0.5292	4.77692	7.05496	0.0049	0.2916	0.2683	524.2494	0.1526
Cranes	2010	501	750	0.3105	0.2609	1.59747	4.49648	0.0049	0.149	0.1371	523.8164	0.1525
Cranes	2010	1001	9999	0.387608	0.3257	1.00751	6.39903	0.0049	0.1506	0.1386	524.505	0.1527
Cranes	2011	26	50	2.66715	2.2411	7.21121	6.2271	0.0053	0.6409	0.5896	574.2181	0.1676
Cranes	2011	51	120	1.579127	1.3269	5.02442	10.9169	0.0048	0.8101	0.7453	521.0055	0.152
Cranes	2011	121	175	0.990868	0.8326	3.9727	8.96629	0.0049	0.4797	0.4414	526.3466	0.1536
Cranes	2011	176	250	0.818849	0.6881	2.82731	8.29972	0.0049	0.3791	0.3488	524.3412	0.153
Cranes	2011	251	500	0.613791	0.5158	4.61471	6.85019	0.0049	0.283	0.2604	523.002	0.1526
Cranes	2011	501	750	0.317708	0.267	1.60931	4.47987	0.0049	0.1509	0.1388	522.4977	0.1525
Cranes	2011	1001	9999	0.392668	0.3299	1.01544	6.442	0.0049	0.1534	0.1411	523.1938	0.1527
Cranes	2012	26	50	2.575229	2.1639	7.10245	6.16881	0.0053	0.6225	0.5727	572.7834	0.1676
Cranes	2012	51	120	1.549708	1.3022	4.99918	10.7338	0.0048	0.7952	0.7316	519.357	0.1519
Cranes	2012	121	175	0.992021	0.8336	3.98552	8.9416	0.0049	0.4808	0.4423	525.0081	0.1536
Cranes	2012	176	250	0.82388	0.6923	2.83394	8.30152	0.0049	0.3805	0.3501	522.9802	0.153
Cranes	2012	251	500	0.612564	0.5147	4.5553	6.7893	0.0049	0.2811	0.2586	521.6408	0.1526
Cranes	2012	501	750	0.324471	0.2726	1.62066	4.45619	0.0049	0.1517	0.1396	521.1061	0.1524
Cranes	2012	1001	9999	0.397633	0.3341	1.02322	6.48415	0.0049	0.1561	0.1436	521.8825	0.1527
Cranes	2013	26	50	2.54578	2.1392	7.11869	6.10837	0.0053	0.6103	0.5615	569.9097	0.1676
Cranes	2013	51	120	1.506211	1.2656	4.95084	10.4655	0.0048	0.7751	0.7131	516.6909	0.1519
Cranes	2013	121	175	0.982629	0.8257	3.98019	8.83222	0.0049	0.4764	0.4382	522.3332	0.1536
Cranes	2013	176	250	0.813083	0.6832	2.80099	8.15558	0.0049	0.3745	0.3446	520.3446	0.153
Cranes	2013	251	500	0.59291	0.4982	4.36265	6.51563	0.0049	0.27	0.2484	519.0961	0.1526
Cranes	2013	501	750	0.327629	0.2753	1.62896	4.36739	0.0049	0.1503	0.1382	518.355	0.1524
Cranes	2013	1001	9999	0.402502	0.3382	1.03085	6.5255	0.0049	0.1588	0.1461	519.26	0.1527
Cranes	2014	26	50	2.516704	2.1147	7.12566	6.09324	0.0053	0.6073	0.5587	567.0058	0.1676
Cranes	2014	51	120	1.481452	1.2448	4.92305	10.3017	0.0048	0.7649	0.7037	514.0286	0.1519
Cranes	2014	121	175	0.944168	0.7934	3.93186	8.47052	0.0049	0.457	0.4205	519.5114	0.1535
Cranes	2014	176	250	0.786323	0.6607	2.72625	7.86026	0.0049	0.3603	0.3314	517.6833	0.153
Cranes	2014	251	500	0.574656	0.4829	4.17708	6.26415	0.0049	0.2596	0.2388	516.5784	0.1527
Cranes	2014	501	750	0.333096	0.2799	1.63547	4.32737	0.0049	0.1507	0.1387	515.6071	0.1524
Cranes	2014	1001	9999	0.143297	0.1204	0.94782	2.28075	0.0049	0.0544	0.05	516.6375	0.1527
Cranes	2015	26	50	2.483294	2.0867	7.12517	6.07491	0.0053	0.6005	0.5525	561.2236	0.1675
Cranes	2015	51	120	1.444394	1.2137	4.88366	10.0604	0.0048	0.7467	0.6869	508.8366	0.1519
Cranes	2015	121	175	0.930749	0.7821	3.91821	8.3254	0.0049	0.4501	0.4141	514.2598	0.1535
Cranes	2015	176	250	0.764242	0.6422	2.65334	7.62156	0.0049	0.3479	0.3201	512.4484	0.153
Cranes	2015	251	500	0.565318	0.475	4.10962	6.12404	0.0049	0.2534	0.2331	511.1972	0.1526
Cranes	2015	501	750	0.340293	0.2859	1.64279	4.31183	0.0049	0.1518	0.1397	510.3342	0.1524
Cranes	2015	1001	9999	0.156078	0.1311	0.95679	2.29477	0.0049	0.0554	0.051	511.3924	0.1527
Cranes	2016	26	50	2.535089	2.1302	7.2684	6.11027	0.0053	0.6102	0.5614	555.4414	0.1675
Cranes	2016	51	120	1.373103	1.1538	4.79702	9.60772	0.0048	0.7095	0.6527	503.5992	0.1519
Cranes	2016	121	175	0.884915	0.7436	3.86156	7.88718	0.0049	0.4273	0.3931	508.9515	0.1535
Cranes	2016	176	250	0.741297	0.6229	2.5822	7.38068	0.0049	0.3349	0.3081	507.1552	0.153
Cranes	2016	251	500	0.527153	0.443	3.83445	5.64865	0.0049	0.2332	0.2145	506.0882	0.1527
Cranes	2016	501	750	0.347738	0.2922	1.65024	4.31387	0.0049	0.1529	0.1406	505.0695	0.1523
Cranes	2016	1001	9999	0.168646	0.1417	0.96562	2.30856	0.0049	0.0565	0.0519	506.1474	0.1527

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Cranes	2017	26	50	2.585562	2.1726	7.40804	6.14479	0.0053	0.6199	0.5703	546.7815	0.1675
Cranes	2017	51	120	1.304913	1.0965	4.71022	9.15389	0.0048	0.6777	0.6235	495.7534	0.1519
Cranes	2017	121	175	0.828528	0.6962	3.78744	7.36009	0.0049	0.3974	0.3656	501.093	0.1535
Cranes	2017	176	250	0.667136	0.5606	2.38452	6.65526	0.0049	0.2967	0.273	499.3721	0.153
Cranes	2017	251	500	0.488095	0.4101	3.54746	5.23184	0.0049	0.2124	0.1954	498.439	0.1527
Cranes	2017	501	750	0.34114	0.2867	1.63305	4.1579	0.0049	0.1471	0.1353	497.1865	0.1523
Cranes	2017	1001	9999	0.181003	0.1521	0.97429	2.32212	0.0049	0.0575	0.0529	498.2798	0.1527
Cranes	2018	26	50	2.466121	2.0722	7.24744	6.00385	0.0053	0.624	0.5741	538.1219	0.1675
Cranes	2018	51	120	1.108698	0.9316	4.45237	7.93075	0.0048	0.5831	0.5364	488.1172	0.152
Cranes	2018	121	175	0.739223	0.6212	3.66571	6.5572	0.0049	0.3511	0.323	493.0451	0.1535
Cranes	2018	176	250	0.574877	0.4831	2.13445	5.77298	0.0049	0.2499	0.2299	491.4069	0.153
Cranes	2018	251	500	0.440014	0.3697	3.1871	4.63433	0.0049	0.187	0.172	490.8912	0.1528
Cranes	2018	501	750	0.322048	0.2706	1.61304	3.7688	0.0049	0.1368	0.1259	489.0536	0.1522
Cranes	2018	1001	9999	0.193147	0.1623	0.98282	2.33544	0.0049	0.0585	0.0538	490.4122	0.1527
Cranes	2019	26	50	2.434147	2.0454	7.24465	5.95197	0.0053	0.6148	0.5657	529.4626	0.1675
Cranes	2019	51	120	0.955908	0.8032	4.26491	6.95786	0.0048	0.5005	0.4604	480.3251	0.152
Cranes	2019	121	175	0.675554	0.5677	3.5982	5.94857	0.0049	0.3177	0.2923	485.1817	0.1535
Cranes	2019	176	250	0.50769	0.4266	1.94079	5.0842	0.0049	0.2155	0.1983	483.4616	0.153
Cranes	2019	251	500	0.415431	0.3491	2.96893	4.29654	0.0049	0.173	0.1592	483.1422	0.1529
Cranes	2019	501	750	0.299943	0.252	1.44568	3.42803	0.0049	0.1238	0.1139	481.1192	0.1522
Cranes	2019	1001	9999	0.205078	0.1723	0.9912	2.34854	0.0049	0.0595	0.0547	482.5446	0.1527
Cranes	2020	26	50	2.47956	2.0835	7.37625	5.98471	0.0053	0.6237	0.5738	517.9263	0.1675
Cranes	2020	51	120	0.871016	0.7319	4.17141	6.38117	0.0048	0.4529	0.4167	469.8821	0.152
Cranes	2020	121	175	0.638941	0.5369	3.56232	5.5697	0.0049	0.2978	0.274	474.5939	0.1535
Cranes	2020	176	250	0.45669	0.3837	1.7904	4.56329	0.0049	0.1881	0.1731	472.9488	0.153
Cranes	2020	251	500	0.381547	0.3206	2.66037	3.86243	0.0049	0.1548	0.1424	472.5579	0.1528
Cranes	2020	501	750	0.287724	0.2418	1.44353	3.10471	0.0049	0.116	0.1067	470.4254	0.1521
Cranes	2020	1001	9999	0.216797	0.1822	0.99943	2.3614	0.0049	0.0604	0.0556	472.0545	0.1527
Cranes	2021	26	50	2.516467	2.1145	7.48883	6.01375	0.0053	0.6311	0.5806	517.8995	0.1675
Cranes	2021	51	120	0.77522	0.6514	4.06507	5.73085	0.0048	0.3983	0.3664	469.8867	0.152
Cranes	2021	121	175	0.593174	0.4984	3.51648	5.1125	0.0049	0.2728	0.251	474.5458	0.1535
Cranes	2021	176	250	0.415905	0.3495	1.67824	4.10439	0.0049	0.1666	0.1533	472.9057	0.1529
Cranes	2021	251	500	0.351498	0.2954	2.44833	3.44253	0.0049	0.1385	0.1274	472.4553	0.1528
Cranes	2021	501	750	0.271141	0.2278	1.43956	2.72739	0.0049	0.1068	0.0982	470.5495	0.1522
Cranes	2021	1001	9999	0.228304	0.1918	1.00751	2.37402	0.0049	0.0614	0.0565	472.0545	0.1527
Cranes	2022	26	50	2.41359	2.0281	7.36828	5.8991	0.0053	0.6031	0.5549	517.8722	0.1675
Cranes	2022	51	120	0.687651	0.5778	3.97198	5.14893	0.0048	0.3459	0.3182	469.9929	0.152
Cranes	2022	121	175	0.543527	0.4567	3.4753	4.6169	0.0049	0.2462	0.2265	474.5887	0.1535
Cranes	2022	176	250	0.375691	0.3157	1.60164	3.54149	0.0049	0.147	0.1353	472.9832	0.153
Cranes	2022	251	500	0.31051	0.2609	2.21201	2.89369	0.0049	0.1173	0.1079	472.1806	0.1527
Cranes	2022	501	750	0.238348	0.2003	1.28309	2.25087	0.0049	0.0888	0.0817	470.4755	0.1522
Cranes	2022	1001	9999	0.239599	0.2013	1.01544	2.38641	0.0049	0.0623	0.0573	472.0545	0.1527
Cranes	2023	26	50	2.435567	2.0466	7.45254	5.9225	0.0053	0.6076	0.559	517.8722	0.1675
Cranes	2023	51	120	0.656595	0.5517	3.9444	4.87461	0.0048	0.3227	0.2969	469.8891	0.152
Cranes	2023	121	175	0.503663	0.4232	3.44284	4.22184	0.0049	0.2237	0.2058	474.595	0.1535
Cranes	2023	176	250	0.353966	0.2974	1.55262	3.22938	0.0049	0.1349	0.1241	472.9738	0.153
Cranes	2023	251	500	0.281202	0.2363	2.01	2.5105	0.0049	0.1015	0.0934	472.294	0.1527
Cranes	2023	501	750	0.23207	0.195	1.28213	2.07257	0.0049	0.0841	0.0774	470.2508	0.1521
Cranes	2023	1001	9999	0.250681	0.2106	1.02322	2.39857	0.0049	0.0632	0.0581	472.0545	0.1527
Cranes	2024	26	50	2.304795	1.9367	7.26852	5.78796	0.0053	0.5771	0.531	517.8722	0.1675
Cranes	2024	51	120	0.623876	0.5242	3.90649	4.61888	0.0048	0.3014	0.2773	469.9032	0.152
Cranes	2024	121	175	0.453764	0.3813	3.3893	3.7029	0.0049	0.1962	0.1805	474.6358	0.1535
Cranes	2024	176	250	0.334159	0.2808	1.50208	2.96596	0.0049	0.1234	0.1135	472.9638	0.153
Cranes	2024	251	500	0.274315	0.2305	1.93263	2.38291	0.0049	0.0963	0.0886	472.0664	0.1527
Cranes	2024	501	750	0.227031	0.1908	1.28334	1.89979	0.0049	0.0796	0.0732	470.3306	0.1521
Cranes	2024	1001	9999	0.261551	0.2198	1.03085	2.4105	0.0049	0.0641	0.059	472.0545	0.1527
Cranes	2025	26	50	2.155227	1.811	7.07168	5.63562	0.0053	0.5427	0.4993	517.8722	0.1675
Cranes	2025	51	120	0.551396	0.4633	3.83081	4.13532	0.0048	0.2604	0.2395	469.5332	0.1519
Cranes	2025	121	175	0.397698	0.3342	3.33544	3.16038	0.0049	0.1663	0.153	474.7477	0.1535
Cranes	2025	176	250	0.31508	0.2648	1.4697	2.68128	0.0049	0.114	0.1049	472.9798	0.153
Cranes	2025	251	500	0.259914	0.2184	1.83363	2.15424	0.0049	0.0879	0.0809	471.9671	0.1526
Cranes	2025	501	750	0.204336	0.1717	1.27366	1.63763	0.0049	0.0677	0.0623	470.2756	0.1521
Cranes	2025	1001	9999	0.272209	0.2287	1.03833	2.42219	0.0049	0.065	0.0598	472.0545	0.1527
Cranes	2030	26	50	1.788	0.684	5.366	3.598	0.007	0.075	0.075	568.299	0.061
Cranes	2030	51	120	1.941	0.343	3.812	1.987	0.006	0.067	0.067	568.299	0.03
Cranes	2030	121	175	2.293	0.253	3.356	0.916	0.006	0.042	0.042	568.299	0.022
Cranes	2030	176	250	2.835	0.224	1.147	0.748	0.006	0.024	0.024	568.299	0.02
Cranes	2030	251	500	4.512	0.222	1.09	0.697	0.005	0.023	0.023	568.299	0.02
Cranes	2030	501	750	7.602	0.222	1.09	0.709	0.005	0.024	0.024	568.3	0.02
Cranes	2030	1001	9999	26.83	0.245	1.108	2.8	0.005	0.043	0.043	568.299	0.022
Cranes	2035	26	50	1.568	0.6	5.292	3.401	0.007	0.039	0.039	568.299	0.054
Cranes	2035	51	120	1.696	0.3	3.801	1.676	0.006	0.036	0.036	568.3	0.027
Cranes	2035	121	175	1.923	0.212	3.357	0.519	0.006	0.024	0.024	568.299	0.019

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Cranes	2035	176	250	2.568	0.203	1.143	0.463	0.006	0.016	0.016	568.299	0.018
Cranes	2035	251	500	4.111	0.202	1.087	0.441	0.005	0.016	0.016	568.299	0.018
Cranes	2035	501	750	6.923	0.202	1.087	0.446	0.005	0.016	0.016	568.299	0.018
Cranes	2035	1001	9999	22.949	0.209	1.089	2.618	0.005	0.031	0.031	568.299	0.018
Cranes	2040	26	50	1.483	0.567	5.268	3.324	0.007	0.024	0.024	568.299	0.051
Cranes	2040	51	120	1.598	0.282	3.797	1.552	0.006	0.021	0.021	568.299	0.025
Cranes	2040	121	175	1.79	0.197	3.358	0.371	0.006	0.016	0.016	568.299	0.017
Cranes	2040	176	250	2.465	0.195	1.144	0.344	0.006	0.013	0.013	568.299	0.017
Cranes	2040	251	500	3.958	0.195	1.087	0.34	0.005	0.013	0.013	568.299	0.017
Cranes	2040	501	750	6.661	0.195	1.087	0.341	0.005	0.013	0.013	568.299	0.017
Cranes	2040	1001	9999	21.703	0.198	1.087	2.534	0.005	0.027	0.027	568.299	0.017
Crawler Tractors	1990	26	50	11.254	4.903	9.907	7.983	0.871	1.291	1.291	568.299	0.442
Crawler Tractors	1990	51	120	14.413	2.374	5.73	14.967	0.791	1.353	1.353	568.299	0.214
Crawler Tractors	1990	121	175	19.335	1.729	5.079	13.979	0.758	0.962	0.962	568.299	0.156
Crawler Tractors	1990	176	250	26.505	1.729	5.079	13.979	0.758	0.962	0.962	568.299	0.156
Crawler Tractors	1990	251	500	36.545	1.528	11.319	13.238	0.662	0.822	0.822	568.3	0.137
Crawler Tractors	1990	501	750	65.509	1.528	11.319	13.238	1.018	0.837	0.837	568.299	0.137
Crawler Tractors	1990	751	1000	92.189	1.518	11.319	13.238	1.018	0.826	0.826	568.299	0.137
Crawler Tractors	2000	26	50	10.858	4.73	9.675	7.197	0.066	0.973	0.973	568.299	0.426
Crawler Tractors	2000	51	120	11.94	1.966	4.886	11.097	0.06	0.949	0.949	568.299	0.177
Crawler Tractors	2000	121	175	14.976	1.339	4.018	10.157	0.057	0.57	0.57	568.3	0.12
Crawler Tractors	2000	176	250	17.901	1.168	3.367	9.863	0.057	0.486	0.486	568.299	0.105
Crawler Tractors	2000	251	500	25.11	1.049	5.849	9.341	0.05	0.424	0.424	568.299	0.094
Crawler Tractors	2000	501	750	45.011	1.049	5.849	9.341	0.052	0.424	0.424	568.299	0.094
Crawler Tractors	2000	751	1000	66.528	1.095	6.349	9.844	0.052	0.407	0.407	568.299	0.098
Crawler Tractors	2005	26	50	9.923	4.323	9.124	6.809	0.066	0.919	0.919	568.299	0.39
Crawler Tractors	2005	51	120	10.68	1.759	4.63	9.75	0.06	0.903	0.903	568.299	0.158
Crawler Tractors	2005	121	175	13.006	1.163	3.749	8.886	0.057	0.513	0.513	568.299	0.104
Crawler Tractors	2005	176	250	13.95	0.91	2.557	8.523	0.057	0.371	0.371	568.299	0.082
Crawler Tractors	2005	251	500	19.249	0.804	3.945	7.791	0.05	0.326	0.326	568.299	0.072
Crawler Tractors	2005	501	750	34.852	0.813	3.938	7.93	0.052	0.328	0.328	568.299	0.073
Crawler Tractors	2005	751	1000	54.011	0.889	4.359	8.804	0.052	0.319	0.319	568.3	0.08
Crawler Tractors	2010	26	50	3.193884	2.6838	8.18872	6.54779	0.0053	0.7848	0.7221	572.972	0.1668
Crawler Tractors	2010	51	120	1.069208	0.8984	4.10668	7.76656	0.0049	0.6284	0.5781	530.0152	0.1543
Crawler Tractors	2010	121	175	0.755513	0.6348	3.40812	7.15822	0.0049	0.378	0.3477	524.4997	0.1527
Crawler Tractors	2010	176	250	0.540569	0.4542	1.89919	6.46768	0.0049	0.2494	0.2294	526.1431	0.1531
Crawler Tractors	2010	251	500	0.491926	0.4134	3.0665	5.96739	0.0049	0.2267	0.2086	528.681	0.1539
Crawler Tractors	2010	501	750	0.418044	0.3513	1.75694	5.31967	0.0049	0.1887	0.1736	525.9395	0.1531
Crawler Tractors	2010	751	1000	0.545095	0.458	2.04187	7.25547	0.0049	0.2102	0.1934	527.6019	0.1536
Crawler Tractors	2011	26	50	3.090465	2.5968	8.06059	6.48764	0.0053	0.762	0.7011	571.2544	0.1667
Crawler Tractors	2011	51	120	1.055307	0.8868	4.11149	7.65924	0.0049	0.6244	0.5744	528.5468	0.1542
Crawler Tractors	2011	121	175	0.753531	0.6332	3.422	7.0937	0.0049	0.3775	0.3473	523.1105	0.1526
Crawler Tractors	2011	176	250	0.541549	0.4551	1.8844	6.42306	0.0049	0.248	0.2281	524.8932	0.1532
Crawler Tractors	2011	251	500	0.494702	0.4157	3.04503	5.91443	0.0049	0.2259	0.2078	527.4003	0.1539
Crawler Tractors	2011	501	750	0.416615	0.3501	1.70832	5.23606	0.0049	0.1862	0.1713	524.9577	0.1532
Crawler Tractors	2011	751	1000	0.550612	0.4627	2.05264	7.30105	0.0049	0.2123	0.1953	526.3508	0.1536
Crawler Tractors	2012	26	50	3.127964	2.6284	8.16399	6.51312	0.0053	0.77	0.7084	569.8895	0.1667
Crawler Tractors	2012	51	120	1.066067	0.8958	4.14375	7.67928	0.0049	0.6326	0.582	527.2248	0.1542
Crawler Tractors	2012	121	175	0.762695	0.6409	3.4484	7.11308	0.0049	0.3819	0.3514	521.7707	0.1526
Crawler Tractors	2012	176	250	0.549863	0.462	1.8924	6.43904	0.0049	0.2499	0.2299	523.5287	0.1532
Crawler Tractors	2012	251	500	0.502104	0.4219	3.05662	5.9107	0.0049	0.2272	0.209	526.0223	0.1539
Crawler Tractors	2012	501	750	0.425611	0.3576	1.71661	5.25574	0.0049	0.1885	0.1734	523.7088	0.1532
Crawler Tractors	2012	751	1000	0.555874	0.4671	2.06265	7.34463	0.0049	0.2144	0.1972	525.1067	0.1536
Crawler Tractors	2013	26	50	3.060938	2.572	8.10275	6.42928	0.0053	0.7525	0.6923	567.3537	0.1668
Crawler Tractors	2013	51	120	1.067402	0.8969	4.16448	7.64718	0.0049	0.636	0.5851	524.5941	0.1542
Crawler Tractors	2013	121	175	0.758762	0.6376	3.4566	7.02367	0.0049	0.3797	0.3493	519.0712	0.1526
Crawler Tractors	2013	176	250	0.548046	0.4605	1.8715	6.36771	0.0049	0.2468	0.2271	520.7236	0.1531
Crawler Tractors	2013	251	500	0.501212	0.4212	2.99715	5.82738	0.0049	0.2246	0.2067	523.5592	0.1539
Crawler Tractors	2013	501	750	0.418079	0.3513	1.67885	5.09878	0.0049	0.1829	0.1683	520.5693	0.1531
Crawler Tractors	2013	751	1000	0.560878	0.4713	2.07187	7.3862	0.0049	0.2163	0.199	522.5513	0.1536
Crawler Tractors	2014	26	50	3.000333	2.5211	8.04733	6.39578	0.0053	0.7434	0.6839	564.5641	0.1668
Crawler Tractors	2014	51	120	1.051605	0.8836	4.16815	7.52434	0.0049	0.6285	0.5782	522.1187	0.1543
Crawler Tractors	2014	121	175	0.748303	0.6288	3.45911	6.87548	0.0049	0.3743	0.3443	516.4039	0.1526
Crawler Tractors	2014	176	250	0.54035	0.454	1.83765	6.23751	0.0049	0.2411	0.2218	518.0363	0.1531
Crawler Tractors	2014	251	500	0.490461	0.4121	2.91108	5.61601	0.0049	0.2172	0.1998	520.5153	0.1538
Crawler Tractors	2014	501	750	0.412689	0.3468	1.67523	4.89468	0.0049	0.1786	0.1643	517.8612	0.153
Crawler Tractors	2014	751	1000	0.565619	0.4753	2.08028	7.42576	0.0049	0.2182	0.2007	520.0052	0.1537
Crawler Tractors	2015	26	50	2.990271	2.5127	8.07628	6.37736	0.0053	0.7408	0.6816	558.8878	0.1669
Crawler Tractors	2015	51	120	1.05262	0.8845	4.18907	7.4938	0.0049	0.63	0.5796	516.8433	0.1543
Crawler Tractors	2015	121	175	0.751623	0.6316	3.47922	6.84937	0.0049	0.3758	0.3457	511.3059	0.1526
Crawler Tractors	2015	176	250	0.536796	0.4511	1.81586	6.14312	0.0049	0.2369	0.2179	512.8973	0.1531
Crawler Tractors	2015	251	500	0.485596	0.408	2.84505	5.48324	0.0049	0.2124	0.1954	515.3725	0.1539
Crawler Tractors	2015	501	750	0.41802	0.3513	1.66415	4.88301	0.0049	0.1788	0.1645	512.5402	0.153

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Crawler Tractors	2015	751	1000	0.570092	0.479	2.08783	7.46329	0.0049	0.22	0.2024	514.83	0.1537
Crawler Tractors	2016	26	50	2.99791	2.5191	8.10441	6.31718	0.0053	0.7329	0.6742	553.214	0.1669
Crawler Tractors	2016	51	120	1.034441	0.8692	4.18548	7.34589	0.0049	0.619	0.5695	511.268	0.1542
Crawler Tractors	2016	121	175	0.743125	0.6244	3.48211	6.7205	0.0049	0.3705	0.3409	506.0335	0.1526
Crawler Tractors	2016	176	250	0.534039	0.4487	1.80295	6.04745	0.0049	0.2332	0.2145	507.355	0.153
Crawler Tractors	2016	251	500	0.473782	0.3981	2.74397	5.27907	0.0049	0.2045	0.1882	510.3385	0.1539
Crawler Tractors	2016	501	750	0.41158	0.3458	1.6206	4.7238	0.0049	0.1738	0.1599	507.2527	0.153
Crawler Tractors	2016	751	1000	0.57429	0.4826	2.09448	7.4988	0.0049	0.2217	0.204	509.6671	0.1537
Crawler Tractors	2017	26	50	2.926516	2.4591	8.00596	6.20834	0.0053	0.7116	0.6547	544.6762	0.1669
Crawler Tractors	2017	51	120	1.010844	0.8494	4.17611	7.141	0.0049	0.6036	0.5553	503.2791	0.1542
Crawler Tractors	2017	121	175	0.731209	0.6144	3.48322	6.55188	0.0049	0.3636	0.3345	498.1245	0.1526
Crawler Tractors	2017	176	250	0.511144	0.4295	1.7418	5.75969	0.0049	0.2199	0.2023	499.832	0.1531
Crawler Tractors	2017	251	500	0.458057	0.3849	2.6349	5.02932	0.0049	0.1946	0.1791	502.422	0.1539
Crawler Tractors	2017	501	750	0.386074	0.3244	1.5221	4.36108	0.0049	0.1597	0.1469	499.1046	0.1529
Crawler Tractors	2017	751	1000	0.578206	0.4859	2.10018	7.53226	0.0049	0.2233	0.2055	501.8777	0.1538
Crawler Tractors	2018	26	50	2.910335	2.4455	8.0094	6.16323	0.0053	0.7038	0.6475	536.1409	0.1669
Crawler Tractors	2018	51	120	0.949614	0.7979	4.1231	6.72257	0.0049	0.5658	0.5205	494.9217	0.1541
Crawler Tractors	2018	121	175	0.660412	0.5549	3.42131	5.8588	0.0049	0.3255	0.2994	490.0002	0.1525
Crawler Tractors	2018	176	250	0.473989	0.3983	1.65354	5.28959	0.0049	0.2001	0.1841	491.606	0.153
Crawler Tractors	2018	251	500	0.409351	0.344	2.38218	4.37324	0.0049	0.1694	0.1559	493.5104	0.1536
Crawler Tractors	2018	501	750	0.351876	0.2957	1.4447	3.8336	0.0049	0.1415	0.1301	491.2659	0.1529
Crawler Tractors	2018	751	1000	0.581827	0.4889	2.10483	7.56366	0.0049	0.2249	0.2069	494.1052	0.1538
Crawler Tractors	2019	26	50	2.648469	2.2254	7.58896	5.85476	0.0053	0.6404	0.5892	525.9767	0.1664
Crawler Tractors	2019	51	120	0.901167	0.7572	4.08842	6.39347	0.0049	0.5347	0.4919	486.9909	0.1541
Crawler Tractors	2019	121	175	0.615173	0.5169	3.37886	5.38191	0.0049	0.2996	0.2756	481.6222	0.1524
Crawler Tractors	2019	176	250	0.45175	0.3796	1.60445	4.9721	0.0049	0.1875	0.1725	483.4489	0.153
Crawler Tractors	2019	251	500	0.37933	0.3187	2.21938	3.93412	0.0049	0.1528	0.1406	485.8645	0.1537
Crawler Tractors	2019	501	750	0.316919	0.2663	1.35585	3.34253	0.0049	0.123	0.1132	483.3879	0.1529
Crawler Tractors	2019	751	1000	0.547243	0.4598	2.02037	7.21215	0.0049	0.2106	0.1938	486.2545	0.1538
Crawler Tractors	2020	26	50	2.443056	2.0528	7.3	5.64276	0.0053	0.5912	0.5439	515.679	0.1668
Crawler Tractors	2020	51	120	0.850709	0.7148	4.04412	6.00933	0.0049	0.5005	0.4604	476.3284	0.1541
Crawler Tractors	2020	121	175	0.566576	0.4761	3.33989	4.87226	0.0049	0.2722	0.2504	471.015	0.1523
Crawler Tractors	2020	176	250	0.428471	0.36	1.55491	4.63225	0.0049	0.1746	0.1606	472.941	0.153
Crawler Tractors	2020	251	500	0.358593	0.3013	2.0875	3.62175	0.0049	0.1409	0.1296	475.2338	0.1537
Crawler Tractors	2020	501	750	0.304872	0.2562	1.31018	3.13716	0.0049	0.1151	0.1059	473.3119	0.1531
Crawler Tractors	2020	751	1000	0.551035	0.463	2.02764	7.23682	0.0049	0.212	0.195	475.6525	0.1538
Crawler Tractors	2021	26	50	2.456387	2.064	7.34869	5.61511	0.0053	0.5906	0.5433	516.1077	0.1669
Crawler Tractors	2021	51	120	0.800723	0.6728	4.00549	5.65746	0.0049	0.4657	0.4285	476.437	0.1541
Crawler Tractors	2021	121	175	0.518367	0.4356	3.30982	4.3947	0.0049	0.2445	0.225	471.421	0.1525
Crawler Tractors	2021	176	250	0.407794	0.3427	1.51456	4.33394	0.0049	0.1631	0.15	472.9246	0.153
Crawler Tractors	2021	251	500	0.337066	0.2832	2.02434	3.27633	0.0049	0.129	0.1187	474.4843	0.1535
Crawler Tractors	2021	501	750	0.284829	0.2393	1.26985	2.82478	0.0049	0.1038	0.0955	473.0941	0.153
Crawler Tractors	2021	751	1000	0.475256	0.3993	1.89563	6.3992	0.0049	0.1816	0.1671	471.8224	0.1526
Crawler Tractors	2022	26	50	2.25944	1.8986	7.04118	5.37962	0.0053	0.5388	0.4957	516.1476	0.1669
Crawler Tractors	2022	51	120	0.714244	0.6002	3.92498	5.10103	0.0049	0.4079	0.3753	476.0219	0.154
Crawler Tractors	2022	121	175	0.463094	0.3891	3.26382	3.82659	0.0049	0.2137	0.1966	471.5674	0.1525
Crawler Tractors	2022	176	250	0.364117	0.306	1.43975	3.73672	0.0049	0.141	0.1297	472.0975	0.1527
Crawler Tractors	2022	251	500	0.30258	0.2543	1.91628	2.74435	0.0049	0.1111	0.1022	474.4115	0.1534
Crawler Tractors	2022	501	750	0.235465	0.1979	1.18638	2.12552	0.0049	0.0794	0.073	472.876	0.1529
Crawler Tractors	2022	751	1000	0.424397	0.3566	1.73227	5.92299	0.0049	0.1624	0.1494	470.7007	0.1522
Crawler Tractors	2023	26	50	2.228685	1.8727	7.02687	5.32514	0.0053	0.5262	0.4841	516.1587	0.1669
Crawler Tractors	2023	51	120	0.663952	0.5579	3.88936	4.76208	0.0049	0.3728	0.343	476.1575	0.154
Crawler Tractors	2023	121	175	0.41309	0.3471	3.23526	3.33004	0.0049	0.1852	0.1704	471.7805	0.1526
Crawler Tractors	2023	176	250	0.328767	0.2763	1.39549	3.18735	0.0049	0.1236	0.1137	471.6244	0.1525
Crawler Tractors	2023	251	500	0.286276	0.2406	1.85216	2.47635	0.0049	0.1017	0.0935	474.6128	0.1535
Crawler Tractors	2023	501	750	0.218505	0.1836	1.15892	1.86667	0.0049	0.0694	0.0639	472.5297	0.1528
Crawler Tractors	2023	751	1000	0.319268	0.2683	1.6104	4.76968	0.0049	0.1184	0.1089	473.6655	0.1532
Crawler Tractors	2024	26	50	2.089827	1.756	6.68497	4.97522	0.0053	0.4659	0.4287	515.4658	0.1667
Crawler Tractors	2024	51	120	0.610839	0.5133	3.85173	4.40892	0.0049	0.3353	0.3085	476.2342	0.154
Crawler Tractors	2024	121	175	0.387606	0.3257	3.22706	3.04107	0.0049	0.1702	0.1566	471.8291	0.1526
Crawler Tractors	2024	176	250	0.313897	0.2638	1.36992	2.95319	0.0049	0.1146	0.1055	471.8603	0.1526
Crawler Tractors	2024	251	500	0.271114	0.2278	1.77984	2.2441	0.0049	0.0926	0.0852	474.025	0.1533
Crawler Tractors	2024	501	750	0.215283	0.1809	1.15921	1.76658	0.0049	0.066	0.0607	472.2827	0.1527
Crawler Tractors	2024	751	1000	0.313081	0.2631	1.58774	4.68945	0.0049	0.1148	0.1056	474.6448	0.1535
Crawler Tractors	2025	26	50	2.075042	1.7436	6.68642	4.93567	0.0053	0.4561	0.4196	516.1279	0.1669
Crawler Tractors	2025	51	120	0.540303	0.454	3.78839	3.96126	0.0049	0.2848	0.262	476.1336	0.154
Crawler Tractors	2025	121	175	0.354345	0.2977	3.20909	2.68768	0.0049	0.15	0.138	471.5923	0.1525
Crawler Tractors	2025	176	250	0.276616	0.2324	1.30849	2.46158	0.0049	0.0961	0.0884	471.6224	0.1525
Crawler Tractors	2025	251	500	0.247477	0.2079	1.71697	1.92007	0.0049	0.0805	0.0741	474.0072	0.1533
Crawler Tractors	2025	501	750	0.198724	0.167	1.12199	1.54452	0.0049	0.0567	0.0522	472.4081	0.1528
Crawler Tractors	2025	751	1000	0.308836	0.2595	1.59298	4.59799	0.0049	0.1115	0.1026	475.4901	0.1538
Crawler Tractors	2030	26	50	1.912	0.833	5.605	3.808	0.007	0.116	0.116	568.299	0.075
Crawler Tractors	2030	51	120	2.461	0.405	3.871	2.341	0.006	0.105	0.105	568.299	0.036

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Crawler Tractors	2030	121	175	3.315	0.296	3.397	1.266	0.006	0.065	0.065	568.299	0.026
Crawler Tractors	2030	176	250	4.019	0.262	1.207	1.104	0.006	0.04	0.04	568.299	0.023
Crawler Tractors	2030	251	500	6.146	0.257	1.2	1.016	0.005	0.038	0.038	568.299	0.023
Crawler Tractors	2030	501	750	11.033	0.257	1.2	1.033	0.005	0.038	0.038	568.299	0.023
Crawler Tractors	2030	751	1000	16.147	0.265	1.225	3.094	0.005	0.056	0.056	568.3	0.023
Crawler Tractors	2035	26	50	1.626	0.708	5.493	3.558	0.007	0.066	0.066	568.299	0.063
Crawler Tractors	2035	51	120	2.099	0.345	3.85	1.922	0.006	0.06	0.06	568.299	0.031
Crawler Tractors	2035	121	175	2.772	0.247	3.391	0.794	0.006	0.038	0.038	568.299	0.022
Crawler Tractors	2035	176	250	3.521	0.229	1.182	0.695	0.006	0.026	0.026	568.299	0.02
Crawler Tractors	2035	251	500	5.432	0.227	1.145	0.657	0.005	0.025	0.025	568.299	0.02
Crawler Tractors	2035	501	750	9.744	0.227	1.145	0.664	0.005	0.025	0.025	568.299	0.02
Crawler Tractors	2035	751	1000	14.073	0.231	1.159	2.792	0.005	0.041	0.041	568.299	0.02
Crawler Tractors	2040	26	50	1.499	0.653	5.443	3.42	0.007	0.042	0.042	568.299	0.058
Crawler Tractors	2040	51	120	1.924	0.316	3.839	1.709	0.006	0.039	0.039	568.299	0.028
Crawler Tractors	2040	121	175	2.48	0.221	3.388	0.539	0.006	0.025	0.025	568.299	0.02
Crawler Tractors	2040	176	250	3.247	0.211	1.167	0.491	0.006	0.018	0.018	568.299	0.019
Crawler Tractors	2040	251	500	5.035	0.21	1.113	0.47	0.005	0.018	0.018	568.299	0.018
Crawler Tractors	2040	501	750	9.03	0.21	1.113	0.475	0.005	0.018	0.018	568.299	0.019
Crawler Tractors	2040	751	1000	12.945	0.213	1.122	2.652	0.005	0.032	0.032	568.299	0.019
Crushing/Proc. Equipment	1990	26	50	11.643	4.43	9.044	7.809	0.871	1.194	1.194	568.299	0.399
Crushing/Proc. Equipment	1990	51	120	11.193	2.255	5.547	14.555	0.791	1.258	1.258	568.299	0.203
Crushing/Proc. Equipment	1990	121	175	15.383	1.54	4.913	13.086	0.758	0.834	0.834	568.299	0.138
Crushing/Proc. Equipment	1990	176	250	22.49	1.54	4.913	13.086	0.758	0.834	0.834	568.299	0.138
Crushing/Proc. Equipment	1990	251	500	30.672	1.374	10.176	12.492	0.662	0.724	0.724	568.299	0.124
Crushing/Proc. Equipment	1990	501	750	48.337	1.374	10.175	12.492	1.018	0.737	0.737	568.299	0.124
Crushing/Proc. Equipment	1990	1001	9999	106.942	1.369	10.175	12.492	1.018	0.731	0.731	568.299	0.123
Crushing/Proc. Equipment	2000	26	50	10.827	4.12	8.551	6.954	0.066	0.876	0.876	568.299	0.371
Crushing/Proc. Equipment	2000	51	120	8.945	1.802	4.594	10.363	0.06	0.857	0.857	568.299	0.162
Crushing/Proc. Equipment	2000	121	175	12.05	1.206	3.737	9.416	0.057	0.506	0.506	568.299	0.108
Crushing/Proc. Equipment	2000	176	250	14.723	1.008	2.963	9.058	0.057	0.414	0.414	568.299	0.09
Crushing/Proc. Equipment	2000	251	500	20.487	0.918	5.011	8.658	0.05	0.366	0.366	568.299	0.082
Crushing/Proc. Equipment	2000	501	750	30.946	0.88	4.658	8.459	0.052	0.348	0.348	568.299	0.079
Crushing/Proc. Equipment	2000	1001	9999	77.281	0.989	5.329	9.138	0.052	0.37	0.37	568.299	0.089
Crushing/Proc. Equipment	2005	26	50	9.624	3.662	7.904	6.477	0.066	0.812	0.812	568.3	0.33
Crushing/Proc. Equipment	2005	51	120	7.644	1.54	4.24	8.68	0.06	0.794	0.794	568.299	0.138
Crushing/Proc. Equipment	2005	121	175	10.064	1.007	3.372	7.941	0.057	0.438	0.438	568.299	0.09
Crushing/Proc. Equipment	2005	176	250	10.399	0.712	1.97	7.484	0.057	0.282	0.282	568.299	0.064
Crushing/Proc. Equipment	2005	251	500	14.029	0.628	2.549	6.846	0.05	0.252	0.252	568.299	0.056
Crushing/Proc. Equipment	2005	501	750	22.225	0.632	2.431	6.974	0.052	0.249	0.249	568.299	0.057
Crushing/Proc. Equipment	2005	1001	9999	60.257	0.771	3.042	8.054	0.052	0.268	0.268	568.299	0.069
Crushing/Proc. Equipment	2010	26	50	7.704	2.931	7.22	6.068	0.007	0.671	0.671	568.299	0.264
Crushing/Proc. Equipment	2010	51	120	5.971	1.203	4.071	7.096	0.006	0.656	0.656	568.299	0.108
Crushing/Proc. Equipment	2010	121	175	8.033	0.804	3.307	6.322	0.006	0.362	0.362	568.299	0.072
Crushing/Proc. Equipment	2010	176	250	7.61	0.521	1.446	5.918	0.006	0.195	0.195	568.299	0.047
Crushing/Proc. Equipment	2010	251	500	10.487	0.47	1.603	5.248	0.005	0.18	0.18	568.299	0.042
Crushing/Proc. Equipment	2010	501	750	16.814	0.478	1.568	5.449	0.005	0.183	0.183	568.299	0.043
Crushing/Proc. Equipment	2010	1001	9999	46.933	0.601	2.091	6.987	0.005	0.209	0.209	568.299	0.054
Crushing/Proc. Equipment	2011	26	50	7.155	2.722	6.995	5.972	0.007	0.636	0.636	568.299	0.245
Crushing/Proc. Equipment	2011	51	120	5.588	1.125	4.03	6.704	0.006	0.625	0.625	568.3	0.101
Crushing/Proc. Equipment	2011	121	175	7.581	0.759	3.294	5.953	0.006	0.347	0.347	568.299	0.068
Crushing/Proc. Equipment	2011	176	250	7.059	0.483	1.356	5.498	0.006	0.175	0.175	568.299	0.043
Crushing/Proc. Equipment	2011	251	500	9.796	0.439	1.462	4.858	0.005	0.162	0.162	568.299	0.039
Crushing/Proc. Equipment	2011	501	750	15.681	0.446	1.435	5.054	0.005	0.165	0.165	568.299	0.04
Crushing/Proc. Equipment	2011	1001	9999	44.108	0.564	1.923	6.609	0.005	0.196	0.196	568.299	0.05
Crushing/Proc. Equipment	2012	26	50	6.538	2.488	6.733	5.867	0.007	0.596	0.596	568.299	0.224
Crushing/Proc. Equipment	2012	51	120	5.173	1.042	3.984	6.269	0.006	0.582	0.582	568.299	0.094
Crushing/Proc. Equipment	2012	121	175	7.084	0.709	3.28	5.553	0.006	0.321	0.321	568.299	0.064
Crushing/Proc. Equipment	2012	176	250	6.627	0.453	1.299	5.088	0.006	0.158	0.158	568.299	0.04
Crushing/Proc. Equipment	2012	251	500	9.273	0.415	1.362	4.48	0.005	0.147	0.147	568.3	0.037
Crushing/Proc. Equipment	2012	501	750	14.786	0.42	1.341	4.662	0.005	0.15	0.15	568.299	0.037
Crushing/Proc. Equipment	2012	1001	9999	41.105	0.526	1.755	6.197	0.005	0.182	0.182	568.299	0.047
Crushing/Proc. Equipment	2013	26	50	5.908	2.248	6.467	5.628	0.007	0.545	0.545	568.299	0.202
Crushing/Proc. Equipment	2013	51	120	4.758	0.958	3.94	5.845	0.006	0.532	0.532	568.299	0.086
Crushing/Proc. Equipment	2013	121	175	6.588	0.659	3.267	5.177	0.006	0.293	0.293	568.299	0.059
Crushing/Proc. Equipment	2013	176	250	6.27	0.429	1.26	4.695	0.006	0.144	0.144	568.299	0.038
Crushing/Proc. Equipment	2013	251	500	8.85	0.396	1.289	4.121	0.005	0.134	0.134	568.299	0.035
Crushing/Proc. Equipment	2013	501	750	14.055	0.399	1.273	4.285	0.005	0.136	0.136	568.299	0.036
Crushing/Proc. Equipment	2013	1001	9999	38.235	0.489	1.599	5.785	0.005	0.168	0.168	568.299	0.044
Crushing/Proc. Equipment	2014	26	50	5.288	2.012	6.212	5.399	0.007	0.494	0.494	568.299	0.181
Crushing/Proc. Equipment	2014	51	120	4.356	0.877	3.898	5.468	0.006	0.481	0.481	568.299	0.079
Crushing/Proc. Equipment	2014	121	175	6.112	0.612	3.256	4.823	0.006	0.265	0.265	568.299	0.055
Crushing/Proc. Equipment	2014	176	250	5.916	0.405	1.228	4.239	0.006	0.13	0.13	568.299	0.036
Crushing/Proc. Equipment	2014	251	500	8.415	0.377	1.23	3.702	0.005	0.121	0.121	568.299	0.034

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Crushing/Proc. Equipment	2014	501	750	13.314	0.378	1.218	3.844	0.005	0.123	0.123	568.299	0.034
Crushing/Proc. Equipment	2014	1001	9999	35.652	0.456	1.46	5.391	0.005	0.155	0.155	568.299	0.041
Crushing/Proc. Equipment	2015	26	50	4.722	1.796	5.996	5.195	0.007	0.446	0.446	568.299	0.162
Crushing/Proc. Equipment	2015	51	120	3.959	0.797	3.859	5.04	0.006	0.43	0.43	568.299	0.071
Crushing/Proc. Equipment	2015	121	175	5.614	0.562	3.247	4.343	0.006	0.237	0.237	568.299	0.05
Crushing/Proc. Equipment	2015	176	250	5.585	0.382	1.201	3.801	0.006	0.117	0.117	568.299	0.034
Crushing/Proc. Equipment	2015	251	500	8	0.358	1.184	3.304	0.005	0.109	0.109	568.299	0.032
Crushing/Proc. Equipment	2015	501	750	12.614	0.358	1.176	3.422	0.005	0.111	0.111	568.299	0.032
Crushing/Proc. Equipment	2015	1001	9999	32.981	0.422	1.343	5.019	0.005	0.14	0.14	568.299	0.038
Crushing/Proc. Equipment	2016	26	50	4.186	1.593	5.801	5.006	0.007	0.399	0.399	568.299	0.143
Crushing/Proc. Equipment	2016	51	120	3.576	0.72	3.823	4.631	0.006	0.379	0.379	568.299	0.065
Crushing/Proc. Equipment	2016	121	175	5.132	0.513	3.241	3.883	0.006	0.21	0.21	568.299	0.046
Crushing/Proc. Equipment	2016	176	250	5.267	0.36	1.178	3.381	0.006	0.105	0.105	568.299	0.032
Crushing/Proc. Equipment	2016	251	500	7.601	0.34	1.146	2.928	0.005	0.098	0.098	568.299	0.03
Crushing/Proc. Equipment	2016	501	750	11.944	0.339	1.14	3.021	0.005	0.099	0.099	568.299	0.03
Crushing/Proc. Equipment	2016	1001	9999	31.036	0.397	1.274	4.7	0.005	0.127	0.127	568.299	0.035
Crushing/Proc. Equipment	2017	26	50	3.684	1.402	5.623	4.827	0.007	0.354	0.354	568.299	0.126
Crushing/Proc. Equipment	2017	51	120	3.216	0.647	3.791	4.244	0.006	0.33	0.33	568.299	0.058
Crushing/Proc. Equipment	2017	121	175	4.681	0.468	3.236	3.45	0.006	0.185	0.185	568.299	0.042
Crushing/Proc. Equipment	2017	176	250	4.974	0.34	1.16	2.987	0.006	0.094	0.094	568.299	0.03
Crushing/Proc. Equipment	2017	251	500	7.242	0.324	1.118	2.602	0.005	0.088	0.088	568.299	0.029
Crushing/Proc. Equipment	2017	501	750	11.359	0.323	1.114	2.664	0.005	0.088	0.088	568.299	0.029
Crushing/Proc. Equipment	2017	1001	9999	29.544	0.378	1.231	4.423	0.005	0.117	0.117	568.299	0.034
Crushing/Proc. Equipment	2018	26	50	3.219	1.225	5.461	4.657	0.007	0.31	0.31	568.299	0.11
Crushing/Proc. Equipment	2018	51	120	2.881	0.58	3.763	3.881	0.006	0.284	0.284	568.299	0.052
Crushing/Proc. Equipment	2018	121	175	4.267	0.427	3.234	3.049	0.006	0.161	0.161	568.299	0.038
Crushing/Proc. Equipment	2018	176	250	4.701	0.322	1.146	2.622	0.006	0.083	0.083	568.299	0.029
Crushing/Proc. Equipment	2018	251	500	6.912	0.309	1.099	2.312	0.005	0.079	0.079	568.299	0.027
Crushing/Proc. Equipment	2018	501	750	10.84	0.308	1.097	2.358	0.005	0.079	0.079	568.299	0.027
Crushing/Proc. Equipment	2018	1001	9999	28.23	0.361	1.198	4.168	0.005	0.107	0.107	568.299	0.032
Crushing/Proc. Equipment	2019	26	50	2.798	1.064	5.316	4.495	0.007	0.269	0.269	568.299	0.096
Crushing/Proc. Equipment	2019	51	120	2.577	0.519	3.739	3.544	0.006	0.241	0.241	568.299	0.046
Crushing/Proc. Equipment	2019	121	175	3.938	0.394	3.233	2.7	0.006	0.141	0.141	568.299	0.035
Crushing/Proc. Equipment	2019	176	250	4.451	0.304	1.134	2.3	0.006	0.074	0.074	568.299	0.027
Crushing/Proc. Equipment	2019	251	500	6.592	0.295	1.087	2.046	0.005	0.071	0.071	568.299	0.026
Crushing/Proc. Equipment	2019	501	750	10.352	0.294	1.085	2.085	0.005	0.071	0.071	568.299	0.026
Crushing/Proc. Equipment	2019	1001	9999	26.978	0.345	1.173	3.927	0.005	0.098	0.098	568.299	0.031
Crushing/Proc. Equipment	2020	26	50	2.489	0.947	5.211	4.347	0.007	0.233	0.233	568.299	0.085
Crushing/Proc. Equipment	2020	51	120	2.348	0.473	3.722	3.249	0.006	0.206	0.206	568.299	0.042
Crushing/Proc. Equipment	2020	121	175	3.673	0.367	3.234	2.392	0.006	0.124	0.124	568.299	0.033
Crushing/Proc. Equipment	2020	176	250	4.222	0.289	1.125	2.014	0.006	0.065	0.065	568.299	0.026
Crushing/Proc. Equipment	2020	251	500	6.283	0.281	1.078	1.799	0.005	0.063	0.063	568.299	0.025
Crushing/Proc. Equipment	2020	501	750	9.884	0.281	1.077	1.835	0.005	0.063	0.063	568.299	0.025
Crushing/Proc. Equipment	2020	1001	9999	25.755	0.329	1.153	3.699	0.005	0.089	0.089	568.299	0.029
Crushing/Proc. Equipment	2021	26	50	2.265	0.862	5.136	4.211	0.007	0.201	0.201	568.299	0.077
Crushing/Proc. Equipment	2021	51	120	2.176	0.438	3.711	2.989	0.006	0.178	0.178	568.299	0.039
Crushing/Proc. Equipment	2021	121	175	3.442	0.344	3.235	2.114	0.006	0.109	0.109	568.299	0.031
Crushing/Proc. Equipment	2021	176	250	4.009	0.274	1.119	1.756	0.006	0.057	0.057	568.299	0.024
Crushing/Proc. Equipment	2021	251	500	5.988	0.268	1.072	1.574	0.005	0.055	0.055	568.3	0.024
Crushing/Proc. Equipment	2021	501	750	9.434	0.268	1.072	1.606	0.005	0.055	0.055	568.299	0.024
Crushing/Proc. Equipment	2021	1001	9999	24.586	0.314	1.136	3.487	0.005	0.08	0.08	568.299	0.028
Crushing/Proc. Equipment	2022	26	50	2.09	0.795	5.081	4.083	0.007	0.172	0.172	568.299	0.071
Crushing/Proc. Equipment	2022	51	120	2.036	0.41	3.704	2.758	0.006	0.154	0.154	568.299	0.037
Crushing/Proc. Equipment	2022	121	175	3.231	0.323	3.237	1.861	0.006	0.095	0.095	568.299	0.029
Crushing/Proc. Equipment	2022	176	250	3.808	0.26	1.114	1.521	0.006	0.05	0.05	568.299	0.023
Crushing/Proc. Equipment	2022	251	500	5.706	0.255	1.067	1.389	0.005	0.048	0.048	568.299	0.023
Crushing/Proc. Equipment	2022	501	750	9.002	0.256	1.067	1.416	0.005	0.048	0.048	568.299	0.023
Crushing/Proc. Equipment	2022	1001	9999	23.492	0.3	1.121	3.31	0.005	0.073	0.073	568.299	0.027
Crushing/Proc. Equipment	2023	26	50	1.944	0.739	5.039	3.962	0.007	0.146	0.146	568.299	0.066
Crushing/Proc. Equipment	2023	51	120	1.914	0.385	3.7	2.552	0.006	0.132	0.132	568.299	0.034
Crushing/Proc. Equipment	2023	121	175	3.042	0.304	3.24	1.654	0.006	0.083	0.083	568.299	0.027
Crushing/Proc. Equipment	2023	176	250	3.623	0.248	1.111	1.33	0.006	0.043	0.043	568.299	0.022
Crushing/Proc. Equipment	2023	251	500	5.444	0.244	1.064	1.227	0.005	0.042	0.042	568.299	0.022
Crushing/Proc. Equipment	2023	501	750	8.598	0.244	1.065	1.251	0.005	0.042	0.042	568.3	0.022
Crushing/Proc. Equipment	2023	1001	9999	22.463	0.287	1.107	3.16	0.005	0.066	0.066	568.299	0.025
Crushing/Proc. Equipment	2024	26	50	1.825	0.694	5.008	3.85	0.007	0.125	0.125	568.299	0.062
Crushing/Proc. Equipment	2024	51	120	1.81	0.364	3.697	2.389	0.006	0.112	0.112	568.299	0.032
Crushing/Proc. Equipment	2024	121	175	2.866	0.287	3.243	1.472	0.006	0.071	0.071	568.299	0.025
Crushing/Proc. Equipment	2024	176	250	3.448	0.236	1.109	1.165	0.006	0.036	0.036	568.299	0.021
Crushing/Proc. Equipment	2024	251	500	5.193	0.232	1.062	1.077	0.005	0.035	0.035	568.299	0.021
Crushing/Proc. Equipment	2024	501	750	8.207	0.233	1.063	1.098	0.005	0.036	0.036	568.299	0.021
Crushing/Proc. Equipment	2024	1001	9999	21.454	0.274	1.096	3.029	0.005	0.059	0.059	568.299	0.024
Crushing/Proc. Equipment	2025	26	50	1.724	0.656	4.982	3.742	0.007	0.107	0.107	568.299	0.059

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Crushing/Proc. Equipment	2025	51	120	1.716	0.345	3.694	2.248	0.006	0.095	0.095	568.299	0.031
Crushing/Proc. Equipment	2025	121	175	2.696	0.27	3.246	1.301	0.006	0.06	0.06	568.299	0.024
Crushing/Proc. Equipment	2025	176	250	3.279	0.224	1.108	1.012	0.006	0.031	0.031	568.299	0.02
Crushing/Proc. Equipment	2025	251	500	4.95	0.221	1.061	0.937	0.005	0.03	0.03	568.299	0.02
Crushing/Proc. Equipment	2025	501	750	7.826	0.222	1.061	0.955	0.005	0.03	0.03	568.299	0.02
Crushing/Proc. Equipment	2025	1001	9999	20.429	0.261	1.087	2.91	0.005	0.053	0.053	568.299	0.023
Crushing/Proc. Equipment	2030	26	50	1.381	0.525	4.857	3.351	0.007	0.043	0.043	568.299	0.047
Crushing/Proc. Equipment	2030	51	120	1.35	0.272	3.673	1.708	0.006	0.038	0.038	568.299	0.024
Crushing/Proc. Equipment	2030	121	175	1.976	0.197	3.244	0.6	0.006	0.025	0.025	568.299	0.017
Crushing/Proc. Equipment	2030	176	250	2.701	0.185	1.105	0.502	0.006	0.017	0.017	568.299	0.016
Crushing/Proc. Equipment	2030	251	500	4.113	0.184	1.058	0.476	0.005	0.017	0.017	568.299	0.016
Crushing/Proc. Equipment	2030	501	750	6.473	0.184	1.058	0.478	0.005	0.017	0.017	568.299	0.016
Crushing/Proc. Equipment	2030	1001	9999	15.345	0.196	1.059	2.59	0.005	0.032	0.032	568.299	0.017
Crushing/Proc. Equipment	2035	26	50	1.282	0.487	4.819	3.237	0.007	0.023	0.023	568.299	0.044
Crushing/Proc. Equipment	2035	51	120	1.236	0.249	3.665	1.531	0.006	0.02	0.02	568.299	0.022
Crushing/Proc. Equipment	2035	121	175	1.76	0.176	3.242	0.382	0.006	0.015	0.015	568.299	0.015
Crushing/Proc. Equipment	2035	176	250	2.521	0.172	1.104	0.342	0.006	0.012	0.012	568.3	0.015
Crushing/Proc. Equipment	2035	251	500	3.852	0.172	1.058	0.338	0.005	0.012	0.012	568.299	0.015
Crushing/Proc. Equipment	2035	501	750	6.064	0.172	1.058	0.338	0.005	0.012	0.012	568.299	0.015
Crushing/Proc. Equipment	2035	1001	9999	13.865	0.177	1.058	2.482	0.005	0.026	0.026	568.299	0.016
Crushing/Proc. Equipment	2040	26	50	1.284	0.488	4.833	3.194	0.007	0.017	0.017	568.299	0.044
Crushing/Proc. Equipment	2040	51	120	1.219	0.245	3.67	1.477	0.006	0.015	0.015	568.299	0.022
Crushing/Proc. Equipment	2040	121	175	1.698	0.17	3.246	0.306	0.006	0.012	0.012	568.299	0.015
Crushing/Proc. Equipment	2040	176	250	2.464	0.168	1.106	0.292	0.006	0.011	0.011	568.299	0.015
Crushing/Proc. Equipment	2040	251	500	3.766	0.168	1.059	0.292	0.005	0.011	0.011	568.299	0.015
Crushing/Proc. Equipment	2040	501	750	5.941	0.169	1.059	0.292	0.005	0.011	0.011	568.299	0.015
Crushing/Proc. Equipment	2040	1001	9999	13.333	0.17	1.059	2.457	0.005	0.024	0.024	568.299	0.015
Dumpers/Tenders	1990	16	25	2.645	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Dumpers/Tenders	2000	16	25	2.444	2.045	4.69	6.397	0.065	0.571	0.571	568.299	0.184
Dumpers/Tenders	2005	16	25	1.554	1.3	3.337	5.74	0.065	0.426	0.426	568.299	0.117
Dumpers/Tenders	2010	16	25	0.963	0.806	2.507	4.804	0.007	0.271	0.271	568.299	0.072
Dumpers/Tenders	2011	16	25	0.921	0.771	2.456	4.686	0.007	0.251	0.251	568.299	0.069
Dumpers/Tenders	2012	16	25	0.887	0.742	2.416	4.576	0.007	0.232	0.232	568.299	0.066
Dumpers/Tenders	2013	16	25	0.86	0.719	2.385	4.477	0.007	0.216	0.216	568.3	0.064
Dumpers/Tenders	2014	16	25	0.842	0.705	2.364	4.433	0.007	0.2	0.2	568.3	0.063
Dumpers/Tenders	2015	16	25	0.831	0.696	2.35	4.402	0.007	0.187	0.187	568.299	0.062
Dumpers/Tenders	2016	16	25	0.825	0.69	2.342	4.378	0.007	0.175	0.175	568.299	0.062
Dumpers/Tenders	2017	16	25	0.821	0.687	2.34	4.362	0.007	0.171	0.171	568.299	0.062
Dumpers/Tenders	2018	16	25	0.82	0.686	2.339	4.35	0.007	0.169	0.169	568.299	0.061
Dumpers/Tenders	2019	16	25	0.82	0.686	2.339	4.341	0.007	0.167	0.167	568.299	0.061
Dumpers/Tenders	2020	16	25	0.819	0.685	2.339	4.336	0.007	0.165	0.165	568.299	0.061
Dumpers/Tenders	2021	16	25	0.819	0.685	2.339	4.333	0.007	0.163	0.163	568.299	0.061
Dumpers/Tenders	2022	16	25	0.819	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
Dumpers/Tenders	2023	16	25	0.819	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
Dumpers/Tenders	2024	16	25	0.819	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
Dumpers/Tenders	2025	16	25	0.819	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Dumpers/Tenders	2030	16	25	0.819	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
Dumpers/Tenders	2035	16	25	0.819	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Dumpers/Tenders	2040	16	25	0.819	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Excavators	1990	16	25	5.933	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Excavators	1990	26	50	21.032	5.155	10.359	8.08	0.871	1.341	1.341	568.299	0.465
Excavators	1990	51	120	29.647	2.469	5.901	15.421	0.791	1.413	1.413	568.299	0.222
Excavators	1990	121	175	35.634	1.947	5.271	15.075	0.758	1.096	1.096	568.299	0.175
Excavators	1990	176	250	50.388	1.947	5.271	15.075	0.758	1.096	1.096	568.299	0.175
Excavators	1990	251	500	65.206	1.71	12.155	14.225	0.662	0.93	0.93	568.3	0.154
Excavators	1990	501	750	108.079	1.71	12.155	14.225	1.018	0.947	0.947	568.299	0.154
Excavators	2000	16	25	4.937	1.841	4.315	6.281	0.065	0.543	0.543	568.299	0.166
Excavators	2000	26	50	18.836	4.616	9.494	7.102	0.066	0.958	0.958	568.299	0.416
Excavators	2000	51	120	21.925	1.826	4.602	10.156	0.06	0.913	0.913	568.299	0.164
Excavators	2000	121	175	22.624	1.236	3.672	9.345	0.057	0.525	0.525	568.299	0.111
Excavators	2000	176	250	25.927	1.001	2.794	8.952	0.057	0.409	0.409	568.299	0.09
Excavators	2000	251	500	34.719	0.91	3.974	8.491	0.05	0.362	0.362	568.299	0.082
Excavators	2000	501	750	57.546	0.91	3.974	8.491	0.052	0.362	0.362	568.299	0.082
Excavators	2005	16	25	2.091	0.779	2.397	5.219	0.065	0.319	0.319	568.299	0.07
Excavators	2005	26	50	16.217	3.974	8.597	6.562	0.066	0.871	0.871	568.299	0.358
Excavators	2005	51	120	19.001	1.582	4.354	8.632	0.06	0.853	0.853	568.299	0.142
Excavators	2005	121	175	18.9	1.032	3.452	7.905	0.057	0.461	0.461	568.299	0.093
Excavators	2005	176	250	18.379	0.71	1.892	7.456	0.057	0.276	0.276	568.299	0.064
Excavators	2005	251	500	24.005	0.629	2.194	6.685	0.05	0.248	0.248	568.299	0.056
Excavators	2005	501	750	40.443	0.64	2.192	6.888	0.052	0.251	0.251	568.299	0.057
Excavators	2010	16	25	0.993664	0.835	4.56926	5.19123	0.0054	0.4128	0.3798	584.0737	0.17
Excavators	2010	26	50	0.993664	0.835	4.56926	5.19123	0.0054	0.4128	0.3798	584.0737	0.17
Excavators	2010	51	120	0.73275	0.6157	3.69337	6.10169	0.0048	0.4694	0.4318	518.9941	0.1511

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Excavators	2010	121	175	0.572846	0.4814	3.1674	5.82964	0.0049	0.299	0.2751	525.0484	0.1528
Excavators	2010	176	250	0.422004	0.3546	1.45526	5.78636	0.0049	0.1818	0.1673	525.2427	0.1529
Excavators	2010	251	500	0.315965	0.2655	1.44794	4.38582	0.0049	0.1435	0.132	522.2909	0.152
Excavators	2010	501	750	0.327987	0.2756	1.53784	4.52996	0.0048	0.1487	0.1368	520.4269	0.1515
Excavators	2011	16	25	0.999474	0.8398	4.67202	5.21824	0.0054	0.4129	0.3798	582.8586	0.1701
Excavators	2011	26	50	0.999474	0.8398	4.67202	5.21824	0.0054	0.4129	0.3798	582.8586	0.1701
Excavators	2011	51	120	0.675188	0.5673	3.65807	5.70006	0.0048	0.4358	0.4009	517.4139	0.151
Excavators	2011	121	175	0.533269	0.4481	3.15702	5.44943	0.0049	0.2776	0.2554	523.5178	0.1528
Excavators	2011	176	250	0.400356	0.3364	1.41809	5.41822	0.0049	0.1706	0.1569	523.6886	0.1528
Excavators	2011	251	500	0.303301	0.2549	1.41288	4.1131	0.0049	0.1332	0.1226	521.2972	0.1521
Excavators	2011	501	750	0.326107	0.274	1.47034	4.42127	0.0048	0.1457	0.1341	519.1221	0.1515
Excavators	2012	16	25	1.018057	0.8555	4.79179	5.19511	0.0054	0.4123	0.3793	581.4648	0.1701
Excavators	2012	26	50	1.018057	0.8555	4.79179	5.19511	0.0054	0.4123	0.3793	581.4648	0.1701
Excavators	2012	51	120	0.67458	0.5668	3.68099	5.63138	0.0048	0.4336	0.3989	516.083	0.151
Excavators	2012	121	175	0.534632	0.4492	3.17839	5.38897	0.0049	0.275	0.253	522.0959	0.1527
Excavators	2012	176	250	0.402641	0.3383	1.42562	5.32577	0.0049	0.1687	0.1552	522.4958	0.1529
Excavators	2012	251	500	0.308496	0.2592	1.4255	4.05714	0.0049	0.1313	0.1208	520.034	0.1521
Excavators	2012	501	750	0.334165	0.2808	1.47962	4.3898	0.0048	0.1452	0.1336	517.8167	0.1515
Excavators	2013	16	25	0.995402	0.8364	4.80774	5.0526	0.0054	0.3931	0.3616	578.236	0.17
Excavators	2013	26	50	0.995402	0.8364	4.80774	5.0526	0.0054	0.3931	0.3616	578.236	0.17
Excavators	2013	51	120	0.639011	0.5369	3.66866	5.3703	0.0048	0.4043	0.372	513.7321	0.151
Excavators	2013	121	175	0.503929	0.4234	3.16966	5.08991	0.0049	0.2534	0.2332	519.496	0.1527
Excavators	2013	176	250	0.383779	0.3225	1.40068	4.93756	0.0049	0.1572	0.1446	519.8753	0.1529
Excavators	2013	251	500	0.295491	0.2483	1.38754	3.73509	0.0049	0.1208	0.1111	517.7809	0.1522
Excavators	2013	501	750	0.301827	0.2536	1.36166	3.92892	0.0048	0.1262	0.1161	514.1872	0.1512
Excavators	2014	16	25	0.981904	0.8251	4.84434	4.96504	0.0054	0.3802	0.3498	575.2674	0.17
Excavators	2014	26	50	0.981904	0.8251	4.84434	4.96504	0.0054	0.3802	0.3498	575.2674	0.17
Excavators	2014	51	120	0.610505	0.513	3.66313	5.13137	0.0048	0.3824	0.3518	511.3057	0.1511
Excavators	2014	121	175	0.464169	0.39	3.15438	4.65701	0.0049	0.2289	0.2106	516.9066	0.1528
Excavators	2014	176	250	0.350137	0.2942	1.34557	4.37384	0.0049	0.1388	0.1277	517.3234	0.1529
Excavators	2014	251	500	0.276896	0.2327	1.32721	3.35284	0.0049	0.108	0.0994	515.2151	0.1523
Excavators	2014	501	750	0.284069	0.2387	1.34745	3.54089	0.0048	0.1143	0.1052	511.9453	0.1513
Excavators	2015	16	25	0.991068	0.8328	4.92488	4.91817	0.0054	0.3747	0.3447	569.5116	0.17
Excavators	2015	26	50	0.991068	0.8328	4.92488	4.91817	0.0054	0.3747	0.3447	569.5116	0.17
Excavators	2015	51	120	0.60346	0.5071	3.67943	5.01907	0.0048	0.3735	0.3436	506.1727	0.1511
Excavators	2015	121	175	0.456597	0.3837	3.16762	4.4807	0.0049	0.2212	0.2035	511.6869	0.1528
Excavators	2015	176	250	0.343545	0.2887	1.33148	4.18222	0.0049	0.1331	0.1224	512.0555	0.1529
Excavators	2015	251	500	0.276143	0.232	1.31662	3.21395	0.0049	0.1042	0.0959	509.8675	0.1522
Excavators	2015	501	750	0.28808	0.2421	1.35372	3.47287	0.0048	0.1129	0.1039	506.6816	0.1513
Excavators	2016	16	25	0.970016	0.8151	4.94198	4.82432	0.0054	0.3586	0.3299	563.8026	0.1701
Excavators	2016	26	50	0.970016	0.8151	4.94198	4.82432	0.0054	0.3586	0.3299	563.8026	0.1701
Excavators	2016	51	120	0.566011	0.4756	3.66066	4.70806	0.0048	0.3441	0.3166	500.9659	0.1511
Excavators	2016	121	175	0.425494	0.3575	3.15771	4.08095	0.0049	0.2008	0.1847	506.495	0.1528
Excavators	2016	176	250	0.312033	0.2622	1.27749	3.66736	0.0049	0.1158	0.1065	506.544	0.1528
Excavators	2016	251	500	0.253752	0.2132	1.23344	2.81451	0.0049	0.0906	0.0834	504.2899	0.1521
Excavators	2016	501	750	0.287698	0.2417	1.34881	3.35762	0.0048	0.1102	0.1014	501.6596	0.1513
Excavators	2017	16	25	0.91741	0.7709	4.88904	4.67818	0.0054	0.3319	0.3053	554.9101	0.17
Excavators	2017	26	50	0.91741	0.7709	4.88904	4.67818	0.0054	0.3319	0.3053	554.9101	0.17
Excavators	2017	51	120	0.523542	0.4399	3.63939	4.37952	0.0048	0.3103	0.2855	493.409	0.1512
Excavators	2017	121	175	0.397029	0.3336	3.15091	3.69967	0.0049	0.182	0.1675	498.5222	0.1527
Excavators	2017	176	250	0.293543	0.2467	1.24911	3.31872	0.0049	0.1051	0.0967	498.4364	0.1527
Excavators	2017	251	500	0.237788	0.1998	1.19852	2.50715	0.0049	0.0811	0.0746	496.8098	0.1522
Excavators	2017	501	750	0.249769	0.2099	1.22803	2.71934	0.0048	0.0899	0.0827	494.5496	0.1515
Excavators	2018	16	25	0.818091	0.6874	4.70022	4.39518	0.0054	0.2841	0.2614	545.3468	0.1698
Excavators	2018	26	50	0.818091	0.6874	4.70022	4.39518	0.0054	0.2841	0.2614	545.3468	0.1698
Excavators	2018	51	120	0.438055	0.3681	3.56214	3.76366	0.0048	0.2505	0.2304	486.056	0.1513
Excavators	2018	121	175	0.324959	0.2731	3.09338	2.92361	0.0049	0.1418	0.1304	490.6725	0.1528
Excavators	2018	176	250	0.240329	0.2019	1.15209	2.59377	0.0049	0.0788	0.0725	490.2569	0.1526
Excavators	2018	251	500	0.207823	0.1746	1.13951	2.05045	0.0049	0.0664	0.0611	489.1025	0.1523
Excavators	2018	501	750	0.22476	0.1889	1.22359	2.26567	0.0048	0.0759	0.0698	487.6528	0.1518
Excavators	2019	16	25	0.75855	0.6374	4.59698	4.19867	0.0054	0.2503	0.2303	536.9132	0.1699
Excavators	2019	26	50	0.75855	0.6374	4.59698	4.19867	0.0054	0.2503	0.2303	536.9132	0.1699
Excavators	2019	51	120	0.386598	0.3248	3.52421	3.36874	0.0048	0.2107	0.1938	478.2452	0.1513
Excavators	2019	121	175	0.293021	0.2462	3.08163	2.53264	0.0049	0.1221	0.1124	482.6838	0.1527
Excavators	2019	176	250	0.220917	0.1856	1.12671	2.24187	0.0049	0.068	0.0625	482.2503	0.1526
Excavators	2019	251	500	0.192898	0.1621	1.1135	1.77986	0.0049	0.0578	0.0532	481.2361	0.1523
Excavators	2019	501	750	0.209677	0.1762	1.17289	1.98661	0.0048	0.0671	0.0618	479.2876	0.1516
Excavators	2020	16	25	0.705964	0.5932	4.50032	4.03131	0.0054	0.2222	0.2044	525.3675	0.1699
Excavators	2020	26	50	0.705964	0.5932	4.50032	4.03131	0.0054	0.2222	0.2044	525.3675	0.1699
Excavators	2020	51	120	0.356064	0.2992	3.50495	3.08964	0.0048	0.1848	0.17	468.0546	0.1514
Excavators	2020	121	175	0.275327	0.2314	3.08597	2.27838	0.0049	0.1104	0.1015	472.2891	0.1527
Excavators	2020	176	250	0.211076	0.1774	1.11778	2.02738	0.0049	0.0614	0.0565	471.8828	0.1526
Excavators	2020	251	500	0.182542	0.1534	1.1016	1.57199	0.0049	0.0518	0.0476	470.2956	0.1521

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Excavators	2020	501	750	0.202011	0.1697	1.14543	1.79718	0.0048	0.0612	0.0563	468.8706	0.1516
Excavators	2021	16	25	0.669315	0.5624	4.46094	3.91866	0.0054	0.2016	0.1855	525.3774	0.1699
Excavators	2021	26	50	0.669315	0.5624	4.46094	3.91866	0.0054	0.2016	0.1855	525.3774	0.1699
Excavators	2021	51	120	0.327314	0.275	3.49196	2.84891	0.0048	0.1606	0.1478	467.7906	0.1513
Excavators	2021	121	175	0.257574	0.2164	3.08975	2.03357	0.0049	0.0986	0.0907	472.3586	0.1528
Excavators	2021	176	250	0.193738	0.1628	1.10324	1.70572	0.0049	0.0523	0.0481	471.7931	0.1526
Excavators	2021	251	500	0.170127	0.143	1.08777	1.33174	0.0049	0.0446	0.041	469.6156	0.1519
Excavators	2021	501	750	0.196683	0.1653	1.14978	1.61856	0.0049	0.0562	0.0517	469.547	0.1519
Excavators	2022	16	25	0.568779	0.4779	4.27341	3.70039	0.0054	0.1597	0.1469	525.4468	0.1699
Excavators	2022	26	50	0.568779	0.4779	4.27341	3.70039	0.0054	0.1597	0.1469	525.4468	0.1699
Excavators	2022	51	120	0.299503	0.2517	3.47329	2.60649	0.0048	0.1375	0.1265	467.6256	0.1512
Excavators	2022	121	175	0.22749	0.1912	3.074	1.6781	0.0049	0.0811	0.0746	472.1917	0.1527
Excavators	2022	176	250	0.176606	0.1484	1.09157	1.38616	0.0049	0.0435	0.04	472.0412	0.1527
Excavators	2022	251	500	0.152263	0.1279	1.06126	1.03988	0.0049	0.0349	0.0321	469.7105	0.1519
Excavators	2022	501	750	0.178436	0.1499	1.144	1.2865	0.0048	0.0472	0.0434	469.2892	0.1518
Excavators	2023	16	25	0.535724	0.4502	4.23393	3.59356	0.0054	0.1394	0.1283	525.4286	0.1699
Excavators	2023	26	50	0.535724	0.4502	4.23393	3.59356	0.0054	0.1394	0.1283	525.4286	0.1699
Excavators	2023	51	120	0.273823	0.2301	3.45367	2.38066	0.0048	0.1162	0.1069	467.1573	0.1511
Excavators	2023	121	175	0.212046	0.1782	3.07648	1.46245	0.0049	0.0716	0.0659	472.277	0.1527
Excavators	2023	176	250	0.168964	0.142	1.08965	1.20943	0.0049	0.0387	0.0356	472.2131	0.1527
Excavators	2023	251	500	0.145171	0.122	1.05093	0.89311	0.0049	0.0302	0.0278	469.8892	0.152
Excavators	2023	501	750	0.171247	0.1439	1.13199	1.15865	0.0048	0.0432	0.0398	468.6826	0.1516
Excavators	2024	16	25	0.495634	0.4165	4.20529	3.50816	0.0054	0.1195	0.11	525.979	0.1701
Excavators	2024	26	50	0.495634	0.4165	4.20529	3.50816	0.0054	0.1195	0.11	525.979	0.1701
Excavators	2024	51	120	0.258544	0.2172	3.45322	2.24781	0.0048	0.1023	0.0942	467.3843	0.1512
Excavators	2024	121	175	0.202572	0.1702	3.08336	1.32479	0.0049	0.0653	0.06	472.4279	0.1528
Excavators	2024	176	250	0.165297	0.1389	1.0899	1.10808	0.0049	0.0358	0.0329	472.4415	0.1528
Excavators	2024	251	500	0.144133	0.1211	1.05369	0.83129	0.0049	0.0287	0.0264	469.7108	0.1519
Excavators	2024	501	750	0.169017	0.142	1.13421	1.10467	0.0048	0.0406	0.0374	468.652	0.1516
Excavators	2025	16	25	0.47994	0.4033	4.21941	3.45298	0.0054	0.1074	0.0988	525.7772	0.17
Excavators	2025	26	50	0.47994	0.4033	4.21941	3.45298	0.0054	0.1074	0.0988	525.7772	0.17
Excavators	2025	51	120	0.23878	0.2006	3.43876	2.08246	0.0048	0.0853	0.0784	466.7376	0.151
Excavators	2025	121	175	0.187811	0.1578	3.078	1.15367	0.0049	0.0566	0.052	472.4964	0.1528
Excavators	2025	176	250	0.155588	0.1307	1.08136	0.96211	0.0049	0.0316	0.0291	472.5599	0.1528
Excavators	2025	251	500	0.137039	0.1152	1.05072	0.72641	0.0049	0.0257	0.0236	470.2915	0.1521
Excavators	2025	501	750	0.165305	0.1389	1.13484	1.02571	0.0048	0.038	0.0349	468.5582	0.1515
Excavators	2030	16	25	1.838	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Excavators	2030	26	50	2.458	0.602	5.309	3.393	0.007	0.038	0.038	568.299	0.054
Excavators	2030	51	120	3.618	0.301	3.806	1.676	0.006	0.034	0.034	568.299	0.027
Excavators	2030	121	175	3.914	0.213	3.362	0.525	0.006	0.023	0.023	568.299	0.019
Excavators	2030	176	250	5.258	0.203	1.145	0.452	0.006	0.016	0.016	568.299	0.018
Excavators	2030	251	500	7.722	0.202	1.088	0.433	0.005	0.016	0.016	568.299	0.018
Excavators	2030	501	750	12.807	0.202	1.088	0.437	0.005	0.016	0.016	568.299	0.018
Excavators	2035	16	25	1.838	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Excavators	2035	26	50	2.333	0.572	5.287	3.323	0.007	0.024	0.024	568.299	0.051
Excavators	2035	51	120	3.411	0.284	3.802	1.551	0.006	0.021	0.021	568.299	0.025
Excavators	2035	121	175	3.622	0.197	3.363	0.365	0.006	0.015	0.015	568.299	0.017
Excavators	2035	176	250	5.059	0.195	1.145	0.342	0.006	0.013	0.013	568.3	0.017
Excavators	2035	251	500	7.45	0.195	1.089	0.337	0.005	0.013	0.013	568.299	0.017
Excavators	2035	501	750	12.348	0.195	1.088	0.338	0.005	0.013	0.013	568.299	0.017
Excavators	2040	16	25	1.838	0.685	2.339	4.332	0.007	0.161	0.161	568.3	0.061
Excavators	2040	26	50	2.314	0.567	5.283	3.29	0.007	0.019	0.019	568.299	0.051
Excavators	2040	51	120	3.36	0.279	3.802	1.507	0.006	0.017	0.017	568.299	0.025
Excavators	2040	121	175	3.532	0.193	3.363	0.311	0.006	0.013	0.013	568.299	0.017
Excavators	2040	176	250	4.971	0.192	1.145	0.3	0.006	0.011	0.011	568.299	0.017
Excavators	2040	251	500	7.322	0.192	1.089	0.3	0.005	0.011	0.011	568.299	0.017
Excavators	2040	501	750	12.137	0.192	1.089	0.3	0.005	0.011	0.011	568.299	0.017
Forklifts	1990	26	50	11.848	4.826	9.773	7.952	0.692	1.266	1.266	568.299	0.435
Forklifts	1990	51	120	12.154	2.326	5.638	14.699	0.628	1.32	1.32	568.3	0.209
Forklifts	1990	121	175	14.423	1.537	4.938	12.932	0.602	0.849	0.849	568.299	0.138
Forklifts	1990	176	250	19.845	1.537	4.938	12.932	0.602	0.849	0.849	568.299	0.138
Forklifts	1990	251	500	25.356	1.365	10.853	12.267	0.525	0.73	0.73	568.299	0.123
Forklifts	2000	26	50	10.952	4.461	9.216	7.035	0.065	0.934	0.934	568.3	0.402
Forklifts	2000	51	120	9.146	1.75	4.459	9.75	0.059	0.882	0.882	568.299	0.157
Forklifts	2000	121	175	11.149	1.188	3.519	9.001	0.057	0.502	0.502	568.299	0.107
Forklifts	2000	176	250	11.958	0.926	2.534	8.546	0.057	0.372	0.372	568.299	0.083
Forklifts	2000	251	500	15.747	0.848	3.255	8.126	0.049	0.333	0.333	568.299	0.076
Forklifts	2005	26	50	10.087	4.108	8.778	6.62	0.065	0.891	0.891	568.299	0.37
Forklifts	2005	51	120	8.425	1.612	4.35	8.602	0.059	0.876	0.876	568.299	0.145
Forklifts	2005	121	175	9.959	1.061	3.418	7.94	0.057	0.475	0.475	568.299	0.095
Forklifts	2005	176	250	8.606	0.666	1.693	7.367	0.057	0.253	0.253	568.299	0.06
Forklifts	2005	251	500	10.976	0.591	1.803	6.611	0.049	0.23	0.23	568.299	0.053
Forklifts	2010	26	50	2.846117	2.3915	7.62516	6.31187	0.0054	0.7289	0.6706	583.8704	0.17

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Forklifts	2010	51	120	1.045472	0.8785	4.10764	7.63494	0.0049	0.6245	0.5746	523.9205	0.1525
Forklifts	2010	121	175	0.764801	0.6426	3.54812	7.24303	0.0049	0.3885	0.3574	524.5625	0.1527
Forklifts	2010	176	250	0.852639	0.7165	2.88991	8.49545	0.0049	0.3977	0.3658	525.9172	0.1531
Forklifts	2010	251	500	0.814667	0.6845	5.79345	8.13812	0.0049	0.3811	0.3506	526.239	0.1532
Forklifts	2011	26	50	2.771689	2.329	7.5619	6.26642	0.0054	0.7146	0.6574	582.4107	0.17
Forklifts	2011	51	120	1.023636	0.8601	4.10232	7.45983	0.0049	0.6169	0.5675	522.6107	0.1525
Forklifts	2011	121	175	0.759385	0.6381	3.55732	7.14122	0.0049	0.3854	0.3545	523.2511	0.1527
Forklifts	2011	176	250	0.819463	0.6886	2.77115	8.17495	0.0049	0.3809	0.3505	524.6024	0.1531
Forklifts	2011	251	500	0.787175	0.6614	5.42187	7.84	0.0049	0.3677	0.3383	524.9234	0.1532
Forklifts	2012	26	50	2.800937	2.3536	7.68036	6.27736	0.0054	0.7204	0.6628	580.951	0.17
Forklifts	2012	51	120	1.026513	0.8626	4.13104	7.43066	0.0049	0.6201	0.5705	521.3009	0.1525
Forklifts	2012	121	175	0.764904	0.6427	3.58413	7.11981	0.0049	0.3873	0.3563	521.9397	0.1527
Forklifts	2012	176	250	0.82428	0.6926	2.77846	8.14199	0.0049	0.3808	0.3504	523.2876	0.1531
Forklifts	2012	251	500	0.795085	0.6681	5.42806	7.85628	0.0049	0.3693	0.3398	523.6078	0.1532
Forklifts	2013	26	50	2.655997	2.2318	7.4937	6.14743	0.0054	0.6887	0.6336	578.0317	0.17
Forklifts	2013	51	120	0.996839	0.8376	4.11855	7.21545	0.0049	0.6033	0.555	518.6813	0.1525
Forklifts	2013	121	175	0.743778	0.625	3.57971	6.90229	0.0049	0.3747	0.3447	519.3169	0.1527
Forklifts	2013	176	250	0.786493	0.6609	2.67477	7.77338	0.0049	0.3604	0.3316	520.658	0.1531
Forklifts	2013	251	500	0.686735	0.577	4.6871	6.91072	0.0049	0.3139	0.2888	520.9766	0.1532
Forklifts	2014	26	50	2.515249	2.1135	7.32058	6.00609	0.0054	0.6563	0.6038	575.1123	0.17
Forklifts	2014	51	120	0.945485	0.7945	4.07936	6.84833	0.0049	0.5737	0.5278	516.0617	0.1525
Forklifts	2014	121	175	0.688099	0.5782	3.52073	6.35205	0.0049	0.3451	0.3175	516.694	0.1527
Forklifts	2014	176	250	0.731475	0.6146	2.50114	7.27612	0.0049	0.3301	0.3037	518.0284	0.1531
Forklifts	2014	251	500	0.644228	0.5413	4.25186	6.35258	0.0049	0.2891	0.266	518.3454	0.1532
Forklifts	2015	26	50	2.466892	2.0729	7.29982	5.93143	0.0054	0.6428	0.5914	569.2736	0.17
Forklifts	2015	51	120	0.914509	0.7684	4.06346	6.60091	0.0049	0.5545	0.5101	510.8225	0.1525
Forklifts	2015	121	175	0.673169	0.5656	3.51969	6.13482	0.0049	0.3348	0.308	511.4484	0.1527
Forklifts	2015	176	250	0.672054	0.5647	2.32501	6.69668	0.0049	0.2978	0.274	512.7693	0.1531
Forklifts	2015	251	500	0.539875	0.4536	3.29951	5.33227	0.0049	0.2368	0.2178	513.083	0.1532
Forklifts	2016	26	50	2.217878	1.8636	6.93473	5.66211	0.0054	0.5832	0.5365	563.4349	0.17
Forklifts	2016	51	120	0.860278	0.7229	4.02311	6.22192	0.0049	0.5203	0.4786	505.5833	0.1525
Forklifts	2016	121	175	0.630613	0.5299	3.47253	5.67466	0.0049	0.3101	0.2853	506.2028	0.1527
Forklifts	2016	176	250	0.641979	0.5394	2.22626	6.35303	0.0049	0.2799	0.2575	507.5101	0.1531
Forklifts	2016	251	500	0.419581	0.3526	2.57209	4.04212	0.0049	0.1737	0.1598	507.8206	0.1532
Forklifts	2017	26	50	2.026819	1.7031	6.67251	5.45035	0.0054	0.5355	0.4927	554.6769	0.17
Forklifts	2017	51	120	0.799635	0.6719	3.97881	5.81772	0.0049	0.48	0.4416	497.7245	0.1525
Forklifts	2017	121	175	0.604568	0.508	3.45188	5.36215	0.0049	0.2937	0.2702	498.3344	0.1527
Forklifts	2017	176	250	0.589964	0.4957	2.0923	5.75116	0.0049	0.2518	0.2316	499.6213	0.1531
Forklifts	2017	251	500	0.401897	0.3377	2.50803	3.7797	0.0049	0.1613	0.1484	499.927	0.1532
Forklifts	2018	26	50	1.658295	1.3934	6.10276	5.05181	0.0054	0.4466	0.4109	545.9188	0.17
Forklifts	2018	51	120	0.675301	0.5674	3.85819	5.0153	0.0049	0.4002	0.3682	489.8657	0.1525
Forklifts	2018	121	175	0.508414	0.4272	3.33646	4.42984	0.0049	0.2412	0.2219	490.4659	0.1527
Forklifts	2018	176	250	0.506009	0.4252	1.83475	4.93757	0.0049	0.2072	0.1906	491.7326	0.1531
Forklifts	2018	251	500	0.335655	0.282	1.87814	3.01864	0.0049	0.1245	0.1146	492.0335	0.1532
Forklifts	2019	26	50	1.480074	1.2437	5.88034	4.86189	0.0054	0.4009	0.3688	537.1608	0.17
Forklifts	2019	51	120	0.606336	0.5095	3.80391	4.54965	0.0049	0.3525	0.3243	482.0069	0.1525
Forklifts	2019	121	175	0.454984	0.3823	3.28831	3.86458	0.0049	0.2102	0.1934	482.5975	0.1527
Forklifts	2019	176	250	0.445406	0.3743	1.6773	4.2498	0.0049	0.1753	0.1613	483.8438	0.1531
Forklifts	2019	251	500	0.31829	0.2675	1.814	2.75148	0.0049	0.112	0.103	484.1399	0.1532
Forklifts	2020	26	50	1.337399	1.1238	5.70563	4.68572	0.0054	0.3601	0.3313	525.4833	0.17
Forklifts	2020	51	120	0.545921	0.4587	3.75954	4.13299	0.0049	0.3079	0.2833	471.5285	0.1525
Forklifts	2020	121	175	0.402357	0.3381	3.24885	3.3196	0.0049	0.1797	0.1653	472.1062	0.1527
Forklifts	2020	176	250	0.348476	0.2928	1.44178	3.24149	0.0049	0.1259	0.1158	473.3255	0.1531
Forklifts	2020	251	500	0.299035	0.2513	1.47807	2.43991	0.0049	0.0967	0.0889	473.6151	0.1532
Forklifts	2021	26	50	1.192536	1.0021	5.53477	4.5202	0.0054	0.3178	0.2924	525.4833	0.17
Forklifts	2021	51	120	0.490261	0.412	3.72	3.75592	0.0049	0.2666	0.2453	471.5285	0.1525
Forklifts	2021	121	175	0.366939	0.3083	3.23128	2.9207	0.0049	0.1577	0.1451	472.1062	0.1527
Forklifts	2021	176	250	0.296154	0.2489	1.33672	2.58195	0.0049	0.0992	0.0912	473.3255	0.1531
Forklifts	2021	251	500	0.301833	0.2536	1.48481	2.30266	0.0049	0.0938	0.0863	473.6151	0.1532
Forklifts	2022	26	50	1.02259	0.8593	5.30418	4.31214	0.0054	0.2698	0.2482	525.4833	0.17
Forklifts	2022	51	120	0.430627	0.3618	3.67507	3.36021	0.0049	0.2226	0.2048	471.5285	0.1525
Forklifts	2022	121	175	0.324265	0.2725	3.19749	2.47982	0.0049	0.1324	0.1218	472.1062	0.1527
Forklifts	2022	176	250	0.280841	0.236	1.3171	2.31941	0.0049	0.0898	0.0826	473.3255	0.1531
Forklifts	2022	251	500	0.275829	0.2318	1.21922	1.99119	0.0049	0.0768	0.0707	473.6151	0.1532
Forklifts	2023	26	50	0.911766	0.7661	5.16597	4.15219	0.0054	0.2318	0.2132	525.4833	0.17
Forklifts	2023	51	120	0.388709	0.3266	3.64655	3.0569	0.0049	0.1889	0.1738	471.5285	0.1525
Forklifts	2023	121	175	0.289923	0.2436	3.1799	2.11214	0.0049	0.1105	0.1017	472.1062	0.1527
Forklifts	2023	176	250	0.242474	0.2037	1.23515	1.80718	0.0049	0.0687	0.0632	473.3255	0.1531
Forklifts	2023	251	500	0.261765	0.22	1.21596	1.78772	0.0049	0.0687	0.0632	473.6151	0.1532
Forklifts	2024	26	50	0.823848	0.6923	5.0885	4.03948	0.0054	0.203	0.1867	525.4833	0.17
Forklifts	2024	51	120	0.357083	0.3	3.62907	2.81432	0.0049	0.1625	0.1495	471.5285	0.1525
Forklifts	2024	121	175	0.266701	0.2241	3.17389	1.86129	0.0049	0.0955	0.0879	472.1062	0.1527
Forklifts	2024	176	250	0.232645	0.1955	1.21846	1.6253	0.0049	0.0614	0.0565	473.3255	0.1531

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Forklifts	2024	251	500	0.258844	0.2175	1.21901	1.72336	0.0049	0.0653	0.06	473.6151	0.1532
Forklifts	2025	26	50	0.757155	0.6362	5.02929	3.93206	0.0054	0.1783	0.1641	525.4833	0.17
Forklifts	2025	51	120	0.329382	0.2768	3.61138	2.60732	0.0049	0.1396	0.1284	471.5285	0.1525
Forklifts	2025	121	175	0.248361	0.2087	3.17013	1.653	0.0049	0.0843	0.0776	472.1062	0.1527
Forklifts	2025	176	250	0.226669	0.1905	1.2143	1.46623	0.0049	0.0562	0.0517	473.3255	0.1531
Forklifts	2025	251	500	0.255656	0.2148	1.22207	1.65848	0.0049	0.0617	0.0568	473.6151	0.1532
Forklifts	2030	26	50	1.388	0.565	5.272	3.33	0.007	0.023	0.023	568.299	0.051
Forklifts	2030	51	120	1.48	0.283	3.799	1.555	0.006	0.021	0.021	568.299	0.025
Forklifts	2030	121	175	1.875	0.199	3.36	0.391	0.006	0.015	0.015	568.299	0.018
Forklifts	2030	176	250	2.524	0.195	1.144	0.341	0.006	0.012	0.012	568.299	0.017
Forklifts	2030	251	500	3.633	0.195	1.088	0.341	0.005	0.012	0.012	568.299	0.017
Forklifts	2035	26	50	1.371	0.558	5.234	3.268	0.007	0.017	0.017	568.299	0.05
Forklifts	2035	51	120	1.438	0.275	3.787	1.495	0.006	0.016	0.016	568.299	0.024
Forklifts	2035	121	175	1.775	0.189	3.35	0.299	0.006	0.012	0.012	568.3	0.017
Forklifts	2035	176	250	2.433	0.188	1.141	0.29	0.006	0.011	0.011	568.3	0.017
Forklifts	2035	251	500	3.502	0.188	1.085	0.29	0.005	0.011	0.011	568.299	0.017
Forklifts	2040	26	50	1.38	0.562	5.256	3.272	0.007	0.017	0.017	568.299	0.05
Forklifts	2040	51	120	1.444	0.276	3.794	1.491	0.006	0.016	0.016	568.299	0.024
Forklifts	2040	121	175	1.777	0.189	3.356	0.288	0.006	0.012	0.012	568.299	0.017
Forklifts	2040	176	250	2.445	0.189	1.143	0.288	0.006	0.011	0.011	568.299	0.017
Forklifts	2040	251	500	3.518	0.189	1.087	0.288	0.005	0.011	0.011	568.299	0.017
Generator Sets	1990	6	15	4.791	1.804	4.999	10	1.018	0.974	0.974	568.299	0.162
Generator Sets	1990	16	25	10.151	2.213	4.999	6.919	0.83	0.74	0.74	568.299	0.199
Generator Sets	1990	26	50	24.936	3.13	6.681	7.325	0.846	0.928	0.928	568.299	0.282
Generator Sets	1990	51	120	38.362	1.891	4.97	13.19	0.768	0.985	0.985	568.299	0.17
Generator Sets	1990	121	175	47.754	1.292	4.395	11.864	0.736	0.653	0.653	568.3	0.116
Generator Sets	1990	176	250	71.475	1.292	4.395	11.864	0.736	0.653	0.653	568.299	0.116
Generator Sets	1990	251	500	104.891	1.196	6.53	11.613	0.642	0.596	0.596	568.299	0.107
Generator Sets	1990	501	750	169.323	1.196	6.53	11.612	0.658	0.596	0.596	568.299	0.107
Generator Sets	1990	1001	9999	326.002	1.195	6.53	11.612	0.658	0.594	0.594	568.299	0.107
Generator Sets	2000	6	15	4.033	1.518	4.875	8.846	0.079	0.613	0.613	568.299	0.137
Generator Sets	2000	16	25	7.648	1.667	4.783	6.405	0.065	0.51	0.51	568.299	0.15
Generator Sets	2000	26	50	23.582	2.96	6.415	6.55	0.066	0.692	0.692	568.299	0.267
Generator Sets	2000	51	120	31.137	1.535	4.158	9.468	0.06	0.686	0.686	568.299	0.138
Generator Sets	2000	121	175	38.027	1.029	3.381	8.612	0.057	0.404	0.404	568.299	0.092
Generator Sets	2000	176	250	46.981	0.849	2.656	8.277	0.057	0.325	0.325	568.299	0.076
Generator Sets	2000	251	500	70.308	0.802	3.7	8.102	0.05	0.301	0.301	568.299	0.072
Generator Sets	2000	501	750	113.5	0.802	3.7	8.102	0.051	0.301	0.301	568.3	0.072
Generator Sets	2000	1001	9999	251.503	0.921	4.274	8.686	0.051	0.344	0.344	568.299	0.083
Generator Sets	2005	6	15	3.219	1.212	4.38	7.615	0.079	0.505	0.505	568.299	0.109
Generator Sets	2005	16	25	5.748	1.253	3.922	6.014	0.065	0.432	0.432	568.299	0.113
Generator Sets	2005	26	50	20.78	2.608	5.919	6.099	0.066	0.64	0.64	568.3	0.235
Generator Sets	2005	51	120	26.634	1.313	3.853	7.987	0.06	0.634	0.634	568.299	0.118
Generator Sets	2005	121	175	31.579	0.854	3.067	7.306	0.057	0.35	0.35	568.299	0.077
Generator Sets	2005	176	250	33.443	0.604	1.801	6.892	0.057	0.229	0.229	568.299	0.054
Generator Sets	2005	251	500	47.834	0.545	2.206	6.465	0.05	0.211	0.211	568.299	0.049
Generator Sets	2005	501	750	79.444	0.561	2.206	6.609	0.051	0.214	0.214	568.3	0.05
Generator Sets	2005	1001	9999	195.712	0.717	2.719	7.582	0.051	0.255	0.255	568.299	0.064
Generator Sets	2010	6	15	2.532	0.953	4.027	6.387	0.008	0.38	0.38	568.299	0.086
Generator Sets	2010	16	25	4.408	0.961	3.309	5.477	0.007	0.342	0.342	568.299	0.086
Generator Sets	2010	26	50	16.299	2.045	5.353	5.68	0.007	0.522	0.522	568.299	0.184
Generator Sets	2010	51	120	20.399	1.005	3.677	6.573	0.006	0.516	0.516	568.299	0.09
Generator Sets	2010	121	175	24.447	0.661	2.986	5.87	0.006	0.286	0.286	568.299	0.059
Generator Sets	2010	176	250	23.668	0.428	1.333	5.501	0.006	0.163	0.163	568.299	0.038
Generator Sets	2010	251	500	33.685	0.384	1.482	5.015	0.005	0.153	0.153	568.299	0.034
Generator Sets	2010	501	750	56.116	0.396	1.482	5.147	0.005	0.155	0.155	568.299	0.035
Generator Sets	2010	1001	9999	147.466	0.54	1.93	6.544	0.005	0.193	0.193	568.299	0.048
Generator Sets	2011	6	15	2.413	0.908	3.952	6.134	0.008	0.358	0.358	568.299	0.081
Generator Sets	2011	16	25	4.22	0.92	3.179	5.36	0.007	0.325	0.325	568.299	0.083
Generator Sets	2011	26	50	15.152	1.901	5.2	5.585	0.007	0.495	0.495	568.3	0.171
Generator Sets	2011	51	120	19.003	0.937	3.64	6.226	0.006	0.493	0.493	568.299	0.084
Generator Sets	2011	121	175	22.889	0.619	2.974	5.544	0.006	0.274	0.274	568.299	0.055
Generator Sets	2011	176	250	21.62	0.391	1.249	5.125	0.006	0.147	0.147	568.299	0.035
Generator Sets	2011	251	500	30.74	0.35	1.36	4.654	0.005	0.138	0.138	568.299	0.031
Generator Sets	2011	501	750	51.271	0.362	1.36	4.784	0.005	0.14	0.14	568.299	0.032
Generator Sets	2011	1001	9999	137.042	0.502	1.784	6.202	0.005	0.18	0.18	568.299	0.045
Generator Sets	2012	6	15	2.298	0.865	3.874	5.874	0.008	0.338	0.338	568.299	0.078
Generator Sets	2012	16	25	4.059	0.884	3.043	5.239	0.007	0.307	0.307	568.299	0.079
Generator Sets	2012	26	50	13.912	1.746	5.03	5.485	0.007	0.466	0.466	568.299	0.157
Generator Sets	2012	51	120	17.544	0.865	3.603	5.848	0.006	0.46	0.46	568.299	0.078
Generator Sets	2012	121	175	21.243	0.575	2.963	5.198	0.006	0.254	0.254	568.299	0.051
Generator Sets	2012	176	250	19.998	0.361	1.196	4.77	0.006	0.133	0.133	568.3	0.032
Generator Sets	2012	251	500	28.44	0.324	1.275	4.315	0.005	0.125	0.125	568.299	0.029

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Generator Sets	2012	501	750	47.464	0.335	1.275	4.441	0.005	0.127	0.127	568.299	0.03
Generator Sets	2012	1001	9999	126.39	0.463	1.639	5.849	0.005	0.166	0.166	568.3	0.041
Generator Sets	2013	6	15	2.187	0.823	3.796	5.616	0.008	0.318	0.318	568.299	0.074
Generator Sets	2013	16	25	3.907	0.851	2.907	5.117	0.007	0.289	0.289	568.299	0.076
Generator Sets	2013	26	50	12.634	1.585	4.854	5.263	0.007	0.428	0.428	568.299	0.143
Generator Sets	2013	51	120	16.078	0.792	3.567	5.478	0.006	0.424	0.424	568.299	0.071
Generator Sets	2013	121	175	19.587	0.53	2.953	4.873	0.006	0.233	0.233	568.299	0.047
Generator Sets	2013	176	250	18.602	0.336	1.16	4.428	0.006	0.122	0.122	568.299	0.03
Generator Sets	2013	251	500	26.484	0.302	1.211	3.989	0.005	0.114	0.114	568.299	0.027
Generator Sets	2013	501	750	44.22	0.312	1.211	4.113	0.005	0.116	0.116	568.299	0.028
Generator Sets	2013	1001	9999	115.946	0.425	1.502	5.494	0.005	0.152	0.152	568.299	0.038
Generator Sets	2014	6	15	2.081	0.783	3.723	5.369	0.008	0.298	0.298	568.299	0.07
Generator Sets	2014	16	25	3.767	0.821	2.78	5	0.007	0.272	0.272	568.299	0.074
Generator Sets	2014	26	50	11.368	1.427	4.683	5.048	0.007	0.389	0.389	568.299	0.128
Generator Sets	2014	51	120	14.638	0.721	3.532	5.147	0.006	0.385	0.385	568.299	0.065
Generator Sets	2014	121	175	17.974	0.486	2.945	4.565	0.006	0.212	0.212	568.299	0.043
Generator Sets	2014	176	250	17.205	0.311	1.13	4.025	0.006	0.111	0.111	568.3	0.028
Generator Sets	2014	251	500	24.516	0.279	1.157	3.603	0.005	0.104	0.104	568.299	0.025
Generator Sets	2014	501	750	40.956	0.289	1.157	3.724	0.005	0.106	0.106	568.299	0.026
Generator Sets	2014	1001	9999	106.127	0.389	1.377	5.15	0.005	0.138	0.138	568.299	0.035
Generator Sets	2015	6	15	1.984	0.747	3.658	5.141	0.008	0.28	0.28	568.299	0.067
Generator Sets	2015	16	25	3.639	0.793	2.666	4.89	0.007	0.256	0.256	568.299	0.071
Generator Sets	2015	26	50	10.213	1.281	4.538	4.858	0.007	0.353	0.353	568.299	0.115
Generator Sets	2015	51	120	13.208	0.651	3.499	4.769	0.006	0.347	0.347	568.299	0.058
Generator Sets	2015	121	175	16.277	0.44	2.938	4.138	0.006	0.191	0.191	568.299	0.039
Generator Sets	2015	176	250	15.884	0.287	1.104	3.633	0.006	0.1	0.1	568.3	0.025
Generator Sets	2015	251	500	22.677	0.258	1.114	3.231	0.005	0.094	0.094	568.299	0.023
Generator Sets	2015	501	750	37.88	0.267	1.114	3.347	0.005	0.096	0.096	568.299	0.024
Generator Sets	2015	1001	9999	95.984	0.351	1.269	4.822	0.005	0.124	0.124	568.299	0.031
Generator Sets	2016	6	15	1.914	0.72	3.622	4.978	0.008	0.264	0.264	568.299	0.065
Generator Sets	2016	16	25	3.548	0.773	2.604	4.803	0.007	0.244	0.244	568.299	0.069
Generator Sets	2016	26	50	9.132	1.146	4.41	4.685	0.007	0.318	0.318	568.299	0.103
Generator Sets	2016	51	120	11.84	0.583	3.469	4.41	0.006	0.309	0.309	568.299	0.052
Generator Sets	2016	121	175	14.658	0.396	2.934	3.731	0.006	0.17	0.17	568.299	0.035
Generator Sets	2016	176	250	14.652	0.265	1.081	3.259	0.006	0.09	0.09	568.299	0.023
Generator Sets	2016	251	500	21.002	0.239	1.077	2.882	0.005	0.084	0.084	568.299	0.021
Generator Sets	2016	501	750	35.041	0.247	1.077	2.989	0.005	0.086	0.086	568.3	0.022
Generator Sets	2016	1001	9999	88.441	0.324	1.204	4.542	0.005	0.113	0.113	568.299	0.029
Generator Sets	2017	6	15	1.857	0.699	3.599	4.847	0.008	0.25	0.25	568.299	0.063
Generator Sets	2017	16	25	3.476	0.757	2.564	4.729	0.007	0.233	0.233	568.299	0.068
Generator Sets	2017	26	50	8.107	1.017	4.292	4.522	0.007	0.285	0.285	568.299	0.091
Generator Sets	2017	51	120	10.557	0.52	3.442	4.072	0.006	0.274	0.274	568.299	0.046
Generator Sets	2017	121	175	13.162	0.356	2.931	3.347	0.006	0.151	0.151	568.299	0.032
Generator Sets	2017	176	250	13.548	0.245	1.063	2.91	0.006	0.081	0.081	568.299	0.022
Generator Sets	2017	251	500	19.649	0.224	1.048	2.579	0.005	0.076	0.076	568.299	0.02
Generator Sets	2017	501	750	32.544	0.23	1.048	2.66	0.005	0.077	0.077	568.299	0.02
Generator Sets	2017	1001	9999	82.27	0.301	1.161	4.293	0.005	0.104	0.104	568.299	0.027
Generator Sets	2018	6	15	1.805	0.679	3.58	4.728	0.008	0.237	0.237	568.299	0.061
Generator Sets	2018	16	25	3.412	0.744	2.531	4.661	0.007	0.224	0.224	568.299	0.067
Generator Sets	2018	26	50	7.133	0.895	4.182	4.366	0.007	0.253	0.253	568.299	0.08
Generator Sets	2018	51	120	9.356	0.461	3.418	3.752	0.006	0.239	0.239	568.299	0.041
Generator Sets	2018	121	175	11.794	0.319	2.93	2.989	0.006	0.133	0.133	568.299	0.028
Generator Sets	2018	176	250	12.549	0.226	1.048	2.582	0.006	0.072	0.072	568.299	0.02
Generator Sets	2018	251	500	18.523	0.211	1.028	2.31	0.005	0.069	0.069	568.299	0.019
Generator Sets	2018	501	750	30.476	0.215	1.028	2.37	0.005	0.07	0.07	568.299	0.019
Generator Sets	2018	1001	9999	76.62	0.28	1.128	4.058	0.005	0.095	0.095	568.299	0.025
Generator Sets	2019	6	15	1.758	0.662	3.562	4.617	0.008	0.224	0.224	568.299	0.059
Generator Sets	2019	16	25	3.356	0.731	2.501	4.596	0.007	0.214	0.214	568.299	0.066
Generator Sets	2019	26	50	6.208	0.779	4.076	4.215	0.007	0.222	0.222	568.299	0.07
Generator Sets	2019	51	120	8.233	0.405	3.396	3.446	0.006	0.206	0.206	568.299	0.036
Generator Sets	2019	121	175	10.727	0.29	2.929	2.669	0.006	0.118	0.118	568.299	0.026
Generator Sets	2019	176	250	11.695	0.211	1.036	2.285	0.006	0.064	0.064	568.299	0.019
Generator Sets	2019	251	500	17.492	0.199	1.015	2.056	0.005	0.062	0.062	568.299	0.018
Generator Sets	2019	501	750	28.675	0.202	1.015	2.104	0.005	0.062	0.062	568.299	0.018
Generator Sets	2019	1001	9999	71.228	0.261	1.103	3.829	0.005	0.087	0.087	568.299	0.023
Generator Sets	2020	6	15	1.715	0.646	3.546	4.516	0.008	0.212	0.212	568.299	0.058
Generator Sets	2020	16	25	3.307	0.721	2.473	4.538	0.007	0.205	0.205	568.299	0.065
Generator Sets	2020	26	50	5.508	0.691	3.995	4.075	0.007	0.194	0.194	568.299	0.062
Generator Sets	2020	51	120	7.383	0.364	3.38	3.173	0.006	0.179	0.179	568.299	0.032
Generator Sets	2020	121	175	9.884	0.267	2.93	2.38	0.006	0.105	0.105	568.299	0.024
Generator Sets	2020	176	250	10.963	0.198	1.026	2.016	0.006	0.057	0.057	568.299	0.017
Generator Sets	2020	251	500	16.528	0.188	1.005	1.816	0.005	0.055	0.055	568.299	0.017
Generator Sets	2020	501	750	27.045	0.191	1.005	1.858	0.005	0.056	0.056	568.299	0.017

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Generator Sets	2020	1001	9999	66.08	0.242	1.082	3.608	0.005	0.079	0.079	568.3	0.021
Generator Sets	2021	6	15	1.683	0.634	3.531	4.441	0.008	0.201	0.201	568.299	0.057
Generator Sets	2021	16	25	3.268	0.712	2.446	4.497	0.007	0.196	0.196	568.299	0.064
Generator Sets	2021	26	50	4.884	0.613	3.905	3.916	0.007	0.165	0.165	568.299	0.055
Generator Sets	2021	51	120	6.62	0.326	3.361	2.888	0.006	0.153	0.153	568.299	0.029
Generator Sets	2021	121	175	8.995	0.243	2.925	2.068	0.006	0.091	0.091	568.299	0.021
Generator Sets	2021	176	250	10.146	0.183	1.016	1.73	0.006	0.049	0.049	568.299	0.016
Generator Sets	2021	251	500	15.395	0.175	0.996	1.562	0.005	0.048	0.048	568.299	0.015
Generator Sets	2021	501	750	25.135	0.177	0.996	1.596	0.005	0.048	0.048	568.299	0.016
Generator Sets	2021	1001	9999	60.247	0.22	1.06	3.372	0.005	0.07	0.07	568.3	0.019
Generator Sets	2022	6	15	1.662	0.626	3.519	4.39	0.008	0.193	0.193	568.299	0.056
Generator Sets	2022	16	25	3.242	0.706	2.426	4.47	0.007	0.188	0.188	568.299	0.063
Generator Sets	2022	26	50	4.466	0.56	3.858	3.796	0.007	0.143	0.143	568.299	0.05
Generator Sets	2022	51	120	6.113	0.301	3.353	2.671	0.006	0.134	0.134	568.299	0.027
Generator Sets	2022	121	175	8.363	0.226	2.926	1.83	0.006	0.081	0.081	568.299	0.02
Generator Sets	2022	176	250	9.575	0.173	1.01	1.508	0.006	0.043	0.043	568.299	0.015
Generator Sets	2022	251	500	14.616	0.166	0.99	1.384	0.005	0.042	0.042	568.299	0.015
Generator Sets	2022	501	750	23.822	0.168	0.99	1.412	0.005	0.043	0.043	568.299	0.015
Generator Sets	2022	1001	9999	56.346	0.206	1.045	3.202	0.005	0.063	0.063	568.299	0.018
Generator Sets	2023	6	15	1.643	0.618	3.508	4.345	0.008	0.186	0.186	568.299	0.055
Generator Sets	2023	16	25	3.219	0.701	2.407	4.447	0.007	0.182	0.182	568.299	0.063
Generator Sets	2023	26	50	4.102	0.514	3.819	3.685	0.007	0.124	0.124	568.299	0.046
Generator Sets	2023	51	120	5.671	0.279	3.347	2.477	0.006	0.117	0.117	568.299	0.025
Generator Sets	2023	121	175	7.812	0.211	2.927	1.635	0.006	0.071	0.071	568.299	0.019
Generator Sets	2023	176	250	9.077	0.164	1.006	1.328	0.006	0.038	0.038	568.299	0.014
Generator Sets	2023	251	500	13.922	0.158	0.986	1.228	0.005	0.037	0.037	568.299	0.014
Generator Sets	2023	501	750	22.664	0.16	0.986	1.253	0.005	0.037	0.037	568.299	0.014
Generator Sets	2023	1001	9999	53.06	0.194	1.031	3.058	0.005	0.058	0.058	568.299	0.017
Generator Sets	2024	6	15	1.627	0.612	3.499	4.305	0.008	0.181	0.181	568.299	0.055
Generator Sets	2024	16	25	3.2	0.697	2.39	4.426	0.007	0.178	0.178	568.299	0.062
Generator Sets	2024	26	50	3.789	0.475	3.787	3.582	0.007	0.107	0.107	568.299	0.042
Generator Sets	2024	51	120	5.287	0.26	3.342	2.321	0.006	0.101	0.101	568.299	0.023
Generator Sets	2024	121	175	7.312	0.197	2.929	1.462	0.006	0.062	0.062	568.299	0.017
Generator Sets	2024	176	250	8.611	0.155	1.003	1.169	0.006	0.033	0.033	568.299	0.014
Generator Sets	2024	251	500	13.26	0.151	0.983	1.082	0.005	0.032	0.032	568.3	0.013
Generator Sets	2024	501	750	21.567	0.152	0.983	1.104	0.005	0.032	0.032	568.299	0.013
Generator Sets	2024	1001	9999	50.108	0.183	1.018	2.929	0.005	0.052	0.052	568.3	0.016
Generator Sets	2025	6	15	1.613	0.607	3.491	4.269	0.008	0.178	0.178	568.299	0.054
Generator Sets	2025	16	25	3.185	0.694	2.376	4.407	0.007	0.175	0.175	568.299	0.062
Generator Sets	2025	26	50	3.511	0.44	3.758	3.481	0.007	0.093	0.093	568.3	0.039
Generator Sets	2025	51	120	4.942	0.243	3.338	2.185	0.006	0.087	0.087	568.299	0.021
Generator Sets	2025	121	175	6.832	0.184	2.93	1.297	0.006	0.053	0.053	568.299	0.016
Generator Sets	2025	176	250	8.168	0.147	1	1.02	0.006	0.028	0.028	568.299	0.013
Generator Sets	2025	251	500	12.627	0.144	0.981	0.945	0.005	0.027	0.027	568.3	0.013
Generator Sets	2025	501	750	20.518	0.145	0.981	0.964	0.005	0.027	0.027	568.299	0.013
Generator Sets	2025	1001	9999	47.32	0.173	1.008	2.812	0.005	0.047	0.047	568.299	0.015
Generator Sets	2030	6	15	1.573	0.592	3.47	4.164	0.008	0.166	0.166	568.299	0.053
Generator Sets	2030	16	25	3.15	0.686	2.34	4.347	0.007	0.165	0.165	568.299	0.061
Generator Sets	2030	26	50	2.512	0.315	3.64	3.107	0.007	0.038	0.038	568.299	0.028
Generator Sets	2030	51	120	3.616	0.178	3.316	1.645	0.006	0.034	0.034	568.299	0.016
Generator Sets	2030	121	175	4.837	0.13	2.929	0.601	0.006	0.023	0.023	568.299	0.011
Generator Sets	2030	176	250	6.637	0.12	0.998	0.504	0.006	0.016	0.016	568.299	0.01
Generator Sets	2030	251	500	10.441	0.119	0.978	0.476	0.005	0.015	0.015	568.299	0.01
Generator Sets	2030	501	750	16.888	0.119	0.978	0.482	0.005	0.015	0.015	568.299	0.01
Generator Sets	2030	1001	9999	35.17	0.128	0.979	2.483	0.005	0.029	0.029	568.299	0.011
Generator Sets	2035	6	15	1.565	0.589	3.47	4.143	0.008	0.162	0.162	568.299	0.053
Generator Sets	2035	16	25	3.144	0.685	2.34	4.332	0.007	0.162	0.162	568.299	0.061
Generator Sets	2035	26	50	2.206	0.276	3.607	2.991	0.007	0.018	0.018	568.299	0.024
Generator Sets	2035	51	120	3.176	0.156	3.31	1.458	0.006	0.016	0.016	568.299	0.014
Generator Sets	2035	121	175	4.187	0.113	2.929	0.373	0.006	0.013	0.013	568.299	0.01
Generator Sets	2035	176	250	6.1	0.11	0.998	0.331	0.006	0.011	0.011	568.299	0.009
Generator Sets	2035	251	500	9.666	0.11	0.978	0.328	0.005	0.011	0.011	568.299	0.009
Generator Sets	2035	501	750	15.606	0.11	0.978	0.328	0.005	0.011	0.011	568.299	0.009
Generator Sets	2035	1001	9999	31.223	0.114	0.978	2.362	0.005	0.022	0.022	568.299	0.01
Generator Sets	2040	6	15	1.565	0.589	3.469	4.142	0.008	0.161	0.161	568.299	0.053
Generator Sets	2040	16	25	3.144	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Generator Sets	2040	26	50	2.182	0.273	3.601	2.941	0.007	0.012	0.012	568.3	0.024
Generator Sets	2040	51	120	3.086	0.152	3.308	1.399	0.006	0.012	0.012	568.299	0.013
Generator Sets	2040	121	175	3.958	0.107	2.928	0.293	0.006	0.01	0.01	568.299	0.009
Generator Sets	2040	176	250	5.86	0.106	0.997	0.277	0.006	0.009	0.009	568.299	0.009
Generator Sets	2040	251	500	9.29	0.106	0.978	0.277	0.005	0.009	0.009	568.299	0.009
Generator Sets	2040	501	750	14.997	0.106	0.978	0.277	0.005	0.009	0.009	568.3	0.009
Generator Sets	2040	1001	9999	29.36	0.107	0.978	2.33	0.005	0.02	0.02	568.299	0.009

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Graders	1990	26	50	10.997	4.776	9.678	7.935	0.871	1.265	1.265	568.3	0.431
Graders	1990	51	120	14.614	2.332	5.658	14.78	0.791	1.325	1.325	568.299	0.21
Graders	1990	121	175	17.684	1.707	5.007	13.838	0.758	0.946	0.946	568.299	0.154
Graders	1990	176	250	24.561	1.707	5.007	13.838	0.758	0.946	0.946	568.299	0.154
Graders	1990	251	500	29.01	1.512	10.95	13.128	0.662	0.811	0.811	568.299	0.136
Graders	1990	501	750	61.406	1.512	10.95	13.128	1.018	0.826	0.826	568.3	0.136
Graders	2000	26	50	10.331	4.487	9.239	7.082	0.066	0.935	0.935	568.299	0.404
Graders	2000	51	120	11.628	1.855	4.675	10.486	0.06	0.904	0.904	568.3	0.167
Graders	2000	121	175	13.017	1.256	3.786	9.601	0.057	0.531	0.531	568.299	0.113
Graders	2000	176	250	15.266	1.061	3.039	9.264	0.057	0.437	0.437	568.299	0.095
Graders	2000	251	500	18.455	0.961	4.848	8.805	0.05	0.384	0.384	568.3	0.086
Graders	2000	501	750	39.064	0.961	4.848	8.805	0.052	0.384	0.384	568.299	0.086
Graders	2005	26	50	9.193	3.993	8.559	6.612	0.066	0.868	0.868	568.299	0.36
Graders	2005	51	120	10.174	1.623	4.406	9.021	0.06	0.849	0.849	568.3	0.146
Graders	2005	121	175	11.01	1.062	3.522	8.238	0.057	0.469	0.469	568.299	0.095
Graders	2005	176	250	11.283	0.784	2.17	7.837	0.057	0.314	0.314	568.299	0.07
Graders	2005	251	500	13.286	0.692	2.913	7.117	0.05	0.279	0.279	568.299	0.062
Graders	2005	501	750	28.569	0.703	2.909	7.284	0.052	0.282	0.282	568.299	0.063
Graders	2010	26	50	3.618169	3.0403	8.828	6.50487	0.005	0.8516	0.7835	547.2284	0.1593
Graders	2010	51	120	1.572744	1.3215	4.95239	10.4805	0.0048	0.8539	0.7856	523.7684	0.1525
Graders	2010	121	175	1.025452	0.8617	3.90428	8.98998	0.005	0.4962	0.4565	536.7031	0.1562
Graders	2010	176	250	0.425787	0.3578	1.43786	5.73143	0.0049	0.1816	0.167	530.3343	0.1544
Graders	2010	251	500	0.323814	0.2721	1.81115	3.80781	0.0049	0.1418	0.1304	525.6597	0.153
Graders	2010	501	750	21.764	0.535	1.861	5.386	0.005	0.202	0.202	568.299	0.048
Graders	2011	26	50	3.655035	3.0712	8.9223	6.52829	0.005	0.8596	0.7909	545.8822	0.1593
Graders	2011	51	120	1.554125	1.3059	4.9423	10.3495	0.0048	0.8474	0.7796	522.5082	0.1525
Graders	2011	121	175	1.019798	0.8569	3.91881	8.91245	0.005	0.4944	0.4548	535.2864	0.1562
Graders	2011	176	250	0.436805	0.367	1.44556	5.74733	0.0049	0.1832	0.1685	529.0473	0.1544
Graders	2011	251	500	0.341103	0.2866	1.83104	3.81827	0.0049	0.144	0.1325	524.3479	0.153
Graders	2011	501	750	20.697	0.509	1.744	4.992	0.005	0.184	0.184	568.299	0.045
Graders	2012	26	50	3.689945	3.1006	9.01183	6.55055	0.005	0.8672	0.7979	544.5383	0.1593
Graders	2012	51	120	1.550155	1.3026	4.94871	10.2881	0.0048	0.848	0.7801	521.1967	0.1525
Graders	2012	121	175	1.022941	0.8596	3.94251	8.89699	0.005	0.496	0.4563	533.878	0.1562
Graders	2012	176	250	0.449323	0.3776	1.45898	5.777	0.0049	0.1854	0.1706	527.8224	0.1544
Graders	2012	251	500	0.355329	0.2986	1.82432	3.8123	0.0049	0.145	0.1334	522.8547	0.153
Graders	2012	501	750	19.697	0.485	1.642	4.624	0.005	0.168	0.168	568.299	0.043
Graders	2013	26	50	3.722893	3.1283	9.0966	6.57166	0.005	0.8744	0.8045	541.8285	0.1593
Graders	2013	51	120	1.548648	1.3013	4.95898	10.2424	0.0048	0.8494	0.7814	518.5552	0.1525
Graders	2013	121	175	1.020021	0.8571	3.95423	8.8338	0.005	0.4951	0.4555	530.9753	0.1561
Graders	2013	176	250	0.455824	0.383	1.45924	5.74577	0.0049	0.1849	0.1701	525.0407	0.1544
Graders	2013	251	500	0.359627	0.3022	1.7965	3.71231	0.0049	0.1413	0.13	520.0526	0.1529
Graders	2013	501	750	18.765	0.462	1.556	4.281	0.005	0.152	0.152	568.299	0.041
Graders	2014	26	50	3.681797	3.0937	9.06534	6.54967	0.005	0.8672	0.7978	539.1216	0.1593
Graders	2014	51	120	1.510465	1.2692	4.91977	9.98567	0.0048	0.832	0.7654	515.3819	0.1523
Graders	2014	121	175	1.007876	0.8469	3.95083	8.70206	0.005	0.4884	0.4493	527.8337	0.156
Graders	2014	176	250	0.463867	0.3898	1.46245	5.73998	0.0049	0.1853	0.1705	522.3298	0.1544
Graders	2014	251	500	0.373775	0.3141	1.79096	3.71371	0.0049	0.1427	0.1313	517.3766	0.1529
Graders	2014	501	750	17.784	0.437	1.483	3.876	0.005	0.138	0.138	568.299	0.039
Graders	2015	26	50	3.711306	3.1185	9.14399	6.56967	0.005	0.8737	0.8038	533.6812	0.1593
Graders	2015	51	120	1.474627	1.2391	4.88439	9.73775	0.0048	0.8131	0.7481	509.597	0.1521
Graders	2015	121	175	1.004333	0.8439	3.95849	8.63742	0.005	0.4857	0.4468	522.2182	0.1559
Graders	2015	176	250	0.471304	0.396	1.46577	5.72754	0.0049	0.1856	0.1708	517.1275	0.1544
Graders	2015	251	500	0.388063	0.3261	1.79107	3.72122	0.0049	0.1442	0.1327	512.0975	0.1529
Graders	2015	501	750	16.846	0.414	1.42	3.501	0.005	0.124	0.124	568.299	0.037
Graders	2016	26	50	3.670899	3.0846	9.10623	6.51973	0.005	0.8644	0.7952	528.2444	0.1593
Graders	2016	51	120	1.419659	1.1929	4.82948	9.41488	0.0048	0.7799	0.7175	503.1614	0.1518
Graders	2016	121	175	0.963567	0.8097	3.91624	8.24966	0.005	0.4635	0.4264	516.1305	0.1557
Graders	2016	176	250	0.473996	0.3983	1.45911	5.6628	0.0049	0.184	0.1692	511.6959	0.1543
Graders	2016	251	500	0.397787	0.3343	1.77374	3.6858	0.0049	0.144	0.1325	506.5064	0.1528
Graders	2016	501	750	15.959	0.393	1.367	3.154	0.005	0.112	0.112	568.299	0.035
Graders	2017	26	50	3.5783	3.0068	8.97826	6.423	0.005	0.8434	0.776	520.0747	0.1593
Graders	2017	51	120	1.385767	1.1644	4.81041	9.19125	0.0048	0.7585	0.6978	495.9186	0.1519
Graders	2017	121	175	0.901	0.7571	3.84518	7.66265	0.0049	0.4304	0.396	506.7478	0.1553
Graders	2017	176	250	0.471391	0.3961	1.44905	5.52488	0.0049	0.1802	0.1658	503.8022	0.1544
Graders	2017	251	500	0.397706	0.3342	1.70747	3.55709	0.0049	0.1393	0.1282	498.5996	0.1528
Graders	2017	501	750	15.127	0.372	1.323	2.835	0.005	0.1	0.1	568.299	0.033
Graders	2018	26	50	3.342571	2.8087	8.62631	6.17962	0.005	0.7895	0.7264	511.9098	0.1594
Graders	2018	51	120	1.27956	1.0752	4.69711	8.51954	0.0048	0.6971	0.6413	487.6979	0.1518
Graders	2018	121	175	0.78708	0.6614	3.70957	6.60465	0.0049	0.3713	0.3416	497.3767	0.1548
Graders	2018	176	250	0.457376	0.3843	1.41595	5.27094	0.0049	0.1713	0.1576	495.431	0.1542
Graders	2018	251	500	0.385909	0.3243	1.56446	3.34465	0.0049	0.1295	0.1191	490.5758	0.1527
Graders	2018	501	750	14.353	0.353	1.286	2.543	0.005	0.09	0.09	568.299	0.031
Graders	2019	26	50	3.11378	2.6164	8.27912	5.94463	0.005	0.7367	0.6778	503.7509	0.1594

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Graders	2019	51	120	1.228249	1.0321	4.6424	8.1592	0.0048	0.6653	0.612	479.9011	0.1518
Graders	2019	121	175	0.724541	0.6088	3.65586	6.01354	0.0049	0.3365	0.3096	489.0419	0.1547
Graders	2019	176	250	0.428358	0.3599	1.35927	4.86575	0.0049	0.1562	0.1437	486.3288	0.1539
Graders	2019	251	500	0.384059	0.3227	1.52849	3.21794	0.0049	0.1244	0.1145	482.5879	0.1527
Graders	2019	501	750	13.635	0.335	1.255	2.276	0.005	0.08	0.08	568.299	0.03
Graders	2020	26	50	2.994737	2.5164	8.13394	5.82549	0.005	0.7086	0.6519	492.8615	0.1594
Graders	2020	51	120	1.161574	0.976	4.56142	7.72513	0.0048	0.622	0.5722	469.3371	0.1518
Graders	2020	121	175	0.674427	0.5667	3.62102	5.53045	0.0049	0.3085	0.2838	478.0403	0.1546
Graders	2020	176	250	0.41877	0.3519	1.34183	4.67787	0.0049	0.1495	0.1376	475.3037	0.1537
Graders	2020	251	500	0.383198	0.322	1.5256	3.10731	0.0049	0.1206	0.111	471.9795	0.1526
Graders	2020	501	750	12.961	0.319	1.229	2.031	0.005	0.072	0.072	568.299	0.028
Graders	2021	26	50	2.660206	2.2353	7.62621	5.48468	0.005	0.6313	0.5808	492.9352	0.1594
Graders	2021	51	120	1.072144	0.9009	4.45175	7.12535	0.0048	0.5698	0.5242	469.0701	0.1517
Graders	2021	121	175	0.601372	0.5053	3.55896	4.83947	0.0049	0.27	0.2484	478.5289	0.1548
Graders	2021	176	250	0.398657	0.335	1.30687	4.38134	0.0049	0.1388	0.1277	474.5386	0.1535
Graders	2021	251	500	0.383194	0.322	1.46044	3.01257	0.0049	0.117	0.1077	471.8981	0.1526
Graders	2021	501	750	12.333	0.303	1.207	1.808	0.005	0.064	0.064	568.299	0.027
Graders	2022	26	50	2.506375	2.1061	7.42848	5.33188	0.005	0.5946	0.547	493.0249	0.1595
Graders	2022	51	120	0.947815	0.7964	4.32966	6.36004	0.0048	0.4929	0.4534	469.6301	0.1519
Graders	2022	121	175	0.524016	0.4403	3.49283	4.12488	0.0049	0.2293	0.2109	478.5664	0.1548
Graders	2022	176	250	0.365229	0.3069	1.27327	3.8881	0.0049	0.1237	0.1138	474.239	0.1534
Graders	2022	251	500	0.370143	0.311	1.38967	2.80191	0.0049	0.1082	0.0996	471.9278	0.1526
Graders	2022	501	750	11.747	0.289	1.187	1.606	0.005	0.057	0.057	568.299	0.026
Graders	2023	26	50	2.316861	1.9468	7.19094	5.14799	0.0051	0.5491	0.5052	494.0202	0.1598
Graders	2023	51	120	0.855685	0.719	4.22811	5.74006	0.0048	0.4357	0.4009	469.2859	0.1518
Graders	2023	121	175	0.463941	0.3898	3.45006	3.54785	0.0049	0.1953	0.1797	478.4629	0.1547
Graders	2023	176	250	0.337478	0.2836	1.25173	3.44101	0.0049	0.1115	0.1026	473.9256	0.1533
Graders	2023	251	500	0.367269	0.3086	1.38481	2.70451	0.0049	0.1051	0.0967	471.0306	0.1523
Graders	2023	501	750	11.215	0.276	1.17	1.425	0.005	0.051	0.051	568.3	0.024
Graders	2024	26	50	2.201935	1.8502	7.05059	5.0278	0.0051	0.5204	0.4787	493.7913	0.1597
Graders	2024	51	120	0.812369	0.6826	4.20033	5.43389	0.0048	0.408	0.3753	469.8208	0.1519
Graders	2024	121	175	0.433005	0.3638	3.43239	3.20219	0.0049	0.1768	0.1626	478.4966	0.1548
Graders	2024	176	250	0.312074	0.2622	1.22497	3.07323	0.0049	0.0997	0.0917	473.6685	0.1532
Graders	2024	251	500	0.348233	0.2926	1.35613	2.43171	0.0049	0.0953	0.0877	470.2664	0.1521
Graders	2024	501	750	10.734	0.264	1.155	1.265	0.005	0.046	0.046	568.3	0.023
Graders	2025	26	50	2.21878	1.8644	7.12535	5.04301	0.0051	0.5215	0.4798	493.5322	0.1596
Graders	2025	51	120	0.759044	0.6378	4.14911	5.07379	0.0048	0.3712	0.3415	468.3155	0.1515
Graders	2025	121	175	0.391287	0.3288	3.41759	2.77396	0.0049	0.1521	0.1399	478.5084	0.1548
Graders	2025	176	250	0.273788	0.2301	1.17888	2.55629	0.0049	0.0823	0.0757	473.4704	0.1531
Graders	2025	251	500	0.332717	0.2796	1.31461	2.26485	0.0049	0.088	0.0809	470.7533	0.1523
Graders	2025	501	750	10.301	0.253	1.141	1.125	0.005	0.041	0.041	568.3	0.022
Graders	2030	26	50	1.493	0.648	5.239	3.53	0.007	0.065	0.065	568.299	0.058
Graders	2030	51	120	2.028	0.323	3.775	1.903	0.006	0.058	0.058	568.299	0.029
Graders	2030	121	175	2.458	0.237	3.326	0.815	0.006	0.038	0.038	568.3	0.021
Graders	2030	176	250	3.114	0.216	1.148	0.684	0.006	0.024	0.024	568.299	0.019
Graders	2030	251	500	4.115	0.214	1.097	0.647	0.005	0.023	0.023	568.299	0.019
Graders	2030	501	750	8.717	0.214	1.097	0.654	0.005	0.023	0.023	568.299	0.019
Graders	2035	26	50	1.367	0.593	5.189	3.356	0.007	0.037	0.037	568.299	0.053
Graders	2035	51	120	1.837	0.293	3.767	1.661	0.006	0.034	0.034	568.299	0.026
Graders	2035	121	175	2.136	0.206	3.326	0.506	0.006	0.022	0.022	568.3	0.018
Graders	2035	176	250	2.822	0.196	1.137	0.452	0.006	0.016	0.016	568.299	0.017
Graders	2035	251	500	3.746	0.195	1.083	0.434	0.005	0.016	0.016	568.299	0.017
Graders	2035	501	750	7.933	0.195	1.083	0.438	0.005	0.016	0.016	568.299	0.017
Graders	2040	26	50	1.297	0.563	5.161	3.298	0.007	0.026	0.026	568.3	0.05
Graders	2040	51	120	1.747	0.278	3.764	1.56	0.006	0.024	0.024	568.299	0.025
Graders	2040	121	175	2.002	0.193	3.326	0.38	0.006	0.017	0.017	568.299	0.017
Graders	2040	176	250	2.719	0.188	1.133	0.36	0.006	0.013	0.013	568.299	0.017
Graders	2040	251	500	3.619	0.188	1.079	0.351	0.005	0.013	0.013	568.299	0.017
Graders	2040	501	750	7.663	0.188	1.079	0.353	0.005	0.013	0.013	568.299	0.017
Off-Highway Tractors	1990	51	120	7.901	2.432	5.842	15.285	0.791	1.384	1.384	568.299	0.219
Off-Highway Tractors	1990	121	175	8.363	1.85	5.217	14.647	0.758	1.033	1.033	568.299	0.166
Off-Highway Tractors	1990	176	250	8.363	1.85	5.217	14.647	0.758	1.033	1.033	568.299	0.166
Off-Highway Tractors	1990	501	750	32.077	1.629	11.847	13.849	1.018	0.896	0.896	568.3	0.147
Off-Highway Tractors	1990	751	1000	45.779	1.622	11.847	13.849	1.018	0.888	0.888	568.3	0.146
Off-Highway Tractors	2000	51	120	6.648	2.047	5.046	11.606	0.06	0.972	0.972	568.299	0.184
Off-Highway Tractors	2000	121	175	6.386	1.413	4.213	10.675	0.057	0.602	0.602	568.299	0.127
Off-Highway Tractors	2000	176	250	5.736	1.269	3.665	10.426	0.057	0.532	0.532	568.299	0.114
Off-Highway Tractors	2000	501	750	22.339	1.134	6.836	9.864	0.052	0.461	0.461	568.299	0.102
Off-Highway Tractors	2000	751	1000	33.036	1.17	7.259	10.29	0.052	0.444	0.444	568.299	0.105
Off-Highway Tractors	2005	51	120	6.042	1.86	4.801	10.379	0.06	0.932	0.932	568.299	0.167
Off-Highway Tractors	2005	121	175	5.63	1.246	3.943	9.479	0.057	0.547	0.547	568.299	0.112
Off-Highway Tractors	2005	176	250	4.641	1.027	2.923	9.16	0.057	0.425	0.425	568.299	0.092
Off-Highway Tractors	2005	501	750	17.978	0.913	4.992	8.543	0.052	0.372	0.372	568.299	0.082

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Off-Highway Tractors	2005	751	1000	27.525	0.975	5.369	9.293	0.052	0.359	0.359	568.299	0.088
Off-Highway Tractors	2010	51	120	1.004164	0.8438	4.06859	7.39576	0.0049	0.6097	0.5609	529.8898	0.1542
Off-Highway Tractors	2010	121	175	0.623556	0.524	3.25207	6.19445	0.0049	0.3224	0.2966	526.0485	0.1531
Off-Highway Tractors	2010	176	250	0.540439	0.4541	1.80076	6.56823	0.0049	0.241	0.2218	522.8212	0.1522
Off-Highway Tractors	2010	501	750	0.353776	0.2973	1.65183	4.74911	0.0049	0.1633	0.1503	526.6401	0.1533
Off-Highway Tractors	2010	751	1000	1.235451	1.0381	13.844	12.2723	0.0049	0.6244	0.5744	524.505	0.1527
Off-Highway Tractors	2011	51	120	0.958318	0.8053	4.04749	7.12201	0.0049	0.5883	0.5412	528.6123	0.1543
Off-Highway Tractors	2011	121	175	0.588696	0.4947	3.25718	5.88095	0.0049	0.307	0.2824	524.5528	0.1531
Off-Highway Tractors	2011	176	250	0.522937	0.4394	1.73271	6.3706	0.0049	0.2303	0.2119	521.5328	0.1522
Off-Highway Tractors	2011	501	750	0.366196	0.3077	1.66137	4.77936	0.0049	0.1661	0.1528	525.3172	0.1533
Off-Highway Tractors	2011	751	1000	1.235451	1.0381	13.844	12.2723	0.0049	0.6244	0.5744	523.1938	0.1527
Off-Highway Tractors	2012	51	120	0.956826	0.804	4.07302	7.07175	0.0049	0.588	0.5409	527.1281	0.1542
Off-Highway Tractors	2012	121	175	0.573556	0.4819	3.27598	5.70904	0.0049	0.2995	0.2755	523.1986	0.1531
Off-Highway Tractors	2012	176	250	0.51645	0.434	1.70131	6.26836	0.0049	0.2249	0.2069	520.2636	0.1522
Off-Highway Tractors	2012	501	750	0.3785	0.318	1.67078	4.80904	0.0049	0.1689	0.1554	523.9941	0.1533
Off-Highway Tractors	2012	751	1000	1.235451	1.0381	13.844	12.2723	0.0049	0.6244	0.5744	521.8825	0.1527
Off-Highway Tractors	2013	51	120	0.915141	0.769	4.04714	6.79599	0.0049	0.564	0.5189	524.1555	0.1541
Off-Highway Tractors	2013	121	175	0.54434	0.4574	3.28016	5.42114	0.0049	0.2809	0.2585	520.6151	0.1531
Off-Highway Tractors	2013	176	250	0.508791	0.4275	1.67153	6.11434	0.0049	0.2187	0.2012	517.5627	0.1522
Off-Highway Tractors	2013	501	750	0.342496	0.2878	1.42496	4.32547	0.0049	0.1491	0.1372	519.6246	0.1528
Off-Highway Tractors	2013	751	1000	1.235451	1.0381	13.844	12.2723	0.0049	0.6244	0.5744	519.26	0.1527
Off-Highway Tractors	2014	51	120	0.830806	0.6981	3.97241	6.28073	0.0049	0.5133	0.4723	520.8244	0.1539
Off-Highway Tractors	2014	121	175	0.504784	0.4242	3.26511	5.02525	0.0049	0.2577	0.2371	518.1639	0.1531
Off-Highway Tractors	2014	176	250	0.481559	0.4046	1.62822	5.66092	0.0049	0.2031	0.1869	514.3699	0.152
Off-Highway Tractors	2014	501	750	0.317193	0.2665	1.33448	4.00651	0.0049	0.133	0.1223	516.904	0.1528
Off-Highway Tractors	2014	751	1000	0.100665	0.0846	0.94694	2.27938	0.0049	0.0543	0.0499	516.6375	0.1527
Off-Highway Tractors	2015	51	120	0.802587	0.6744	3.96474	6.06726	0.0049	0.4942	0.4547	515.3203	0.1538
Off-Highway Tractors	2015	121	175	0.478075	0.4017	3.26419	4.72365	0.0049	0.2393	0.2201	512.6079	0.153
Off-Highway Tractors	2015	176	250	0.476529	0.4004	1.60534	5.52773	0.0049	0.1989	0.183	509.1896	0.152
Off-Highway Tractors	2015	501	750	0.312134	0.2623	1.17195	3.87437	0.0049	0.1262	0.1161	511.0814	0.1526
Off-Highway Tractors	2015	751	1000	0.114305	0.096	0.96003	2.29983	0.0049	0.0558	0.0513	511.3924	0.1527
Off-Highway Tractors	2016	51	120	0.743357	0.6246	3.92464	5.6465	0.0049	0.4538	0.4175	509.4472	0.1537
Off-Highway Tractors	2016	121	175	0.465284	0.391	3.27806	4.51093	0.0049	0.229	0.2106	507.6294	0.1531
Off-Highway Tractors	2016	176	250	0.426838	0.3587	1.47177	4.92994	0.0049	0.1709	0.1572	504.1229	0.1521
Off-Highway Tractors	2016	501	750	0.299821	0.2519	1.14348	3.57265	0.0049	0.1171	0.1077	505.762	0.1526
Off-Highway Tractors	2016	751	1000	0.127675	0.1073	0.97285	2.31987	0.0049	0.0573	0.0527	506.1474	0.1527
Off-Highway Tractors	2017	51	120	0.697857	0.5864	3.90108	5.31726	0.0049	0.4229	0.389	501.2453	0.1536
Off-Highway Tractors	2017	121	175	0.423504	0.3559	3.2589	4.02594	0.0049	0.2049	0.1885	499.2446	0.153
Off-Highway Tractors	2017	176	250	0.389773	0.3275	1.403	4.38216	0.0049	0.1511	0.139	496.4983	0.1521
Off-Highway Tractors	2017	501	750	0.294592	0.2475	1.14456	3.32351	0.0049	0.1118	0.1029	497.6181	0.1525
Off-Highway Tractors	2017	751	1000	0.140776	0.1183	0.98542	2.33951	0.0049	0.0588	0.0541	498.2798	0.1527
Off-Highway Tractors	2018	51	120	0.621057	0.5219	3.83227	4.78732	0.0049	0.3728	0.343	492.8709	0.1534
Off-Highway Tractors	2018	121	175	0.374746	0.3149	3.2191	3.49764	0.0049	0.1756	0.1616	491.3128	0.153
Off-Highway Tractors	2018	176	250	0.323278	0.2716	1.29494	3.45421	0.0049	0.1186	0.1091	488.6765	0.1521
Off-Highway Tractors	2018	501	750	0.232675	0.1955	1.11871	2.1656	0.0049	0.0806	0.0741	490.1818	0.1526
Off-Highway Tractors	2018	751	1000	0.153606	0.1291	0.99773	2.35874	0.0049	0.0602	0.0554	490.4122	0.1527
Off-Highway Tractors	2019	51	120	0.562974	0.4731	3.79465	4.42145	0.0049	0.3311	0.3046	484.2693	0.1532
Off-Highway Tractors	2019	121	175	0.350048	0.2941	3.21895	3.20755	0.0049	0.1586	0.1459	483.4306	0.153
Off-Highway Tractors	2019	176	250	0.283777	0.2385	1.21832	2.9142	0.0049	0.0976	0.0898	481.2751	0.1523
Off-Highway Tractors	2019	501	750	0.244248	0.2052	1.12934	2.17682	0.0049	0.082	0.0754	482.3091	0.1526
Off-Highway Tractors	2019	751	1000	0.166166	0.1396	1.00978	2.37757	0.0049	0.0616	0.0567	482.5446	0.1527
Off-Highway Tractors	2020	51	120	0.533073	0.4479	3.78798	4.18317	0.0049	0.307	0.2825	474.1481	0.1533
Off-Highway Tractors	2020	121	175	0.322507	0.271	3.21511	2.89032	0.0049	0.1402	0.129	472.9169	0.153
Off-Highway Tractors	2020	176	250	0.263453	0.2214	1.1813	2.57547	0.0049	0.0862	0.0793	470.943	0.1523
Off-Highway Tractors	2020	501	750	0.239679	0.2014	1.13143	2.04663	0.0049	0.0762	0.0701	471.8151	0.1526
Off-Highway Tractors	2020	751	1000	0.178457	0.15	1.02156	2.39599	0.0049	0.063	0.058	472.0545	0.1527
Off-Highway Tractors	2021	51	120	0.469894	0.3948	3.74258	3.77306	0.0049	0.261	0.2401	474.5155	0.1535
Off-Highway Tractors	2021	121	175	0.307902	0.2587	3.21953	2.65962	0.0049	0.1286	0.1183	472.9236	0.153
Off-Highway Tractors	2021	176	250	0.237665	0.1997	1.16179	2.11341	0.0049	0.0723	0.0665	471.0028	0.1523
Off-Highway Tractors	2021	501	750	0.215694	0.1812	1.12237	1.71505	0.0049	0.063	0.058	471.8056	0.1526
Off-Highway Tractors	2021	751	1000	0.190478	0.1601	1.0331	2.41401	0.0049	0.0644	0.0592	472.0545	0.1527
Off-Highway Tractors	2022	51	120	0.414344	0.3482	3.70994	3.39986	0.0049	0.2194	0.2018	475.2338	0.1537
Off-Highway Tractors	2022	121	175	0.275155	0.2312	3.18586	2.23877	0.0049	0.1073	0.0987	472.8111	0.1529
Off-Highway Tractors	2022	176	250	0.213642	0.1795	1.14284	1.73242	0.0049	0.0601	0.0553	471.1313	0.1524
Off-Highway Tractors	2022	501	750	0.20345	0.171	1.12111	1.43309	0.0049	0.0545	0.0501	471.939	0.1526
Off-Highway Tractors	2022	751	1000	0.202228	0.1699	1.04437	2.43162	0.0049	0.0657	0.0604	472.0545	0.1527
Off-Highway Tractors	2023	51	120	0.37642	0.3163	3.68654	3.09527	0.0049	0.1871	0.1721	476.0871	0.154
Off-Highway Tractors	2023	121	175	0.239199	0.201	3.14329	1.78476	0.0049	0.0854	0.0785	472.9962	0.153
Off-Highway Tractors	2023	176	250	0.20356	0.171	1.13796	1.49148	0.0049	0.053	0.0487	470.845	0.1523
Off-Highway Tractors	2023	501	750	0.199838	0.1679	1.12418	1.28868	0.0049	0.0508	0.0467	471.9321	0.1526
Off-Highway Tractors	2023	751	1000	0.213709	0.1796	1.05538	2.44883	0.0049	0.067	0.0616	472.0545	0.1527
Off-Highway Tractors	2024	51	120	0.359218	0.3018	3.69095	2.94932	0.0049	0.1705	0.1569	476.3711	0.1541
Off-Highway Tractors	2024	121	175	0.21727	0.1826	3.1328	1.49579	0.0049	0.0715	0.0658	473.097	0.153

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Off-Highway Tractors	2024	176	250	0.200963	0.1689	1.13461	1.37732	0.0049	0.0491	0.0452	470.6894	0.1522
Off-Highway Tractors	2024	501	750	0.200706	0.1686	1.13006	1.23477	0.0049	0.0483	0.0444	471.9247	0.1526
Off-Highway Tractors	2024	751	1000	0.22492	0.189	1.06613	2.46563	0.0049	0.0682	0.0628	472.0545	0.1527
Off-Highway Tractors	2025	51	120	0.32831	0.2759	3.66914	2.70745	0.0049	0.1439	0.1324	476.9211	0.1542
Off-Highway Tractors	2025	121	175	0.208537	0.1752	3.14246	1.34858	0.0049	0.0647	0.0595	473.3021	0.1531
Off-Highway Tractors	2025	176	250	0.183862	0.1545	1.13017	1.11624	0.0049	0.04	0.0368	470.861	0.1523
Off-Highway Tractors	2025	501	750	0.199094	0.1673	1.13452	1.11804	0.0049	0.0451	0.0414	471.9169	0.1526
Off-Highway Tractors	2025	751	1000	0.235862	0.1982	1.07663	2.48203	0.0049	0.0695	0.0639	472.0545	0.1527
Off-Highway Tractors	2030	51	120	1.683	0.518	3.944	2.959	0.006	0.175	0.175	568.299	0.046
Off-Highway Tractors	2030	121	175	1.689	0.373	3.435	1.916	0.006	0.104	0.104	568.299	0.033
Off-Highway Tractors	2030	176	250	1.423	0.315	1.286	1.715	0.006	0.064	0.064	568.299	0.028
Off-Highway Tractors	2030	501	750	5.992	0.304	1.351	1.59	0.005	0.06	0.06	568.299	0.027
Off-Highway Tractors	2030	751	1000	8.981	0.318	1.409	3.569	0.005	0.078	0.078	568.3	0.028
Off-Highway Tractors	2035	51	120	1.359	0.418	3.902	2.35	0.006	0.107	0.107	568.299	0.037
Off-Highway Tractors	2035	121	175	1.361	0.301	3.421	1.252	0.006	0.065	0.065	568.299	0.027
Off-Highway Tractors	2035	176	250	1.211	0.268	1.232	1.115	0.006	0.042	0.042	568.299	0.024
Off-Highway Tractors	2035	501	750	5.163	0.262	1.238	1.045	0.005	0.04	0.04	568.299	0.023
Off-Highway Tractors	2035	751	1000	7.617	0.269	1.268	3.116	0.005	0.056	0.056	568.299	0.024
Off-Highway Tractors	2040	51	120	1.176	0.362	3.878	1.976	0.006	0.067	0.067	568.299	0.032
Off-Highway Tractors	2040	121	175	1.162	0.257	3.412	0.836	0.006	0.041	0.041	568.299	0.023
Off-Highway Tractors	2040	176	250	1.073	0.237	1.198	0.747	0.006	0.028	0.028	568.299	0.021
Off-Highway Tractors	2040	501	750	4.612	0.234	1.164	0.71	0.005	0.027	0.027	568.299	0.021
Off-Highway Tractors	2040	751	1000	6.743	0.238	1.183	2.844	0.005	0.042	0.042	568.299	0.021
Off-Highway Trucks	1990	121	175	6.457	2.005	5.36	15.394	0.758	1.133	1.133	568.299	0.18
Off-Highway Trucks	1990	176	250	8.597	2.005	5.36	15.394	0.758	1.133	1.133	568.299	0.18
Off-Highway Trucks	1990	251	500	12.319	1.757	12.538	14.499	0.662	0.959	0.959	568.299	0.158
Off-Highway Trucks	1990	501	750	19.982	1.757	12.538	14.499	1.018	0.976	0.976	568.299	0.158
Off-Highway Trucks	1990	751	1000	28.084	1.746	12.538	14.499	1.018	0.963	0.963	568.3	0.157
Off-Highway Trucks	2000	121	175	4.115	1.278	3.772	9.57	0.057	0.548	0.548	568.299	0.115
Off-Highway Trucks	2000	176	250	4.454	1.039	2.896	9.178	0.057	0.425	0.425	568.299	0.093
Off-Highway Trucks	2000	251	500	6.594	0.94	4.214	8.675	0.05	0.376	0.376	568.299	0.084
Off-Highway Trucks	2000	501	750	10.696	0.94	4.214	8.675	0.052	0.376	0.376	568.299	0.084
Off-Highway Trucks	2000	751	1000	16.13	1.003	4.878	9.339	0.052	0.355	0.355	568.3	0.09
Off-Highway Trucks	2005	121	175	3.462	1.075	3.531	8.1	0.057	0.481	0.481	568.299	0.097
Off-Highway Trucks	2005	176	250	3.21	0.748	1.978	7.652	0.057	0.291	0.291	568.299	0.067
Off-Highway Trucks	2005	251	500	4.695	0.669	2.332	6.848	0.05	0.26	0.26	568.299	0.06
Off-Highway Trucks	2005	501	750	7.697	0.677	2.33	7.052	0.052	0.264	0.264	568.299	0.061
Off-Highway Trucks	2005	751	1000	12.436	0.773	2.812	8.177	0.052	0.266	0.266	568.299	0.069
Off-Highway Trucks	2010	121	175	0.758703	0.6375	3.51002	6.59182	0.0048	0.3905	0.3592	522.6455	0.1521
Off-Highway Trucks	2010	176	250	0.657432	0.5524	2.13151	6.86617	0.0048	0.29	0.2668	521.8781	0.1519
Off-Highway Trucks	2010	251	500	0.5118	0.4301	2.32222	5.52051	0.0049	0.2133	0.1962	528.8078	0.1539
Off-Highway Trucks	2010	501	750	0.633984	0.5327	3.68555	6.54487	0.0049	0.2757	0.2537	530.4366	0.1544
Off-Highway Trucks	2010	751	1000	0.549873	0.462	2.05613	7.15365	0.0049	0.2114	0.1945	526.5915	0.1533
Off-Highway Trucks	2011	121	175	0.704506	0.592	3.48667	6.13879	0.0048	0.357	0.3284	521.3222	0.1521
Off-Highway Trucks	2011	176	250	0.640546	0.5382	2.08881	6.53722	0.0048	0.2783	0.256	520.1539	0.1518
Off-Highway Trucks	2011	251	500	0.515485	0.4332	2.27798	5.39802	0.0049	0.2097	0.1929	527.2602	0.1539
Off-Highway Trucks	2011	501	750	0.643792	0.541	3.68121	6.51376	0.0049	0.2762	0.2541	529.0143	0.1544
Off-Highway Trucks	2011	751	1000	0.55014	0.4623	2.03783	7.09609	0.0049	0.2112	0.1943	524.7459	0.1531
Off-Highway Trucks	2012	121	175	0.704248	0.5918	3.51164	6.0668	0.0048	0.3535	0.3252	519.901	0.1521
Off-Highway Trucks	2012	176	250	0.646155	0.5429	2.1013	6.43814	0.0048	0.2767	0.2546	518.7133	0.1517
Off-Highway Trucks	2012	251	500	0.525914	0.4419	2.29017	5.37678	0.0049	0.2102	0.1934	525.9398	0.1539
Off-Highway Trucks	2012	501	750	0.661317	0.5557	3.73128	6.55684	0.0049	0.2804	0.2579	527.6141	0.1543
Off-Highway Trucks	2012	751	1000	0.55909	0.4698	2.05327	7.10377	0.0049	0.2133	0.1962	523.3305	0.1531
Off-Highway Trucks	2013	121	175	0.671819	0.5645	3.51059	5.78297	0.0048	0.3302	0.3038	517.0124	0.152
Off-Highway Trucks	2013	176	250	0.623589	0.524	2.04802	6.05816	0.0048	0.2628	0.2418	515.8273	0.1517
Off-Highway Trucks	2013	251	500	0.502477	0.4222	2.17762	5.06239	0.0049	0.1965	0.1808	523.5459	0.1539
Off-Highway Trucks	2013	501	750	0.645495	0.5424	3.55888	6.30864	0.0049	0.2684	0.2469	525.1075	0.1544
Off-Highway Trucks	2013	751	1000	0.543085	0.4563	1.9094	6.89277	0.0049	0.2052	0.1888	520.5876	0.1531
Off-Highway Trucks	2014	121	175	0.610195	0.5127	3.47308	5.21922	0.0048	0.2921	0.2688	514.0574	0.1519
Off-Highway Trucks	2014	176	250	0.574728	0.4829	1.93163	5.4411	0.0048	0.2355	0.2166	512.8333	0.1515
Off-Highway Trucks	2014	251	500	0.468214	0.3934	2.07518	4.68575	0.0049	0.1795	0.1652	521.0573	0.154
Off-Highway Trucks	2014	501	750	0.576983	0.4848	2.95299	5.57816	0.0049	0.2307	0.2123	521.2295	0.154
Off-Highway Trucks	2014	751	1000	0.493307	0.4145	1.77934	6.36534	0.0049	0.1872	0.1723	516.9385	0.1528
Off-Highway Trucks	2015	121	175	0.604782	0.5082	3.48853	5.10449	0.0048	0.2844	0.2616	508.7011	0.1519
Off-Highway Trucks	2015	176	250	0.563373	0.4734	1.89994	5.24228	0.0048	0.2267	0.2086	507.8087	0.1516
Off-Highway Trucks	2015	251	500	0.457555	0.3845	2.0367	4.52794	0.0049	0.173	0.1591	515.8419	0.154
Off-Highway Trucks	2015	501	750	0.537539	0.4517	2.61969	5.12427	0.0049	0.2085	0.1918	514.6436	0.1536
Off-Highway Trucks	2015	751	1000	0.489174	0.411	1.77206	6.28012	0.0049	0.1846	0.1698	511.1369	0.1526
Off-Highway Trucks	2016	121	175	0.562854	0.473	3.45883	4.64707	0.0048	0.2577	0.237	503.5515	0.1519
Off-Highway Trucks	2016	176	250	0.530487	0.4458	1.82377	4.82646	0.0048	0.2077	0.1911	502.4732	0.1516
Off-Highway Trucks	2016	251	500	0.418147	0.3514	1.88523	4.04798	0.0049	0.1527	0.1405	509.8604	0.1538
Off-Highway Trucks	2016	501	750	0.497396	0.418	2.43646	4.64247	0.0049	0.1866	0.1717	508.3916	0.1533
Off-Highway Trucks	2016	751	1000	0.467579	0.3929	1.70739	6.0352	0.0049	0.1754	0.1614	505.7218	0.1525

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Off-Highway Trucks	2017	121	175	0.525186	0.4413	3.43636	4.23649	0.0048	0.2334	0.2147	495.924	0.152
Off-Highway Trucks	2017	176	250	0.496493	0.4172	1.75281	4.36785	0.0048	0.1887	0.1736	494.7935	0.1516
Off-Highway Trucks	2017	251	500	0.387096	0.3253	1.74773	3.66841	0.0049	0.1362	0.1253	501.4368	0.1536
Off-Highway Trucks	2017	501	750	0.468516	0.3937	2.35644	4.25656	0.0049	0.1702	0.1566	500.1987	0.1533
Off-Highway Trucks	2017	751	1000	0.430867	0.362	1.54555	5.65254	0.0049	0.1591	0.1463	497.1154	0.1523
Off-Highway Trucks	2018	121	175	0.456313	0.3834	3.38333	3.54273	0.0048	0.1922	0.1768	488.0439	0.1519
Off-Highway Trucks	2018	176	250	0.405448	0.3407	1.54329	3.45071	0.0048	0.1413	0.13	487.6353	0.1518
Off-Highway Trucks	2018	251	500	0.341588	0.287	1.5595	3.08995	0.0049	0.1128	0.1038	493.5059	0.1536
Off-Highway Trucks	2018	501	750	0.413946	0.3478	2.17619	3.69054	0.0049	0.1431	0.1316	492.1136	0.1532
Off-Highway Trucks	2018	751	1000	0.352998	0.2966	1.35734	4.85753	0.0048	0.1265	0.1163	487.7902	0.1519
Off-Highway Trucks	2019	121	175	0.38382	0.3225	3.32598	2.82463	0.0049	0.1494	0.1375	480.3623	0.152
Off-Highway Trucks	2019	176	250	0.365362	0.307	1.46079	2.98481	0.0049	0.119	0.1095	480.1703	0.1519
Off-Highway Trucks	2019	251	500	0.313575	0.2635	1.48346	2.66851	0.0049	0.097	0.0893	485.3832	0.1536
Off-Highway Trucks	2019	501	750	0.389037	0.3269	2.04129	3.32044	0.0049	0.1286	0.1183	483.2182	0.1529
Off-Highway Trucks	2019	751	1000	0.351304	0.2952	1.3561	4.76495	0.0049	0.1242	0.1142	480.3479	0.152
Off-Highway Trucks	2020	121	175	0.36879	0.3099	3.3388	2.62769	0.0049	0.137	0.126	470.0967	0.152
Off-Highway Trucks	2020	176	250	0.327003	0.2748	1.39106	2.50726	0.0049	0.0977	0.0899	470.1675	0.1521
Off-Highway Trucks	2020	251	500	0.292906	0.2461	1.41417	2.34677	0.0049	0.0855	0.0787	474.5787	0.1535
Off-Highway Trucks	2020	501	750	0.371665	0.3123	2.02683	3.05816	0.0049	0.1196	0.11	472.7499	0.1529
Off-Highway Trucks	2020	751	1000	0.360605	0.303	1.37163	4.79365	0.0049	0.1252	0.1152	469.8892	0.152
Off-Highway Trucks	2021	121	175	0.331341	0.2784	3.32405	2.24626	0.0049	0.1131	0.1041	470.2898	0.1521
Off-Highway Trucks	2021	176	250	0.29675	0.2494	1.34839	2.10869	0.0049	0.0821	0.0755	470.1932	0.1521
Off-Highway Trucks	2021	251	500	0.267636	0.2249	1.33781	1.95357	0.0049	0.0717	0.0659	474.542	0.1535
Off-Highway Trucks	2021	501	750	0.348975	0.2932	1.93522	2.66798	0.0049	0.1064	0.0979	472.991	0.153
Off-Highway Trucks	2021	751	1000	0.304392	0.2558	1.25154	4.15817	0.0049	0.0988	0.0909	471.0552	0.1523
Off-Highway Trucks	2022	121	175	0.286556	0.2408	3.28383	1.81091	0.0049	0.0877	0.0807	470.1813	0.1521
Off-Highway Trucks	2022	176	250	0.255309	0.2145	1.27852	1.61794	0.0049	0.0637	0.0586	469.6151	0.1519
Off-Highway Trucks	2022	251	500	0.233409	0.1961	1.24664	1.48975	0.0049	0.0542	0.0498	474.7136	0.1535
Off-Highway Trucks	2022	501	750	0.313397	0.2633	1.74571	2.26799	0.0049	0.0877	0.0806	473.9773	0.1533
Off-Highway Trucks	2022	751	1000	0.27833	0.2339	1.2141	3.84239	0.0049	0.0859	0.079	472.3437	0.1528
Off-Highway Trucks	2023	121	175	0.280582	0.2358	3.30432	1.68277	0.0049	0.0807	0.0742	470.2917	0.1521
Off-Highway Trucks	2023	176	250	0.24623	0.2069	1.27325	1.45572	0.0048	0.059	0.0543	469.4464	0.1518
Off-Highway Trucks	2023	251	500	0.222566	0.187	1.22057	1.32428	0.0049	0.0479	0.0441	475.0488	0.1536
Off-Highway Trucks	2023	501	750	0.312722	0.2628	1.71923	2.18151	0.0049	0.0844	0.0776	473.7666	0.1532
Off-Highway Trucks	2023	751	1000	0.254284	0.2137	1.19398	3.54374	0.0049	0.0739	0.068	472.8574	0.1529
Off-Highway Trucks	2024	121	175	0.266426	0.2239	3.3248	1.49436	0.0049	0.0699	0.0644	470.2638	0.1521
Off-Highway Trucks	2024	176	250	0.240426	0.202	1.25915	1.35543	0.0048	0.0542	0.0499	469.1126	0.1517
Off-Highway Trucks	2024	251	500	0.219543	0.1845	1.20637	1.23518	0.0049	0.0445	0.0409	475.2203	0.1537
Off-Highway Trucks	2024	501	750	0.308071	0.2589	1.64986	2.08486	0.0049	0.0792	0.0729	473.8394	0.1532
Off-Highway Trucks	2024	751	1000	0.248432	0.2088	1.19994	3.43925	0.0049	0.0694	0.0639	473.0969	0.153
Off-Highway Trucks	2025	121	175	0.254265	0.2137	3.32765	1.3354	0.0049	0.0648	0.0596	470.0035	0.152
Off-Highway Trucks	2025	176	250	0.220008	0.1849	1.21268	1.12886	0.0048	0.0432	0.0397	469.1258	0.1517
Off-Highway Trucks	2025	251	500	0.210955	0.1773	1.18233	1.06379	0.0049	0.038	0.035	474.9697	0.1536
Off-Highway Trucks	2025	501	750	0.280009	0.2353	1.57807	1.75055	0.0049	0.066	0.0607	476.314	0.154
Off-Highway Trucks	2025	751	1000	0.222695	0.1871	1.14565	3.13521	0.0049	0.0566	0.0521	473.3693	0.1531
Off-Highway Trucks	2030	121	175	0.739	0.229	3.425	0.563	0.006	0.025	0.025	568.299	0.02
Off-Highway Trucks	2030	176	250	0.932	0.217	1.166	0.481	0.006	0.017	0.017	568.3	0.019
Off-Highway Trucks	2030	251	500	1.52	0.216	1.104	0.458	0.005	0.017	0.017	568.299	0.019
Off-Highway Trucks	2030	501	750	2.467	0.217	1.104	0.463	0.005	0.017	0.017	568.299	0.019
Off-Highway Trucks	2030	751	1000	3.55	0.22	1.107	2.651	0.005	0.033	0.033	568.3	0.019
Off-Highway Trucks	2035	121	175	0.68	0.211	3.425	0.38	0.006	0.016	0.016	568.299	0.019
Off-Highway Trucks	2035	176	250	0.894	0.208	1.167	0.353	0.006	0.013	0.013	568.299	0.018
Off-Highway Trucks	2035	251	500	1.461	0.208	1.105	0.348	0.005	0.013	0.013	568.299	0.018
Off-Highway Trucks	2035	501	750	2.371	0.208	1.105	0.348	0.005	0.013	0.013	568.299	0.018
Off-Highway Trucks	2035	751	1000	3.368	0.209	1.105	2.565	0.005	0.028	0.028	568.299	0.018
Off-Highway Trucks	2040	121	175	0.662	0.205	3.426	0.318	0.006	0.013	0.013	568.299	0.018
Off-Highway Trucks	2040	176	250	0.877	0.204	1.167	0.305	0.006	0.012	0.012	568.3	0.018
Off-Highway Trucks	2040	251	500	1.434	0.204	1.105	0.305	0.005	0.012	0.012	568.299	0.018
Off-Highway Trucks	2040	501	750	2.327	0.204	1.105	0.305	0.005	0.012	0.012	568.299	0.018
Off-Highway Trucks	2040	751	1000	3.296	0.205	1.105	2.532	0.005	0.026	0.026	568.299	0.018
Other Construction Equipment	1990	6	15	5.348	1.804	4.999	9.999	1.049	0.975	0.975	568.3	0.162
Other Construction Equipment	1990	16	25	8.578	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Other Construction Equipment	1990	26	50	39.33	4.791	9.693	7.947	0.871	1.267	1.267	568.299	0.432
Other Construction Equipment	1990	51	120	56.637	2.388	5.782	15.176	0.791	1.343	1.343	568.299	0.215
Other Construction Equipment	1990	121	175	60.86	1.948	5.191	15.112	0.758	1.085	1.085	568.299	0.175
Other Construction Equipment	1990	251	500	128.26	1.72	11.412	14.332	0.662	0.927	0.927	568.299	0.155
Other Construction Equipment	2000	6	15	4.374	1.475	4.49	8.242	0.079	0.676	0.676	568.299	0.133
Other Construction Equipment	2000	16	25	7.591	1.958	4.53	6.358	0.065	0.563	0.563	568.3	0.176
Other Construction Equipment	2000	26	50	30.619	3.73	7.85	6.784	0.066	0.816	0.816	568.299	0.336
Other Construction Equipment	2000	51	120	38.817	1.636	4.283	9.507	0.06	0.786	0.786	568.3	0.147
Other Construction Equipment	2000	121	175	34.573	1.106	3.417	8.749	0.057	0.453	0.453	568.299	0.099
Other Construction Equipment	2000	251	500	61.92	0.83	3.67	8.069	0.05	0.321	0.321	568.299	0.074
Other Construction Equipment	2005	6	15	2.271	0.766	3.469	5.228	0.079	0.361	0.361	568.299	0.069

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Other Construction Equipment	2005	16	25	3.564	0.919	2.642	5.412	0.065	0.347	0.347	568.3	0.082
Other Construction Equipment	2005	26	50	26.204	3.192	7.102	6.226	0.066	0.739	0.739	568.299	0.288
Other Construction Equipment	2005	51	120	33.145	1.397	4.043	8.067	0.06	0.725	0.725	568.299	0.126
Other Construction Equipment	2005	121	175	28.235	0.903	3.208	7.379	0.057	0.392	0.392	568.299	0.081
Other Construction Equipment	2005	251	500	41.035	0.55	2.051	6.334	0.05	0.22	0.22	568.299	0.049
Other Construction Equipment	2010	6	15	1.52864	1.2845	5.29076	5.55407	0.0054	0.4971	0.4573	587.5495	0.171
Other Construction Equipment	2010	16	25	1.52864	1.2845	5.29076	5.55407	0.0054	0.4971	0.4573	587.5495	0.171
Other Construction Equipment	2010	26	50	1.52864	1.2845	5.29076	5.55407	0.0054	0.4971	0.4573	587.5495	0.171
Other Construction Equipment	2010	51	120	0.92739	0.7793	3.89903	7.11752	0.0049	0.5485	0.5046	523.1661	0.1523
Other Construction Equipment	2010	121	175	0.769602	0.6467	3.47406	7.30949	0.0048	0.3797	0.3493	522.1244	0.152
Other Construction Equipment	2010	251	500	0.480247	0.4035	3.20434	5.78616	0.0049	0.2188	0.2013	530.8514	0.1545
Other Construction Equipment	2011	6	15	1.531741	1.2871	5.36962	5.5686	0.0054	0.4992	0.4593	586.0703	0.171
Other Construction Equipment	2011	16	25	1.531741	1.2871	5.36962	5.5686	0.0054	0.4992	0.4593	586.0703	0.171
Other Construction Equipment	2011	26	50	1.531741	1.2871	5.36962	5.5686	0.0054	0.4992	0.4593	586.0703	0.171
Other Construction Equipment	2011	51	120	0.909764	0.7645	3.89723	6.98332	0.0048	0.5418	0.4984	521.5282	0.1522
Other Construction Equipment	2011	121	175	0.725704	0.6098	3.41832	6.92098	0.0048	0.3607	0.3318	520.664	0.1519
Other Construction Equipment	2011	251	500	0.449646	0.3778	2.91483	5.42766	0.0049	0.204	0.1877	529.9639	0.1546
Other Construction Equipment	2012	6	15	1.548775	1.3014	5.47004	5.58169	0.0054	0.5032	0.463	584.6639	0.171
Other Construction Equipment	2012	16	25	1.548775	1.3014	5.47004	5.58169	0.0054	0.5032	0.463	584.6639	0.171
Other Construction Equipment	2012	26	50	1.548775	1.3014	5.47004	5.58169	0.0054	0.5032	0.463	584.6639	0.171
Other Construction Equipment	2012	51	120	0.910724	0.7653	3.91674	6.95644	0.0048	0.5433	0.4998	519.9075	0.1521
Other Construction Equipment	2012	121	175	0.730754	0.614	3.4429	6.91612	0.0048	0.3627	0.3337	519.3479	0.1519
Other Construction Equipment	2012	251	500	0.458869	0.3856	2.95715	5.42334	0.0049	0.2059	0.1894	528.6246	0.1546
Other Construction Equipment	2013	6	15	1.571874	1.3208	5.57699	5.60361	0.0054	0.509	0.4682	581.8471	0.1711
Other Construction Equipment	2013	16	25	1.571874	1.3208	5.57699	5.60361	0.0054	0.509	0.4682	581.8471	0.1711
Other Construction Equipment	2013	26	50	1.571874	1.3208	5.57699	5.60361	0.0054	0.509	0.4682	581.8471	0.1711
Other Construction Equipment	2013	51	120	0.892781	0.7502	3.91866	6.82868	0.0048	0.5315	0.489	517.5939	0.1522
Other Construction Equipment	2013	121	175	0.708053	0.595	3.41257	6.69102	0.0048	0.351	0.3229	516.9857	0.152
Other Construction Equipment	2013	251	500	0.440093	0.3698	2.79519	5.14317	0.0049	0.1942	0.1787	525.1086	0.1544
Other Construction Equipment	2014	6	15	1.547867	1.3006	5.60223	5.56546	0.0054	0.5023	0.4621	578.9591	0.1711
Other Construction Equipment	2014	16	25	1.547867	1.3006	5.60223	5.56546	0.0054	0.5023	0.4621	578.9591	0.1711
Other Construction Equipment	2014	26	50	1.547867	1.3006	5.60223	5.56546	0.0054	0.5023	0.4621	578.9591	0.1711
Other Construction Equipment	2014	51	120	0.866935	0.7285	3.90558	6.63282	0.0049	0.5177	0.4763	515.2847	0.1523
Other Construction Equipment	2014	121	175	0.674237	0.5665	3.38516	6.37185	0.0048	0.3332	0.3065	514.5518	0.1521
Other Construction Equipment	2014	251	500	0.392211	0.3296	2.47571	4.5608	0.0049	0.168	0.1546	520.9444	0.1539
Other Construction Equipment	2015	6	15	1.557753	1.3089	5.68113	5.56397	0.0054	0.5034	0.4631	573.0198	0.1711
Other Construction Equipment	2015	16	25	1.557753	1.3089	5.68113	5.56397	0.0054	0.5034	0.4631	573.0198	0.1711
Other Construction Equipment	2015	26	50	1.557753	1.3089	5.68113	5.56397	0.0054	0.5034	0.4631	573.0198	0.1711
Other Construction Equipment	2015	51	120	0.860334	0.7229	3.9159	6.53649	0.0049	0.5118	0.4709	510.1706	0.1523
Other Construction Equipment	2015	121	175	0.66302	0.5571	3.38183	6.2305	0.0048	0.3264	0.3003	509.3069	0.152
Other Construction Equipment	2015	251	500	0.386006	0.3244	2.40724	4.41519	0.0049	0.1626	0.1496	515.1953	0.1538
Other Construction Equipment	2016	6	15	1.524032	1.2806	5.67687	5.49921	0.0054	0.492	0.4526	566.9782	0.171
Other Construction Equipment	2016	16	25	1.524032	1.2806	5.67687	5.49921	0.0054	0.492	0.4526	566.9782	0.171
Other Construction Equipment	2016	26	50	1.524032	1.2806	5.67687	5.49921	0.0054	0.492	0.4526	566.9782	0.171
Other Construction Equipment	2016	51	120	0.837049	0.7034	3.90894	6.32533	0.0049	0.4957	0.456	505.349	0.1524
Other Construction Equipment	2016	121	175	0.62413	0.5244	3.35672	5.81763	0.0048	0.3059	0.2815	503.9641	0.152
Other Construction Equipment	2016	251	500	0.366005	0.3075	2.28488	4.08972	0.0049	0.1507	0.1386	509.7062	0.1537
Other Construction Equipment	2017	6	15	1.480652	1.2442	5.65509	5.42066	0.0054	0.4774	0.4392	558.0007	0.171
Other Construction Equipment	2017	16	25	1.480652	1.2442	5.65509	5.42066	0.0054	0.4774	0.4392	558.0007	0.171
Other Construction Equipment	2017	26	50	1.480652	1.2442	5.65509	5.42066	0.0054	0.4774	0.4392	558.0007	0.171
Other Construction Equipment	2017	51	120	0.804436	0.6759	3.88542	6.06955	0.0049	0.4749	0.4369	497.3832	0.1524
Other Construction Equipment	2017	121	175	0.595557	0.5004	3.33767	5.49424	0.0048	0.2903	0.2671	495.9311	0.152
Other Construction Equipment	2017	251	500	0.3449	0.2898	2.12114	3.77706	0.0049	0.1382	0.1272	501.1295	0.1535
Other Construction Equipment	2018	6	15	1.39068	1.1686	5.54108	5.27161	0.0054	0.4492	0.4133	548.9388	0.1709
Other Construction Equipment	2018	16	25	1.39068	1.1686	5.54108	5.27161	0.0054	0.4492	0.4133	548.9388	0.1709
Other Construction Equipment	2018	26	50	1.39068	1.1686	5.54108	5.27161	0.0054	0.4492	0.4133	548.9388	0.1709
Other Construction Equipment	2018	51	120	0.711314	0.5977	3.79863	5.44123	0.0049	0.4166	0.3833	490.018	0.1525
Other Construction Equipment	2018	121	175	0.519398	0.4364	3.26346	4.75499	0.0048	0.2502	0.2302	487.9859	0.1519
Other Construction Equipment	2018	251	500	0.298599	0.2509	1.81261	3.16693	0.0049	0.1146	0.1054	493.36	0.1536
Other Construction Equipment	2019	6	15	1.370834	1.1519	5.54123	5.20338	0.0054	0.4374	0.4024	539.7349	0.1708
Other Construction Equipment	2019	16	25	1.370834	1.1519	5.54123	5.20338	0.0054	0.4374	0.4024	539.7349	0.1708
Other Construction Equipment	2019	26	50	1.370834	1.1519	5.54123	5.20338	0.0054	0.4374	0.4024	539.7349	0.1708
Other Construction Equipment	2019	51	120	0.655004	0.5504	3.7535	5.04831	0.0049	0.3789	0.3486	482.2177	0.1526
Other Construction Equipment	2019	121	175	0.490382	0.4121	3.25619	4.4331	0.0049	0.2335	0.2148	480.4518	0.152
Other Construction Equipment	2019	251	500	0.277883	0.2335	1.66739	2.85547	0.0049	0.1026	0.0944	485.4127	0.1536
Other Construction Equipment	2020	6	15	1.276029	1.0722	5.40446	5.03626	0.0054	0.4052	0.3728	527.9656	0.1708
Other Construction Equipment	2020	16	25	1.276029	1.0722	5.40446	5.03626	0.0054	0.4052	0.3728	527.9656	0.1708
Other Construction Equipment	2020	26	50	1.276029	1.0722	5.40446	5.03626	0.0054	0.4052	0.3728	527.9656	0.1708
Other Construction Equipment	2020	51	120	0.617777	0.5191	3.73189	4.7712	0.0049	0.3537	0.3254	472.2162	0.1527
Other Construction Equipment	2020	121	175	0.461441	0.3877	3.23528	4.11203	0.0049	0.217	0.1996	469.9837	0.152
Other Construction Equipment	2020	251	500	0.266788	0.2242	1.6338	2.63672	0.0049	0.096	0.0883	475.2326	0.1537
Other Construction Equipment	2021	6	15	1.201423	1.0095	5.30749	4.90234	0.0054	0.3816	0.351	527.7834	0.1707
Other Construction Equipment	2021	16	25	1.201423	1.0095	5.30749	4.90234	0.0054	0.3816	0.351	527.7834	0.1707

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Other Construction Equipment	2021	26	50	1.201423	1.0095	5.30749	4.90234	0.0054	0.3816	0.351	527.7834	0.1707
Other Construction Equipment	2021	51	120	0.573212	0.4817	3.70304	4.4558	0.0049	0.3234	0.2975	472.275	0.1527
Other Construction Equipment	2021	121	175	0.392185	0.3295	3.18275	3.43847	0.0048	0.1798	0.1654	469.7642	0.1519
Other Construction Equipment	2021	251	500	0.256006	0.2151	1.59874	2.42822	0.0049	0.0897	0.0825	475.2124	0.1537
Other Construction Equipment	2022	6	15	1.094466	0.9197	5.16732	4.74117	0.0054	0.3478	0.32	529.1825	0.1711
Other Construction Equipment	2022	16	25	1.094466	0.9197	5.16732	4.74117	0.0054	0.3478	0.32	529.1825	0.1711
Other Construction Equipment	2022	26	50	1.094466	0.9197	5.16732	4.74117	0.0054	0.3478	0.32	529.1825	0.1711
Other Construction Equipment	2022	51	120	0.523663	0.44	3.66623	4.09846	0.0049	0.2884	0.2653	472.3178	0.1528
Other Construction Equipment	2022	121	175	0.351187	0.2951	3.15539	2.99437	0.0048	0.1562	0.1437	469.6126	0.1519
Other Construction Equipment	2022	251	500	0.223796	0.1881	1.43828	1.97544	0.0049	0.0742	0.0683	475.9983	0.1539
Other Construction Equipment	2023	6	15	1.030598	0.866	5.07368	4.59446	0.0055	0.3215	0.2958	529.3389	0.1712
Other Construction Equipment	2023	16	25	1.030598	0.866	5.07368	4.59446	0.0055	0.3215	0.2958	529.3389	0.1712
Other Construction Equipment	2023	26	50	1.030598	0.866	5.07368	4.59446	0.0055	0.3215	0.2958	529.3389	0.1712
Other Construction Equipment	2023	51	120	0.482844	0.4057	3.63188	3.79013	0.0049	0.2588	0.2381	471.9899	0.1527
Other Construction Equipment	2023	121	175	0.325455	0.2735	3.14152	2.69821	0.0048	0.1405	0.1292	469.5579	0.1519
Other Construction Equipment	2023	251	500	0.214667	0.1804	1.39596	1.81226	0.0049	0.0688	0.0633	476.1847	0.154
Other Construction Equipment	2024	6	15	0.984979	0.8277	5.03181	4.51017	0.0055	0.3048	0.2805	529.2094	0.1712
Other Construction Equipment	2024	16	25	0.984979	0.8277	5.03181	4.51017	0.0055	0.3048	0.2805	529.2094	0.1712
Other Construction Equipment	2024	26	50	0.984979	0.8277	5.03181	4.51017	0.0055	0.3048	0.2805	529.2094	0.1712
Other Construction Equipment	2024	51	120	0.454266	0.3817	3.61958	3.58173	0.0049	0.2369	0.2179	472.1254	0.1527
Other Construction Equipment	2024	121	175	0.310043	0.2605	3.14951	2.52019	0.0048	0.13	0.1196	469.5445	0.1519
Other Construction Equipment	2024	251	500	0.208244	0.175	1.38248	1.67692	0.0049	0.0644	0.0592	476.4838	0.1541
Other Construction Equipment	2025	6	15	0.901061	0.7571	4.87388	4.30575	0.0055	0.2678	0.2464	528.9535	0.1711
Other Construction Equipment	2025	16	25	0.901061	0.7571	4.87388	4.30575	0.0055	0.2678	0.2464	528.9535	0.1711
Other Construction Equipment	2025	26	50	0.901061	0.7571	4.87388	4.30575	0.0055	0.2678	0.2464	528.9535	0.1711
Other Construction Equipment	2025	51	120	0.40612	0.3413	3.58397	3.25221	0.0049	0.2029	0.1867	472.7482	0.1529
Other Construction Equipment	2025	121	175	0.279358	0.2347	3.13647	2.16742	0.0049	0.1121	0.1031	469.843	0.152
Other Construction Equipment	2025	251	500	0.200431	0.1684	1.3582	1.55241	0.0049	0.0594	0.0547	476.2959	0.154
Other Construction Equipment	2030	6	15	1.96	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Other Construction Equipment	2030	16	25	2.657	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Other Construction Equipment	2030	26	50	3.526	0.429	4.39	3.19	0.007	0.03	0.03	568.299	0.038
Other Construction Equipment	2030	51	120	5.348	0.225	3.538	1.576	0.006	0.027	0.027	568.3	0.02
Other Construction Equipment	2030	121	175	5.057	0.161	3.127	0.459	0.006	0.019	0.019	568.299	0.014
Other Construction Equipment	2030	251	500	11.523	0.154	1.028	0.391	0.005	0.014	0.014	568.3	0.013
Other Construction Equipment	2035	6	15	1.96	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Other Construction Equipment	2035	16	25	2.657	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Other Construction Equipment	2035	26	50	3.367	0.41	4.377	3.124	0.007	0.018	0.018	568.299	0.037
Other Construction Equipment	2035	51	120	5.057	0.213	3.536	1.474	0.006	0.017	0.017	568.299	0.019
Other Construction Equipment	2035	121	175	4.686	0.15	3.128	0.334	0.006	0.013	0.013	568.299	0.013
Other Construction Equipment	2035	251	500	11.034	0.147	1.029	0.311	0.005	0.011	0.011	568.299	0.013
Other Construction Equipment	2040	6	15	1.96	0.661	3.47	4.142	0.008	0.161	0.161	568.3	0.059
Other Construction Equipment	2040	16	25	2.657	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Other Construction Equipment	2040	26	50	3.359	0.409	4.377	3.096	0.007	0.015	0.015	568.3	0.036
Other Construction Equipment	2040	51	120	4.992	0.21	3.536	1.441	0.006	0.014	0.014	568.299	0.018
Other Construction Equipment	2040	121	175	4.556	0.145	3.128	0.29	0.006	0.011	0.011	568.299	0.013
Other Construction Equipment	2040	251	500	10.825	0.145	1.029	0.282	0.005	0.01	0.01	568.299	0.013
Other General Industrial Equipment	1990	6	15	4.264	1.804	4.999	9.999	0.833	0.968	0.968	568.299	0.162
Other General Industrial Equipment	1990	16	25	12.555	2.213	4.999	6.919	0.679	0.735	0.735	568.299	0.199
Other General Industrial Equipment	1990	26	50	38.808	4.828	9.768	7.957	0.692	1.266	1.266	568.299	0.435
Other General Industrial Equipment	1990	51	120	54.2	2.363	5.72	14.962	0.628	1.331	1.331	568.299	0.213
Other General Industrial Equipment	1990	121	175	57.106	1.61	5.066	13.434	0.602	0.88	0.88	568.299	0.145
Other General Industrial Equipment	1990	176	250	80.71	1.61	5.066	13.434	0.602	0.88	0.88	568.299	0.145
Other General Industrial Equipment	1990	251	500	139.861	1.425	11.207	12.743	0.525	0.756	0.756	568.299	0.128
Other General Industrial Equipment	1990	501	750	230.516	1.425	11.207	12.743	0.538	0.756	0.756	568.299	0.128
Other General Industrial Equipment	1990	751	1000	293.256	1.417	11.207	12.743	0.538	0.746	0.746	568.299	0.127
Other General Industrial Equipment	2000	6	15	2.475	1.047	4.258	7.362	0.079	0.428	0.428	568.299	0.094
Other General Industrial Equipment	2000	16	25	5.83	1.027	4.322	6.284	0.064	0.431	0.431	568.299	0.092
Other General Industrial Equipment	2000	26	50	36.086	4.49	9.236	7.09	0.065	0.935	0.935	568.299	0.405
Other General Industrial Equipment	2000	51	120	43.196	1.883	4.733	10.664	0.059	0.91	0.91	568.299	0.169
Other General Industrial Equipment	2000	121	175	44.74	1.261	3.852	9.686	0.057	0.536	0.536	568.299	0.113
Other General Industrial Equipment	2000	176	250	53	1.057	3.072	9.325	0.057	0.438	0.438	568.299	0.095
Other General Industrial Equipment	2000	251	500	93.834	0.956	5.179	8.862	0.049	0.385	0.385	568.299	0.086
Other General Industrial Equipment	2000	501	750	154.656	0.956	5.179	8.862	0.051	0.385	0.385	568.3	0.086
Other General Industrial Equipment	2000	751	1000	214.063	1.034	5.791	9.479	0.051	0.385	0.385	568.299	0.093
Other General Industrial Equipment	2005	6	15	1.674	0.708	3.469	4.985	0.079	0.35	0.35	568.299	0.063
Other General Industrial Equipment	2005	16	25	4.288	0.755	2.4	5.226	0.064	0.315	0.315	568.299	0.068
Other General Industrial Equipment	2005	26	50	33.133	4.122	8.765	6.676	0.065	0.888	0.888	568.299	0.371
Other General Industrial Equipment	2005	51	120	37.812	1.649	4.418	9.041	0.059	0.867	0.867	568.299	0.148
Other General Industrial Equipment	2005	121	175	38.439	1.084	3.513	8.273	0.057	0.479	0.479	568.299	0.097
Other General Industrial Equipment	2005	176	250	38.228	0.762	2.065	7.795	0.057	0.301	0.301	568.299	0.068
Other General Industrial Equipment	2005	251	500	66.246	0.675	2.681	7.094	0.049	0.269	0.269	568.299	0.06
Other General Industrial Equipment	2005	501	750	110.94	0.686	2.681	7.252	0.051	0.272	0.272	568.3	0.061
Other General Industrial Equipment	2005	751	1000	166.893	0.806	3.276	8.322	0.051	0.28	0.28	568.299	0.072

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Other General Industrial Equipment	2010	6	15	1.873274	1.5741	6.00712	5.68505	0.0054	0.5635	0.5184	584.6401	0.1702
Other General Industrial Equipment	2010	16	25	1.873274	1.5741	6.00712	5.68505	0.0054	0.5635	0.5184	584.6401	0.1702
Other General Industrial Equipment	2010	26	50	1.873274	1.5741	6.00712	5.68505	0.0054	0.5635	0.5184	584.6401	0.1702
Other General Industrial Equipment	2010	51	120	1.01726	0.8548	4.0773	7.36447	0.0048	0.611	0.5621	522.222	0.152
Other General Industrial Equipment	2010	121	175	0.746027	0.6269	3.51505	7.0202	0.0049	0.3789	0.3486	524.278	0.1526
Other General Industrial Equipment	2010	176	250	0.769173	0.6463	2.61803	8.04899	0.0049	0.3587	0.33	525.8035	0.153
Other General Industrial Equipment	2010	251	500	0.489206	0.4111	2.96412	5.68219	0.0049	0.2194	0.2019	525.4767	0.153
Other General Industrial Equipment	2010	501	750	0.368598	0.3097	1.62081	4.78207	0.0049	0.1677	0.1543	526.0709	0.1531
Other General Industrial Equipment	2010	751	1000	0.368913	0.31	1.02418	6.10226	0.0049	0.1483	0.1364	524.505	0.1527
Other General Industrial Equipment	2011	6	15	1.86071	1.5635	6.08575	5.69446	0.0054	0.5623	0.5173	583.1785	0.1702
Other General Industrial Equipment	2011	16	25	1.86071	1.5635	6.08575	5.69446	0.0054	0.5623	0.5173	583.1785	0.1702
Other General Industrial Equipment	2011	26	50	1.86071	1.5635	6.08575	5.69446	0.0054	0.5623	0.5173	583.1785	0.1702
Other General Industrial Equipment	2011	51	120	1.006419	0.8457	4.08854	7.24885	0.0048	0.6088	0.5601	520.9164	0.152
Other General Industrial Equipment	2011	121	175	0.688559	0.5786	3.47165	6.5273	0.0049	0.352	0.3238	522.9673	0.1526
Other General Industrial Equipment	2011	176	250	0.679053	0.5706	2.33422	7.30022	0.0049	0.3134	0.2883	524.489	0.153
Other General Industrial Equipment	2011	251	500	0.467324	0.3927	2.74249	5.42881	0.0049	0.2067	0.1902	524.163	0.153
Other General Industrial Equipment	2011	501	750	0.373245	0.3136	1.62791	4.72869	0.0049	0.1634	0.1503	524.7557	0.1531
Other General Industrial Equipment	2011	751	1000	0.37971	0.3191	1.03813	6.1714	0.0049	0.1529	0.1407	523.1938	0.1527
Other General Industrial Equipment	2012	6	15	1.895405	1.5927	6.24676	5.71254	0.0054	0.5694	0.5239	581.7169	0.1702
Other General Industrial Equipment	2012	16	25	1.895405	1.5927	6.24676	5.71254	0.0054	0.5694	0.5239	581.7169	0.1702
Other General Industrial Equipment	2012	26	50	1.895405	1.5927	6.24676	5.71254	0.0054	0.5694	0.5239	581.7169	0.1702
Other General Industrial Equipment	2012	51	120	1.008569	0.8475	4.12133	7.21493	0.0048	0.612	0.563	519.6109	0.152
Other General Industrial Equipment	2012	121	175	0.685664	0.5761	3.49618	6.44491	0.0049	0.3488	0.3209	521.6566	0.1526
Other General Industrial Equipment	2012	176	250	0.675065	0.5672	2.33594	7.14362	0.0049	0.3084	0.2837	523.1745	0.153
Other General Industrial Equipment	2012	251	500	0.47625	0.4002	2.75094	5.39821	0.0049	0.2069	0.1903	522.8493	0.153
Other General Industrial Equipment	2012	501	750	0.379047	0.3185	1.63473	4.69855	0.0049	0.1609	0.148	523.4405	0.1531
Other General Industrial Equipment	2012	751	1000	0.390508	0.3281	1.05208	6.24054	0.0049	0.1575	0.1449	521.8825	0.1527
Other General Industrial Equipment	2013	6	15	1.848739	1.5535	6.26146	5.64536	0.0054	0.5557	0.5113	578.7937	0.1702
Other General Industrial Equipment	2013	16	25	1.848739	1.5535	6.26146	5.64536	0.0054	0.5557	0.5113	578.7937	0.1702
Other General Industrial Equipment	2013	26	50	1.848739	1.5535	6.26146	5.64536	0.0054	0.5557	0.5113	578.7937	0.1702
Other General Industrial Equipment	2013	51	120	0.982208	0.8253	4.11871	7.03299	0.0048	0.5968	0.5491	516.9998	0.152
Other General Industrial Equipment	2013	121	175	0.6403	0.538	3.4592	6.02319	0.0049	0.3243	0.2984	519.0352	0.1526
Other General Industrial Equipment	2013	176	250	0.609561	0.5122	2.15134	6.51958	0.0049	0.273	0.2511	520.5455	0.153
Other General Industrial Equipment	2013	251	500	0.434695	0.3653	2.62159	4.82071	0.0049	0.1827	0.1681	520.2219	0.153
Other General Industrial Equipment	2013	501	750	0.344704	0.2896	1.58393	4.12057	0.0049	0.1392	0.1281	520.8102	0.1531
Other General Industrial Equipment	2013	751	1000	0.401306	0.3372	1.06602	6.30968	0.0049	0.1621	0.1492	519.26	0.1527
Other General Industrial Equipment	2014	6	15	1.810128	1.521	6.28785	5.58361	0.0054	0.5439	0.5004	575.8705	0.1702
Other General Industrial Equipment	2014	16	25	1.810128	1.521	6.28785	5.58361	0.0054	0.5439	0.5004	575.8705	0.1702
Other General Industrial Equipment	2014	26	50	1.810128	1.521	6.28785	5.58361	0.0054	0.5439	0.5004	575.8705	0.1702
Other General Industrial Equipment	2014	51	120	0.938561	0.7887	4.09005	6.72277	0.0048	0.5739	0.528	514.3886	0.152
Other General Industrial Equipment	2014	121	175	0.621882	0.5226	3.46929	5.79166	0.0049	0.3118	0.2868	516.4138	0.1526
Other General Industrial Equipment	2014	176	250	0.580321	0.4876	2.05376	6.15263	0.0049	0.2546	0.2342	517.9164	0.153
Other General Industrial Equipment	2014	251	500	0.422239	0.3548	2.49943	4.56494	0.0049	0.1724	0.1587	517.5945	0.153
Other General Industrial Equipment	2014	501	750	0.304364	0.2557	1.48882	3.62195	0.0049	0.1153	0.1061	518.1798	0.1531
Other General Industrial Equipment	2014	751	1000	0.412103	0.3463	1.07997	6.37883	0.0049	0.1668	0.1534	516.6375	0.1527
Other General Industrial Equipment	2015	6	15	1.779268	1.4951	6.32452	5.52435	0.0054	0.5324	0.4898	570.0241	0.1702
Other General Industrial Equipment	2015	16	25	1.779268	1.4951	6.32452	5.52435	0.0054	0.5324	0.4898	570.0241	0.1702
Other General Industrial Equipment	2015	26	50	1.779268	1.4951	6.32452	5.52435	0.0054	0.5324	0.4898	570.0241	0.1702
Other General Industrial Equipment	2015	51	120	0.905303	0.7607	4.0811	6.50163	0.0048	0.5528	0.5086	509.1664	0.152
Other General Industrial Equipment	2015	121	175	0.589015	0.4949	3.45434	5.3974	0.0049	0.294	0.2704	511.171	0.1526
Other General Industrial Equipment	2015	176	250	0.538134	0.4522	1.9257	5.64293	0.0049	0.2295	0.2111	512.6584	0.153
Other General Industrial Equipment	2015	251	500	0.420225	0.3531	2.43603	4.42481	0.0049	0.1671	0.1537	512.3397	0.153
Other General Industrial Equipment	2015	501	750	0.298831	0.2511	1.49062	3.36512	0.0049	0.1092	0.1004	512.9191	0.1531
Other General Industrial Equipment	2015	751	1000	0.422901	0.3554	1.09391	6.44797	0.0049	0.1714	0.1577	511.3924	0.1527
Other General Industrial Equipment	2016	6	15	1.690474	1.4205	6.25866	5.40705	0.0054	0.5065	0.466	564.1777	0.1702
Other General Industrial Equipment	2016	16	25	1.690474	1.4205	6.25866	5.40705	0.0054	0.5065	0.466	564.1777	0.1702
Other General Industrial Equipment	2016	26	50	1.690474	1.4205	6.25866	5.40705	0.0054	0.5065	0.466	564.1777	0.1702
Other General Industrial Equipment	2016	51	120	0.851445	0.7155	4.04541	6.14411	0.0048	0.5178	0.4764	503.9442	0.152
Other General Industrial Equipment	2016	121	175	0.559455	0.4701	3.43665	5.05466	0.0049	0.2758	0.2537	505.9282	0.1526
Other General Industrial Equipment	2016	176	250	0.519923	0.4369	1.8667	5.40733	0.0049	0.2173	0.1999	507.4004	0.153
Other General Industrial Equipment	2016	251	500	0.407021	0.342	2.36652	4.14966	0.0049	0.1589	0.1462	507.085	0.153
Other General Industrial Equipment	2016	501	750	0.289084	0.2429	1.49061	3.10202	0.0049	0.1004	0.0924	507.6584	0.1531
Other General Industrial Equipment	2016	751	1000	0.288345	0.2423	1.04483	4.7462	0.0049	0.112	0.103	506.1474	0.1527
Other General Industrial Equipment	2017	6	15	1.605819	1.3493	6.17923	5.27694	0.0054	0.4793	0.4409	555.4081	0.1702
Other General Industrial Equipment	2017	16	25	1.605819	1.3493	6.17923	5.27694	0.0054	0.4793	0.4409	555.4081	0.1702
Other General Industrial Equipment	2017	26	50	1.605819	1.3493	6.17923	5.27694	0.0054	0.4793	0.4409	555.4081	0.1702
Other General Industrial Equipment	2017	51	120	0.785454	0.66	3.99811	5.72138	0.0048	0.4705	0.4328	496.1109	0.152
Other General Industrial Equipment	2017	121	175	0.520155	0.4371	3.39928	4.53359	0.0049	0.2495	0.2296	498.0641	0.1526
Other General Industrial Equipment	2017	176	250	0.489435	0.4113	1.78	5.02246	0.0049	0.199	0.183	499.5133	0.153
Other General Industrial Equipment	2017	251	500	0.397215	0.3338	2.36453	3.9491	0.0049	0.152	0.1399	499.2028	0.153
Other General Industrial Equipment	2017	501	750	0.260833	0.2192	1.48016	2.59187	0.0049	0.0862	0.0793	499.7673	0.1531
Other General Industrial Equipment	2017	751	1000	0.29828	0.2506	1.05719	4.7865	0.0049	0.1145	0.1053	498.2798	0.1527
Other General Industrial Equipment	2018	6	15	1.373834	1.1544	5.82717	4.97857	0.0054	0.4137	0.3806	546.6385	0.1702

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Other General Industrial Equipment	2018	16	25	1.373834	1.1544	5.82717	4.97857	0.0054	0.4137	0.3806	546.6385	0.1702
Other General Industrial Equipment	2018	26	50	1.373834	1.1544	5.82717	4.97857	0.0054	0.4137	0.3806	546.6385	0.1702
Other General Industrial Equipment	2018	51	120	0.663253	0.5573	3.87633	4.95455	0.0048	0.3917	0.3604	488.2775	0.152
Other General Industrial Equipment	2018	121	175	0.377931	0.3176	3.23662	3.23673	0.0049	0.172	0.1582	490.1999	0.1526
Other General Industrial Equipment	2018	176	250	0.360768	0.3031	1.45525	3.64819	0.0049	0.1348	0.124	491.6263	0.153
Other General Industrial Equipment	2018	251	500	0.301755	0.2536	1.58301	2.90735	0.0049	0.1036	0.0953	491.3207	0.153
Other General Industrial Equipment	2018	501	750	0.257602	0.2165	1.48303	2.41933	0.0049	0.0826	0.076	491.8763	0.1531
Other General Industrial Equipment	2018	751	1000	0.306245	0.2573	1.06646	4.81007	0.0049	0.1159	0.1066	490.4122	0.1527
Other General Industrial Equipment	2019	6	15	1.240314	1.0422	5.66186	4.80683	0.0054	0.3737	0.3438	537.8689	0.1702
Other General Industrial Equipment	2019	16	25	1.240314	1.0422	5.66186	4.80683	0.0054	0.3737	0.3438	537.8689	0.1702
Other General Industrial Equipment	2019	26	50	1.240314	1.0422	5.66186	4.80683	0.0054	0.3737	0.3438	537.8689	0.1702
Other General Industrial Equipment	2019	51	120	0.594634	0.4997	3.82128	4.49674	0.0048	0.3429	0.3155	480.4442	0.152
Other General Industrial Equipment	2019	121	175	0.359068	0.3017	3.24129	2.99891	0.0049	0.1565	0.144	482.3357	0.1526
Other General Industrial Equipment	2019	176	250	0.307665	0.2585	1.29893	3.01996	0.0049	0.1058	0.0973	483.7392	0.153
Other General Industrial Equipment	2019	251	500	0.283854	0.2385	1.56115	2.57531	0.0049	0.0923	0.0849	483.4385	0.153
Other General Industrial Equipment	2019	501	750	0.236758	0.1989	1.47441	2.11518	0.0049	0.0758	0.0697	483.9852	0.1531
Other General Industrial Equipment	2019	751	1000	0.31421	0.264	1.07573	4.83364	0.0049	0.1172	0.1079	482.5446	0.1527
Other General Industrial Equipment	2020	6	15	1.125869	0.946	5.50397	4.62219	0.0054	0.334	0.3073	526.1761	0.1702
Other General Industrial Equipment	2020	16	25	1.125869	0.946	5.50397	4.62219	0.0054	0.334	0.3073	526.1761	0.1702
Other General Industrial Equipment	2020	26	50	1.125869	0.946	5.50397	4.62219	0.0054	0.334	0.3073	526.1761	0.1702
Other General Industrial Equipment	2020	51	120	0.53075	0.446	3.77073	4.06079	0.0048	0.2959	0.2722	469.9998	0.152
Other General Industrial Equipment	2020	121	175	0.319281	0.2683	3.22922	2.57503	0.0049	0.135	0.1242	471.8502	0.1526
Other General Industrial Equipment	2020	176	250	0.281815	0.2368	1.23914	2.66782	0.0049	0.0902	0.083	473.2231	0.153
Other General Industrial Equipment	2020	251	500	0.247036	0.2076	1.34424	2.06187	0.0049	0.0724	0.0666	472.929	0.153
Other General Industrial Equipment	2020	501	750	0.207847	0.1746	1.46184	1.67591	0.0049	0.0622	0.0572	473.4638	0.1531
Other General Industrial Equipment	2020	751	1000	0.322174	0.2707	1.085	4.85721	0.0049	0.1186	0.1092	472.0545	0.1527
Other General Industrial Equipment	2021	6	15	0.989462	0.8314	5.31354	4.42532	0.0054	0.2889	0.2658	526.1761	0.1702
Other General Industrial Equipment	2021	16	25	0.989462	0.8314	5.31354	4.42532	0.0054	0.2889	0.2658	526.1761	0.1702
Other General Industrial Equipment	2021	26	50	0.989462	0.8314	5.31354	4.42532	0.0054	0.2889	0.2658	526.1761	0.1702
Other General Industrial Equipment	2021	51	120	0.480398	0.4037	3.74029	3.7177	0.0049	0.2559	0.2354	469.9998	0.152
Other General Industrial Equipment	2021	121	175	0.302394	0.2541	3.23421	2.34745	0.0049	0.1209	0.1113	471.8502	0.1526
Other General Industrial Equipment	2021	176	250	0.242448	0.2037	1.17138	2.0939	0.0049	0.0696	0.0641	473.2231	0.153
Other General Industrial Equipment	2021	251	500	0.232592	0.1954	1.32956	1.79624	0.0049	0.0642	0.059	472.929	0.153
Other General Industrial Equipment	2021	501	750	0.197551	0.166	1.46305	1.38672	0.0049	0.0544	0.05	473.4638	0.1531
Other General Industrial Equipment	2021	751	1000	0.328625	0.2761	1.09291	4.87557	0.0049	0.1196	0.1101	472.0545	0.1527
Other General Industrial Equipment	2022	6	15	0.835231	0.7018	5.07591	4.19687	0.0054	0.2377	0.2187	526.1761	0.1702
Other General Industrial Equipment	2022	16	25	0.835231	0.7018	5.07591	4.19687	0.0054	0.2377	0.2187	526.1761	0.1702
Other General Industrial Equipment	2022	26	50	0.835231	0.7018	5.07591	4.19687	0.0054	0.2377	0.2187	526.1761	0.1702
Other General Industrial Equipment	2022	51	120	0.403101	0.3387	3.66821	3.19968	0.0049	0.1991	0.1831	469.9998	0.152
Other General Industrial Equipment	2022	121	175	0.289798	0.2435	3.23346	2.14959	0.0049	0.1109	0.102	471.8502	0.1526
Other General Industrial Equipment	2022	176	250	0.222216	0.1867	1.13752	1.75874	0.0049	0.0569	0.0523	473.2231	0.153
Other General Industrial Equipment	2022	251	500	0.208015	0.1748	1.17139	1.43348	0.0049	0.0499	0.0459	472.929	0.153
Other General Industrial Equipment	2022	501	750	0.177285	0.149	1.45658	1.06247	0.0049	0.0458	0.0422	473.4638	0.1531
Other General Industrial Equipment	2022	751	1000	0.223076	0.1874	1.03925	3.942	0.0049	0.0793	0.073	472.0545	0.1527
Other General Industrial Equipment	2023	6	15	0.717857	0.6032	4.88317	3.99304	0.0054	0.194	0.1785	526.1761	0.1702
Other General Industrial Equipment	2023	16	25	0.717857	0.6032	4.88317	3.99304	0.0054	0.194	0.1785	526.1761	0.1702
Other General Industrial Equipment	2023	26	50	0.717857	0.6032	4.88317	3.99304	0.0054	0.194	0.1785	526.1761	0.1702
Other General Industrial Equipment	2023	51	120	0.366077	0.3076	3.64703	2.92394	0.0049	0.1685	0.155	469.9998	0.152
Other General Industrial Equipment	2023	121	175	0.238568	0.2005	3.17453	1.60937	0.0049	0.0802	0.0738	471.8502	0.1526
Other General Industrial Equipment	2023	176	250	0.214876	0.1806	1.14024	1.53043	0.0049	0.0512	0.0471	473.2231	0.153
Other General Industrial Equipment	2023	251	500	0.195172	0.164	1.12057	1.25618	0.0049	0.043	0.0396	472.929	0.153
Other General Industrial Equipment	2023	501	750	0.131565	0.1106	1.10458	0.62571	0.0049	0.0226	0.0208	473.4638	0.1531
Other General Industrial Equipment	2023	751	1000	0.229255	0.1926	1.04852	3.95649	0.0049	0.0798	0.0734	472.0545	0.1527
Other General Industrial Equipment	2024	6	15	0.649743	0.546	4.78022	3.85892	0.0054	0.1654	0.1522	526.1761	0.1702
Other General Industrial Equipment	2024	16	25	0.649743	0.546	4.78022	3.85892	0.0054	0.1654	0.1522	526.1761	0.1702
Other General Industrial Equipment	2024	26	50	0.649743	0.546	4.78022	3.85892	0.0054	0.1654	0.1522	526.1761	0.1702
Other General Industrial Equipment	2024	51	120	0.341745	0.2872	3.63929	2.70778	0.0049	0.1459	0.1342	469.9998	0.152
Other General Industrial Equipment	2024	121	175	0.226791	0.1906	3.18534	1.44774	0.0049	0.0727	0.0669	471.8502	0.1526
Other General Industrial Equipment	2024	176	250	0.205547	0.1727	1.14124	1.31888	0.0049	0.0457	0.0421	473.2231	0.153
Other General Industrial Equipment	2024	251	500	0.187509	0.1576	1.1102	1.15288	0.0049	0.0395	0.0363	472.929	0.153
Other General Industrial Equipment	2024	501	750	0.137014	0.1151	1.11228	0.62782	0.0049	0.0227	0.0209	473.4638	0.1531
Other General Industrial Equipment	2024	751	1000	0.235434	0.1978	1.05779	3.97098	0.0049	0.0802	0.0738	472.0545	0.1527
Other General Industrial Equipment	2025	6	15	0.585572	0.492	4.67981	3.71721	0.0054	0.1362	0.1253	526.1761	0.1702
Other General Industrial Equipment	2025	16	25	0.585572	0.492	4.67981	3.71721	0.0054	0.1362	0.1253	526.1761	0.1702
Other General Industrial Equipment	2025	26	50	0.585572	0.492	4.67981	3.71721	0.0054	0.1362	0.1253	526.1761	0.1702
Other General Industrial Equipment	2025	51	120	0.306396	0.2575	3.61204	2.43889	0.0049	0.1181	0.1086	469.9998	0.152
Other General Industrial Equipment	2025	121	175	0.224974	0.189	3.20434	1.36379	0.0049	0.0702	0.0646	471.8502	0.1526
Other General Industrial Equipment	2025	176	250	0.184121	0.1547	1.13176	1.02801	0.0049	0.0362	0.0333	473.2231	0.153
Other General Industrial Equipment	2025	251	500	0.180295	0.1515	1.10932	1.05334	0.0049	0.0353	0.0325	472.929	0.153
Other General Industrial Equipment	2025	501	750	0.139282	0.117	1.1152	0.629	0.0049	0.0228	0.021	473.4638	0.1531
Other General Industrial Equipment	2025	751	1000	0.241613	0.203	1.06706	3.98546	0.0049	0.0806	0.0742	472.0545	0.1527
Other General Industrial Equipment	2030	6	15	1.393	0.589	3.469	4.142	0.008	0.161	0.161	568.299	0.053
Other General Industrial Equipment	2030	16	25	3.889	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Other General Industrial Equipment	2030	26	50	4.896	0.609	5.299	3.46	0.007	0.048	0.048	568.299	0.054
Other General Industrial Equipment	2030	51	120	7.091	0.309	3.802	1.766	0.006	0.043	0.043	568.299	0.027
Other General Industrial Equipment	2030	121	175	7.93	0.223	3.357	0.641	0.006	0.028	0.028	568.299	0.02
Other General Industrial Equipment	2030	176	250	10.485	0.209	1.143	0.536	0.006	0.018	0.018	568.299	0.018
Other General Industrial Equipment	2030	251	500	20.447	0.208	1.087	0.506	0.005	0.018	0.018	568.299	0.018
Other General Industrial Equipment	2030	501	750	33.725	0.208	1.087	0.512	0.005	0.018	0.018	568.299	0.018
Other General Industrial Equipment	2030	751	1000	44.002	0.212	1.088	2.66	0.005	0.035	0.035	568.299	0.019
Other General Industrial Equipment	2035	6	15	1.393	0.589	3.469	4.142	0.008	0.161	0.161	568.299	0.053
Other General Industrial Equipment	2035	16	25	3.889	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Other General Industrial Equipment	2035	26	50	4.535	0.564	5.255	3.334	0.007	0.025	0.025	568.299	0.05
Other General Industrial Equipment	2035	51	120	6.486	0.282	3.794	1.567	0.006	0.022	0.022	568.3	0.025
Other General Industrial Equipment	2035	121	175	7.079	0.199	3.355	0.399	0.006	0.016	0.016	568.3	0.018
Other General Industrial Equipment	2035	176	250	9.803	0.195	1.143	0.355	0.006	0.013	0.013	568.299	0.017
Other General Industrial Equipment	2035	251	500	19.187	0.195	1.087	0.351	0.005	0.013	0.013	568.299	0.017
Other General Industrial Equipment	2035	501	750	31.624	0.195	1.087	0.351	0.005	0.013	0.013	568.299	0.017
Other General Industrial Equipment	2035	751	1000	40.723	0.196	1.087	2.532	0.005	0.028	0.028	568.299	0.017
Other General Industrial Equipment	2040	6	15	1.393	0.589	3.47	4.142	0.008	0.161	0.161	568.299	0.053
Other General Industrial Equipment	2040	16	25	3.889	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Other General Industrial Equipment	2040	26	50	4.521	0.562	5.257	3.283	0.007	0.019	0.019	568.299	0.05
Other General Industrial Equipment	2040	51	120	6.373	0.277	3.794	1.506	0.006	0.017	0.017	568.299	0.025
Other General Industrial Equipment	2040	121	175	6.806	0.191	3.356	0.315	0.006	0.012	0.012	568.299	0.017
Other General Industrial Equipment	2040	176	250	9.551	0.19	1.143	0.299	0.006	0.011	0.011	568.299	0.017
Other General Industrial Equipment	2040	251	500	18.696	0.19	1.087	0.299	0.005	0.011	0.011	568.299	0.017
Other General Industrial Equipment	2040	501	750	30.815	0.19	1.087	0.299	0.005	0.011	0.011	568.299	0.017
Other General Industrial Equipment	2040	751	1000	39.521	0.191	1.087	2.5	0.005	0.025	0.025	568.299	0.017
Other Material Handling Equipment	1990	26	50	12.278	4.763	9.649	7.932	0.692	1.252	1.252	568.3	0.429
Other Material Handling Equipment	1990	51	120	12.096	2.346	5.692	14.896	0.628	1.317	1.317	568.299	0.211
Other Material Handling Equipment	1990	121	175	16.59	1.599	5.041	13.377	0.602	0.872	0.872	568.299	0.144
Other Material Handling Equipment	1990	176	250	19.708	1.599	5.041	13.377	0.602	0.872	0.872	568.3	0.144
Other Material Handling Equipment	1990	251	500	23.083	1.417	11.046	12.702	0.525	0.75	0.75	568.299	0.127
Other Material Handling Equipment	1990	1001	9999	88.844	1.41	11.046	12.702	0.525	0.741	0.741	568.3	0.127
Other Material Handling Equipment	2000	26	50	11.414	4.428	9.121	7.068	0.065	0.925	0.925	568.299	0.399
Other Material Handling Equipment	2000	51	120	9.647	1.871	4.712	10.623	0.059	0.901	0.901	568.299	0.168
Other Material Handling Equipment	2000	121	175	13	1.253	3.836	9.648	0.057	0.531	0.531	568.299	0.113
Other Material Handling Equipment	2000	176	250	12.957	1.051	3.061	9.289	0.057	0.435	0.435	568.3	0.094
Other Material Handling Equipment	2000	251	500	15.5	0.951	5.171	8.836	0.049	0.383	0.383	568.299	0.085
Other Material Handling Equipment	2000	1001	9999	65.006	1.031	5.779	9.45	0.049	0.384	0.384	568.299	0.093
Other Material Handling Equipment	2005	26	50	10.467	4.06	8.646	6.65	0.065	0.878	0.878	568.299	0.366
Other Material Handling Equipment	2005	51	120	8.426	1.634	4.393	9.001	0.059	0.857	0.857	568.3	0.147
Other Material Handling Equipment	2005	121	175	11.141	1.073	3.493	8.235	0.057	0.473	0.473	568.299	0.096
Other Material Handling Equipment	2005	176	250	9.335	0.757	2.058	7.76	0.057	0.299	0.299	568.299	0.068
Other Material Handling Equipment	2005	251	500	10.914	0.67	2.676	7.071	0.049	0.268	0.268	568.299	0.06
Other Material Handling Equipment	2005	1001	9999	50.601	0.803	3.267	8.291	0.049	0.278	0.278	568.299	0.072
Other Material Handling Equipment	2010	26	50	2.513226	2.1118	7.14242	6.11921	0.0054	0.6727	0.6189	581.8987	0.1694
Other Material Handling Equipment	2010	51	120	0.880333	0.7397	3.91836	6.86036	0.0049	0.5499	0.5059	526.2094	0.1532
Other Material Handling Equipment	2010	121	175	0.703937	0.5915	3.45939	6.62945	0.0049	0.3644	0.3353	524.6881	0.1527
Other Material Handling Equipment	2010	176	250	0.639111	0.537	2.2178	7.05748	0.0049	0.2919	0.2685	523.8689	0.1525
Other Material Handling Equipment	2010	251	500	0.474577	0.3988	2.89546	5.53948	0.0049	0.2246	0.2066	522.5525	0.1521
Other Material Handling Equipment	2010	1001	9999	0.19342	0.1625	0.96514	4.31467	0.0049	0.0998	0.0918	524.505	0.1527
Other Material Handling Equipment	2011	26	50	2.357707	1.9811	6.95209	6.0264	0.0054	0.644	0.5925	580.4439	0.1694
Other Material Handling Equipment	2011	51	120	0.835489	0.702	3.89742	6.54765	0.0049	0.5271	0.485	524.8938	0.1532
Other Material Handling Equipment	2011	121	175	0.695125	0.5841	3.45599	6.48588	0.0049	0.3599	0.3311	523.3764	0.1527
Other Material Handling Equipment	2011	176	250	0.63663	0.5349	2.18416	6.98965	0.0049	0.288	0.265	522.5592	0.1525
Other Material Handling Equipment	2011	251	500	0.474482	0.3987	2.78574	5.43165	0.0049	0.2207	0.203	521.2461	0.1521
Other Material Handling Equipment	2011	1001	9999	0.210247	0.1767	0.97804	4.35542	0.0049	0.1031	0.0949	523.1938	0.1527
Other Material Handling Equipment	2012	26	50	2.238738	1.8812	6.81597	5.92499	0.0054	0.6197	0.5702	578.9892	0.1694
Other Material Handling Equipment	2012	51	120	0.817068	0.6866	3.90414	6.36758	0.0049	0.5159	0.4746	523.5783	0.1532
Other Material Handling Equipment	2012	121	175	0.692769	0.5821	3.47827	6.40913	0.0049	0.3565	0.328	522.0647	0.1527
Other Material Handling Equipment	2012	176	250	0.646463	0.5432	2.19514	7.02565	0.0049	0.2902	0.267	521.2496	0.1525
Other Material Handling Equipment	2012	251	500	0.470349	0.3952	2.61135	5.30246	0.0049	0.2145	0.1973	519.9397	0.1521
Other Material Handling Equipment	2012	1001	9999	0.227073	0.1908	0.99094	4.39617	0.0049	0.1065	0.0979	521.8825	0.1527
Other Material Handling Equipment	2013	26	50	2.105942	1.7696	6.66457	5.85572	0.0054	0.596	0.5483	576.0797	0.1694
Other Material Handling Equipment	2013	51	120	0.724086	0.6084	3.82317	5.76277	0.0049	0.447	0.4112	520.9473	0.1532
Other Material Handling Equipment	2013	121	175	0.665996	0.5596	3.43613	6.15356	0.0049	0.3328	0.3062	519.4412	0.1527
Other Material Handling Equipment	2013	176	250	0.634565	0.5332	2.16882	6.82184	0.0049	0.2811	0.2587	518.6302	0.1525
Other Material Handling Equipment	2013	251	500	0.438071	0.3681	2.33558	4.87099	0.0049	0.1948	0.1792	517.327	0.1521
Other Material Handling Equipment	2013	1001	9999	0.2439	0.2049	1.00384	4.43692	0.0049	0.1098	0.101	519.26	0.1527
Other Material Handling Equipment	2014	26	50	2.017454	1.6952	6.58988	5.75119	0.0054	0.5751	0.5291	573.1702	0.1694
Other Material Handling Equipment	2014	51	120	0.66398	0.5579	3.77914	5.37202	0.0049	0.4122	0.3792	518.3162	0.1532
Other Material Handling Equipment	2014	121	175	0.628738	0.5283	3.43064	5.79759	0.0049	0.3128	0.2877	516.8178	0.1527
Other Material Handling Equipment	2014	176	250	0.565441	0.4751	1.93605	6.17254	0.0049	0.2421	0.2227	516.0109	0.1525
Other Material Handling Equipment	2014	251	500	0.394393	0.3314	1.92674	4.35658	0.0049	0.1689	0.1554	514.7142	0.1521
Other Material Handling Equipment	2014	1001	9999	0.168044	0.1412	0.97804	3.4363	0.0049	0.0665	0.0612	516.6375	0.1527

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Other Material Handling Equipment	2015	26	50	2.062891	1.7334	6.75642	5.7994	0.0054	0.5863	0.5394	567.3512	0.1694
Other Material Handling Equipment	2015	51	120	0.628094	0.5278	3.75787	4.98312	0.0049	0.3827	0.352	513.0541	0.1532
Other Material Handling Equipment	2015	121	175	0.624881	0.5251	3.43301	5.6445	0.0049	0.306	0.2815	511.5709	0.1527
Other Material Handling Equipment	2015	176	250	0.503855	0.4234	1.74236	5.5323	0.0049	0.2071	0.1905	510.7722	0.1525
Other Material Handling Equipment	2015	251	500	0.396328	0.333	1.91761	4.27243	0.0049	0.1655	0.1523	509.4887	0.1521
Other Material Handling Equipment	2015	1001	9999	0.1762	0.1481	0.98449	3.45753	0.0049	0.0682	0.0627	511.3924	0.1527
Other Material Handling Equipment	2016	26	50	2.100647	1.7651	6.89161	5.80157	0.0054	0.5934	0.5459	561.5322	0.1694
Other Material Handling Equipment	2016	51	120	0.611519	0.5138	3.76606	4.79843	0.0049	0.367	0.3377	507.792	0.1532
Other Material Handling Equipment	2016	121	175	0.581687	0.4888	3.41823	5.21152	0.0049	0.2795	0.2571	506.324	0.1527
Other Material Handling Equipment	2016	176	250	0.474176	0.3984	1.64277	5.19629	0.0049	0.1889	0.1738	505.5335	0.1525
Other Material Handling Equipment	2016	251	500	0.384009	0.3227	1.87077	4.05322	0.0049	0.1557	0.1433	504.2631	0.1521
Other Material Handling Equipment	2016	1001	9999	0.188654	0.1585	0.99739	3.48884	0.0049	0.0702	0.0646	506.1474	0.1527
Other Material Handling Equipment	2017	26	50	1.922269	1.6152	6.63527	5.57447	0.0054	0.5458	0.5022	552.8037	0.1694
Other Material Handling Equipment	2017	51	120	0.580499	0.4878	3.75788	4.56113	0.0049	0.3412	0.3139	499.8989	0.1532
Other Material Handling Equipment	2017	121	175	0.508007	0.4269	3.35117	4.48809	0.0049	0.2379	0.2189	498.4537	0.1527
Other Material Handling Equipment	2017	176	250	0.42771	0.3594	1.51249	4.70454	0.0049	0.163	0.15	497.6755	0.1525
Other Material Handling Equipment	2017	251	500	0.386945	0.3251	1.86256	3.9709	0.0049	0.1535	0.1413	496.4249	0.1521
Other Material Handling Equipment	2017	1001	9999	0.201109	0.169	1.01029	3.52015	0.0049	0.0722	0.0665	498.2798	0.1527
Other Material Handling Equipment	2018	26	50	1.534491	1.2894	6.06083	5.18225	0.0054	0.4567	0.4201	544.0753	0.1694
Other Material Handling Equipment	2018	51	120	0.484553	0.4072	3.67482	3.9436	0.0049	0.2711	0.2494	492.0058	0.1532
Other Material Handling Equipment	2018	121	175	0.38852	0.3265	3.21803	3.33231	0.0049	0.1725	0.1587	490.5834	0.1527
Other Material Handling Equipment	2018	176	250	0.376195	0.3161	1.3884	4.09187	0.0049	0.135	0.1242	489.8174	0.1525
Other Material Handling Equipment	2018	251	500	0.352182	0.2959	1.63271	3.52439	0.0049	0.1335	0.1228	488.5866	0.1521
Other Material Handling Equipment	2018	1001	9999	0.213564	0.1795	1.02319	3.55146	0.0049	0.0742	0.0683	490.4122	0.1527
Other Material Handling Equipment	2019	26	50	1.5177	1.2753	6.13945	5.17904	0.0054	0.4519	0.4158	535.3468	0.1694
Other Material Handling Equipment	2019	51	120	0.428699	0.3602	3.63634	3.56573	0.0049	0.2307	0.2123	484.1126	0.1532
Other Material Handling Equipment	2019	121	175	0.332757	0.2796	3.1852	2.77369	0.0049	0.1388	0.1277	482.7131	0.1527
Other Material Handling Equipment	2019	176	250	0.357063	0.3	1.34052	3.81716	0.0049	0.1231	0.1133	481.9594	0.1525
Other Material Handling Equipment	2019	251	500	0.346245	0.2909	1.61951	3.37078	0.0049	0.1278	0.1175	480.7483	0.1521
Other Material Handling Equipment	2019	1001	9999	0.226018	0.1899	1.03609	3.58277	0.0049	0.0763	0.0702	482.5446	0.1527
Other Material Handling Equipment	2020	26	50	1.481858	1.2452	6.1671	5.13925	0.0054	0.4392	0.4041	523.7088	0.1694
Other Material Handling Equipment	2020	51	120	0.36479	0.3065	3.58938	3.10396	0.0049	0.1823	0.1677	473.5884	0.1532
Other Material Handling Equipment	2020	121	175	0.299922	0.252	3.17089	2.36653	0.0049	0.1181	0.1086	472.2193	0.1527
Other Material Handling Equipment	2020	176	250	0.346024	0.2908	1.31882	3.59889	0.0049	0.1152	0.106	471.482	0.1525
Other Material Handling Equipment	2020	251	500	0.336187	0.2825	1.52346	3.20974	0.0049	0.1198	0.1102	470.2972	0.1521
Other Material Handling Equipment	2020	1001	9999	0.238473	0.2004	1.04898	3.61407	0.0049	0.0783	0.072	472.0545	0.1527
Other Material Handling Equipment	2021	26	50	1.318509	1.1079	5.95956	4.96638	0.0054	0.3956	0.364	523.7088	0.1694
Other Material Handling Equipment	2021	51	120	0.349969	0.2941	3.60203	2.95622	0.0049	0.1657	0.1524	473.5884	0.1532
Other Material Handling Equipment	2021	121	175	0.296084	0.2488	3.19638	2.24633	0.0049	0.1138	0.1047	472.2193	0.1527
Other Material Handling Equipment	2021	176	250	0.32063	0.2694	1.30911	3.08193	0.0049	0.1024	0.0942	471.482	0.1525
Other Material Handling Equipment	2021	251	500	0.302407	0.2541	1.44188	2.60166	0.0049	0.1011	0.093	470.2972	0.1521
Other Material Handling Equipment	2021	1001	9999	0.086228	0.0725	0.97159	2.3179	0.0049	0.0195	0.0179	472.0545	0.1527
Other Material Handling Equipment	2022	26	50	1.313129	1.1034	5.98386	4.92048	0.0054	0.3851	0.3543	523.7088	0.1694
Other Material Handling Equipment	2022	51	120	0.294157	0.2472	3.55673	2.56673	0.0049	0.1209	0.1112	473.5884	0.1532
Other Material Handling Equipment	2022	121	175	0.268495	0.2256	3.17607	1.89383	0.0049	0.1028	0.0945	472.2193	0.1527
Other Material Handling Equipment	2022	176	250	0.272302	0.2288	1.23917	2.42542	0.0049	0.0826	0.076	471.482	0.1525
Other Material Handling Equipment	2022	251	500	0.269417	0.2264	1.34592	2.06254	0.0049	0.0834	0.0767	470.2972	0.1521
Other Material Handling Equipment	2022	1001	9999	0.090526	0.0761	0.97804	2.32798	0.0049	0.0198	0.0182	472.0545	0.1527
Other Material Handling Equipment	2023	26	50	1.203044	1.0109	5.75727	4.68435	0.0054	0.3401	0.3129	523.7088	0.1694
Other Material Handling Equipment	2023	51	120	0.267491	0.2248	3.51535	2.29768	0.0049	0.1037	0.0954	473.5884	0.1532
Other Material Handling Equipment	2023	121	175	0.25813	0.2169	3.17066	1.76898	0.0049	0.0959	0.0882	472.2193	0.1527
Other Material Handling Equipment	2023	176	250	0.246291	0.207	1.20917	2.00366	0.0049	0.069	0.0635	471.482	0.1525
Other Material Handling Equipment	2023	251	500	0.258837	0.2175	1.34382	1.87023	0.0049	0.0781	0.0719	470.2972	0.1521
Other Material Handling Equipment	2023	1001	9999	0.064735	0.0544	0.93935	2.26751	0.0049	0.0179	0.0165	472.0545	0.1527
Other Material Handling Equipment	2024	26	50	1.121754	0.9426	5.6693	4.5789	0.0054	0.3139	0.2888	523.7088	0.1694
Other Material Handling Equipment	2024	51	120	0.262084	0.2202	3.51036	2.22162	0.0049	0.0964	0.0887	473.5884	0.1532
Other Material Handling Equipment	2024	121	175	0.247908	0.2083	3.18111	1.63864	0.0049	0.088	0.0809	472.2193	0.1527
Other Material Handling Equipment	2024	176	250	0.250036	0.2101	1.21822	1.98559	0.0049	0.0682	0.0627	471.482	0.1525
Other Material Handling Equipment	2024	251	500	0.252116	0.2118	1.26223	1.75588	0.0049	0.072	0.0662	470.2972	0.1521
Other Material Handling Equipment	2024	1001	9999	0.069034	0.058	0.9458	2.27759	0.0049	0.0182	0.0168	472.0545	0.1527
Other Material Handling Equipment	2025	26	50	0.88573	0.7443	5.24797	4.23278	0.0054	0.2385	0.2194	523.7088	0.1694
Other Material Handling Equipment	2025	51	120	0.241784	0.2032	3.49652	2.05524	0.0049	0.0806	0.0742	473.5884	0.1532
Other Material Handling Equipment	2025	121	175	0.225132	0.1892	3.1679	1.39583	0.0049	0.0724	0.0666	472.2193	0.1527
Other Material Handling Equipment	2025	176	250	0.237677	0.1997	1.19728	1.77352	0.0049	0.06	0.0552	471.482	0.1525
Other Material Handling Equipment	2025	251	500	0.242568	0.2038	1.25988	1.60116	0.0049	0.0667	0.0613	470.2972	0.1521
Other Material Handling Equipment	2025	1001	9999	0.077631	0.0652	0.9587	2.29775	0.0049	0.0189	0.0173	472.0545	0.1527
Other Material Handling Equipment	2030	26	50	1.542	0.598	5.237	3.447	0.007	0.048	0.048	568.299	0.053
Other Material Handling Equipment	2030	51	120	1.57	0.304	3.784	1.762	0.006	0.043	0.043	568.299	0.027
Other Material Handling Equipment	2030	121	175	2.287	0.22	3.341	0.64	0.006	0.028	0.028	568.299	0.019
Other Material Handling Equipment	2030	176	250	2.539	0.206	1.138	0.535	0.006	0.018	0.018	568.299	0.018
Other Material Handling Equipment	2030	251	500	3.342	0.205	1.083	0.505	0.005	0.018	0.018	568.299	0.018
Other Material Handling Equipment	2030	1001	9999	13.763	0.218	1.084	2.653	0.005	0.035	0.035	568.299	0.019
Other Material Handling Equipment	2035	26	50	1.425	0.552	5.189	3.321	0.007	0.025	0.025	568.299	0.049

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Other Material Handling Equipment	2035	51	120	1.432	0.277	3.774	1.563	0.006	0.022	0.022	568.299	0.025
Other Material Handling Equipment	2035	121	175	2.036	0.196	3.338	0.398	0.006	0.016	0.016	568.299	0.017
Other Material Handling Equipment	2035	176	250	2.369	0.192	1.137	0.354	0.006	0.013	0.013	568.299	0.017
Other Material Handling Equipment	2035	251	500	3.13	0.192	1.082	0.35	0.005	0.013	0.013	568.299	0.017
Other Material Handling Equipment	2035	1001	9999	12.454	0.197	1.082	2.525	0.005	0.027	0.027	568.299	0.017
Other Material Handling Equipment	2040	26	50	1.42	0.551	5.191	3.269	0.007	0.018	0.018	568.299	0.049
Other Material Handling Equipment	2040	51	120	1.407	0.272	3.775	1.502	0.006	0.017	0.017	568.3	0.024
Other Material Handling Equipment	2040	121	175	1.956	0.188	3.339	0.314	0.006	0.012	0.012	568.299	0.017
Other Material Handling Equipment	2040	176	250	2.307	0.187	1.137	0.298	0.006	0.011	0.011	568.299	0.016
Other Material Handling Equipment	2040	251	500	3.048	0.187	1.082	0.298	0.005	0.011	0.011	568.299	0.016
Other Material Handling Equipment	2040	1001	9999	11.917	0.189	1.082	2.493	0.005	0.025	0.025	568.3	0.017
Pavers	1990	16	25	5.971	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Pavers	1990	26	50	19.405	4.794	9.701	7.946	0.871	1.268	1.268	568.299	0.432
Pavers	1990	51	120	23.749	2.373	5.748	15.062	0.791	1.339	1.339	568.299	0.214
Pavers	1990	121	175	33.808	1.822	5.135	14.503	0.758	1.01	1.01	568.3	0.164
Pavers	1990	176	250	51.225	1.822	5.135	14.503	0.758	1.01	1.01	568.299	0.164
Pavers	1990	251	500	54.32	1.61	11.305	13.755	0.662	0.864	0.864	568.3	0.145
Pavers	2000	16	25	5.517	2.044	4.689	6.391	0.065	0.569	0.569	568.299	0.184
Pavers	2000	26	50	18.072	4.464	9.175	7.116	0.066	0.93	0.93	568.299	0.402
Pavers	2000	51	120	19.415	1.94	4.853	11.121	0.06	0.916	0.916	568.299	0.175
Pavers	2000	121	175	24.566	1.324	4.022	10.172	0.057	0.558	0.558	568.299	0.119
Pavers	2000	176	250	33.03	1.175	3.443	9.909	0.057	0.488	0.488	568.299	0.106
Pavers	2000	251	500	35.713	1.058	6.242	9.422	0.05	0.426	0.426	568.299	0.095
Pavers	2005	16	25	3.746	1.388	3.497	5.819	0.065	0.444	0.444	568.299	0.125
Pavers	2005	26	50	16.699	4.125	8.722	6.746	0.066	0.883	0.883	568.299	0.372
Pavers	2005	51	120	17.345	1.733	4.584	9.797	0.06	0.869	0.869	568.299	0.156
Pavers	2005	121	175	21.287	1.147	3.731	8.921	0.057	0.5	0.5	568.299	0.103
Pavers	2005	176	250	26.087	0.928	2.661	8.591	0.057	0.382	0.382	568.299	0.083
Pavers	2005	251	500	27.622	0.818	4.283	7.91	0.05	0.335	0.335	568.299	0.073
Pavers	2010	16	25	2.244446	1.886	6.22261	5.97127	0.0054	0.6188	0.5693	585.4019	0.1704
Pavers	2010	26	50	2.244446	1.886	6.22261	5.97127	0.0054	0.6188	0.5693	585.4019	0.1704
Pavers	2010	51	120	0.922393	0.7751	3.82417	7.01944	0.0048	0.5403	0.4971	521.2606	0.1517
Pavers	2010	121	175	0.693583	0.5828	3.10662	6.66867	0.0049	0.3369	0.31	525.3233	0.1529
Pavers	2010	176	250	0.236627	0.1988	1.01703	4.38018	0.0049	0.1109	0.1021	526.8527	0.1534
Pavers	2010	251	500	0.240458	0.2021	1.1256	3.56944	0.0048	0.1231	0.1132	517.8758	0.1507
Pavers	2011	16	25	2.255759	1.8955	6.28822	5.97418	0.0054	0.6211	0.5714	583.8947	0.1704
Pavers	2011	26	50	2.255759	1.8955	6.28822	5.97418	0.0054	0.6211	0.5714	583.8947	0.1704
Pavers	2011	51	120	0.882284	0.7414	3.7912	6.70468	0.0048	0.5208	0.4791	519.7431	0.1517
Pavers	2011	121	175	0.67473	0.567	3.11177	6.45159	0.0049	0.3275	0.3013	524.0864	0.1529
Pavers	2011	176	250	0.244703	0.2056	1.02596	4.38871	0.0049	0.1122	0.1033	525.5251	0.1534
Pavers	2011	251	500	0.249329	0.2095	1.13249	3.58498	0.0048	0.125	0.115	516.5811	0.1507
Pavers	2012	16	25	2.286702	1.9215	6.36408	5.86068	0.0054	0.609	0.5603	582.5825	0.1704
Pavers	2012	26	50	2.286702	1.9215	6.36408	5.86068	0.0054	0.609	0.5603	582.5825	0.1704
Pavers	2012	51	120	0.886577	0.745	3.81157	6.67323	0.0048	0.5234	0.4815	518.3581	0.1516
Pavers	2012	121	175	0.677654	0.5694	3.13178	6.44162	0.0049	0.3293	0.303	522.8325	0.1529
Pavers	2012	176	250	0.2532	0.2128	1.035	4.41317	0.0049	0.114	0.1049	524.2222	0.1534
Pavers	2012	251	500	0.257974	0.2168	1.13914	3.59993	0.0048	0.1268	0.1166	515.2863	0.1507
Pavers	2013	16	25	2.27571	1.9122	6.39148	5.84153	0.0054	0.6051	0.5567	580.2093	0.1706
Pavers	2013	26	50	2.27571	1.9122	6.39148	5.84153	0.0054	0.6051	0.5567	580.2093	0.1706
Pavers	2013	51	120	0.845721	0.7106	3.79289	6.43604	0.0048	0.5009	0.4608	516.6013	0.1519
Pavers	2013	121	175	0.630117	0.5295	3.11657	6.05919	0.0049	0.3039	0.2796	519.6823	0.1528
Pavers	2013	176	250	0.245733	0.2065	1.01743	4.23038	0.0049	0.1061	0.0976	521.5314	0.1533
Pavers	2013	251	500	0.242925	0.2041	1.08604	3.39449	0.0048	0.1175	0.1081	514.2313	0.1512
Pavers	2014	16	25	2.258865	1.8981	6.3806	5.71682	0.0054	0.5946	0.547	577.016	0.1705
Pavers	2014	26	50	2.258865	1.8981	6.3806	5.71682	0.0054	0.5946	0.547	577.016	0.1705
Pavers	2014	51	120	0.81298	0.6831	3.77256	6.19872	0.0048	0.4827	0.4441	514.3769	0.152
Pavers	2014	121	175	0.597911	0.5024	3.1146	5.73631	0.0049	0.2869	0.2639	516.745	0.1527
Pavers	2014	176	250	0.247393	0.2079	1.02279	4.14032	0.0049	0.1051	0.0967	518.7225	0.1533
Pavers	2014	251	500	0.214341	0.1801	1.00469	3.04734	0.0048	0.1012	0.0931	512.1908	0.1514
Pavers	2015	16	25	2.205076	1.8529	6.34019	5.63731	0.0054	0.5791	0.5327	571.0859	0.1705
Pavers	2015	26	50	2.205076	1.8529	6.34019	5.63731	0.0054	0.5791	0.5327	571.0859	0.1705
Pavers	2015	51	120	0.809163	0.6799	3.78832	6.14096	0.0048	0.4794	0.441	509.3767	0.1521
Pavers	2015	121	175	0.582419	0.4894	3.11546	5.53669	0.0049	0.2774	0.2552	511.6457	0.1527
Pavers	2015	176	250	0.254974	0.2142	1.03121	4.16051	0.0049	0.1066	0.098	513.4682	0.1533
Pavers	2015	251	500	0.209561	0.1761	0.97787	2.91741	0.0048	0.0968	0.0891	506.0973	0.1511
Pavers	2016	16	25	2.174792	1.8274	6.33993	5.57882	0.0054	0.5688	0.5233	565.2336	0.1705
Pavers	2016	26	50	2.174792	1.8274	6.33993	5.57882	0.0054	0.5688	0.5233	565.2336	0.1705
Pavers	2016	51	120	0.773362	0.6498	3.76854	5.88646	0.0048	0.4566	0.42	503.7795	0.152
Pavers	2016	121	175	0.515586	0.4332	3.08023	4.87397	0.0049	0.2422	0.2228	506.5401	0.1528
Pavers	2016	176	250	0.254126	0.2135	1.03591	4.02384	0.0049	0.1041	0.0958	508.0698	0.1533
Pavers	2016	251	500	0.214564	0.1803	0.9829	2.88492	0.0048	0.0962	0.0885	500.9364	0.1511
Pavers	2017	16	25	2.059621	1.7307	6.19932	5.43675	0.0054	0.5396	0.4965	556.4528	0.1705
Pavers	2017	26	50	2.059621	1.7307	6.19932	5.43675	0.0054	0.5396	0.4965	556.4528	0.1705

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Pavers	2017	51	120	0.744072	0.6252	3.75882	5.69243	0.0048	0.4374	0.4024	495.9253	0.152
Pavers	2017	121	175	0.462819	0.3889	3.06282	4.35312	0.0049	0.2142	0.1971	498.967	0.1529
Pavers	2017	176	250	0.247933	0.2083	1.03652	3.80866	0.0049	0.0997	0.0918	499.5617	0.1531
Pavers	2017	251	500	0.199578	0.1677	0.97942	2.48674	0.0048	0.0874	0.0805	491.7843	0.1507
Pavers	2018	16	25	1.831035	1.5386	5.8493	5.12103	0.0054	0.4782	0.4399	547.0785	0.1703
Pavers	2018	26	50	1.831035	1.5386	5.8493	5.12103	0.0054	0.4782	0.4399	547.0785	0.1703
Pavers	2018	51	120	0.637446	0.5356	3.66032	5.01936	0.0048	0.3752	0.3452	488.1812	0.152
Pavers	2018	121	175	0.403099	0.3387	3.03913	3.7472	0.0049	0.1831	0.1684	491.322	0.153
Pavers	2018	176	250	0.235833	0.1982	1.03446	3.47438	0.0049	0.0922	0.0848	491.543	0.153
Pavers	2018	251	500	0.195547	0.1643	0.98125	2.32002	0.0048	0.0826	0.076	484.2774	0.1508
Pavers	2019	16	25	1.687019	1.4176	5.65687	4.91634	0.0054	0.4361	0.4012	538.3246	0.1703
Pavers	2019	26	50	1.687019	1.4176	5.65687	4.91634	0.0054	0.4361	0.4012	538.3246	0.1703
Pavers	2019	51	120	0.589904	0.4957	3.62215	4.67048	0.0048	0.3455	0.3178	480.2509	0.1519
Pavers	2019	121	175	0.355588	0.2988	3.01323	3.24473	0.0049	0.1589	0.1462	483.3938	0.1529
Pavers	2019	176	250	0.222293	0.1868	1.03181	3.11084	0.0049	0.0842	0.0774	483.5743	0.153
Pavers	2019	251	500	0.198123	0.1665	0.98586	2.26992	0.0048	0.081	0.0746	476.9707	0.1509
Pavers	2020	16	25	1.568718	1.3182	5.52345	4.76401	0.0054	0.4022	0.37	526.2098	0.1702
Pavers	2020	26	50	1.568718	1.3182	5.52345	4.76401	0.0054	0.4022	0.37	526.2098	0.1702
Pavers	2020	51	120	0.558949	0.4697	3.60405	4.42718	0.0048	0.3249	0.2989	469.8815	0.152
Pavers	2020	121	175	0.324615	0.2728	3.0097	2.91833	0.0049	0.1419	0.1305	472.7746	0.1529
Pavers	2020	176	250	0.209036	0.1756	1.02834	2.77699	0.0049	0.076	0.0699	472.8337	0.1529
Pavers	2020	251	500	0.195949	0.1647	0.98677	2.13394	0.0048	0.0772	0.071	466.2059	0.1508
Pavers	2021	16	25	1.43708	1.2075	5.30162	4.60183	0.0054	0.3699	0.3403	526.5153	0.1703
Pavers	2021	26	50	1.43708	1.2075	5.30162	4.60183	0.0054	0.3699	0.3403	526.5153	0.1703
Pavers	2021	51	120	0.499355	0.4196	3.56251	4.02622	0.0048	0.2853	0.2625	469.7736	0.1519
Pavers	2021	121	175	0.304315	0.2557	3.01647	2.6948	0.0049	0.1302	0.1198	472.5552	0.1528
Pavers	2021	176	250	0.196899	0.1655	1.02422	2.4844	0.0049	0.0697	0.0642	472.4765	0.1528
Pavers	2021	251	500	0.195105	0.1639	0.9877	2.05298	0.0048	0.074	0.068	465.5908	0.1506
Pavers	2022	16	25	1.299052	1.0916	5.11433	4.42092	0.0054	0.3297	0.3033	526.8963	0.1704
Pavers	2022	26	50	1.299052	1.0916	5.11433	4.42092	0.0054	0.3297	0.3033	526.8963	0.1704
Pavers	2022	51	120	0.443951	0.373	3.52511	3.65932	0.0049	0.2479	0.2281	470.1854	0.1521
Pavers	2022	121	175	0.255688	0.2148	2.99478	2.17958	0.0049	0.1036	0.0953	472.7599	0.1529
Pavers	2022	176	250	0.167123	0.1404	1.01231	1.89985	0.0049	0.0547	0.0503	472.3718	0.1528
Pavers	2022	251	500	0.178545	0.15	0.98238	1.81028	0.0048	0.0631	0.058	466.0042	0.1507
Pavers	2023	16	25	1.198318	1.0069	5.00667	4.28484	0.0054	0.2985	0.2746	526.8595	0.1704
Pavers	2023	26	50	1.198318	1.0069	5.00667	4.28484	0.0054	0.2985	0.2746	526.8595	0.1704
Pavers	2023	51	120	0.415607	0.3492	3.50733	3.42661	0.0049	0.2262	0.2081	470.0839	0.152
Pavers	2023	121	175	0.237199	0.1993	2.99398	1.95517	0.0049	0.092	0.0846	472.7178	0.1529
Pavers	2023	176	250	0.154288	0.1296	1.01018	1.6106	0.0049	0.047	0.0433	472.6051	0.1529
Pavers	2023	251	500	0.18061	0.1518	0.98653	1.77101	0.0048	0.0616	0.0567	466.0038	0.1507
Pavers	2024	16	25	1.130978	0.9503	4.95625	4.20308	0.0054	0.2791	0.2568	526.8565	0.1704
Pavers	2024	26	50	1.130978	0.9503	4.95625	4.20308	0.0054	0.2791	0.2568	526.8565	0.1704
Pavers	2024	51	120	0.40131	0.3372	3.50784	3.2771	0.0049	0.2126	0.1956	470.2262	0.1521
Pavers	2024	121	175	0.226916	0.1907	3.0042	1.80882	0.0049	0.0845	0.0777	472.6605	0.1529
Pavers	2024	176	250	0.141914	0.1192	1.00872	1.34323	0.0049	0.0412	0.0379	473.2362	0.1531
Pavers	2024	251	500	0.169789	0.1427	0.98624	1.54798	0.0048	0.0537	0.0494	467.1711	0.1511
Pavers	2025	16	25	1.092933	0.9184	4.94451	4.13112	0.0054	0.2646	0.2434	526.8533	0.1704
Pavers	2025	26	50	1.092933	0.9184	4.94451	4.13112	0.0054	0.2646	0.2434	526.8533	0.1704
Pavers	2025	51	120	0.373474	0.3138	3.49286	3.06788	0.0049	0.1905	0.1753	469.8988	0.152
Pavers	2025	121	175	0.214799	0.1805	3.0071	1.64396	0.0049	0.077	0.0708	472.485	0.1528
Pavers	2025	176	250	0.127304	0.107	1.00414	1.03493	0.0049	0.0337	0.031	473.4832	0.1531
Pavers	2025	251	500	0.136633	0.1148	0.96892	1.13351	0.0048	0.039	0.0359	465.8824	0.1507
Pavers	2030	16	25	1.849	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Pavers	2030	26	50	3.42	0.845	5.396	3.841	0.007	0.134	0.134	568.299	0.076
Pavers	2030	51	120	4.084	0.408	3.8	2.468	0.006	0.121	0.121	568.3	0.036
Pavers	2030	121	175	5.577	0.3	3.326	1.425	0.006	0.074	0.074	568.299	0.027
Pavers	2030	176	250	7.306	0.259	1.192	1.246	0.006	0.045	0.045	568.299	0.023
Pavers	2030	251	500	8.558	0.253	1.181	1.141	0.005	0.043	0.043	568.299	0.022
Pavers	2035	16	25	1.849	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Pavers	2035	26	50	2.812	0.694	5.26	3.555	0.007	0.076	0.076	568.299	0.062
Pavers	2035	51	120	3.386	0.338	3.774	1.986	0.006	0.069	0.069	568.299	0.03
Pavers	2035	121	175	4.543	0.244	3.319	0.889	0.006	0.043	0.043	568.299	0.022
Pavers	2035	176	250	6.219	0.221	1.157	0.772	0.006	0.027	0.027	568.3	0.019
Pavers	2035	251	500	7.364	0.218	1.111	0.722	0.005	0.026	0.026	568.299	0.019
Pavers	2040	16	25	1.849	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Pavers	2040	26	50	2.504	0.618	5.189	3.393	0.007	0.047	0.047	568.299	0.055
Pavers	2040	51	120	3.03	0.302	3.763	1.731	0.006	0.043	0.043	568.299	0.027
Pavers	2040	121	175	3.958	0.213	3.319	0.583	0.006	0.027	0.027	568.299	0.019
Pavers	2040	176	250	5.625	0.2	1.138	0.525	0.006	0.018	0.018	568.299	0.018
Pavers	2040	251	500	6.703	0.198	1.085	0.498	0.005	0.018	0.018	568.299	0.017
Paving Equipment	1990	16	25	5.257	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Paving Equipment	1990	26	50	21.788	4.84	9.783	7.965	0.871	1.277	1.277	568.299	0.436
Paving Equipment	1990	51	120	24.593	2.398	5.796	15.202	0.791	1.352	1.352	568.299	0.216

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Paving Equipment	1990	121	175	35.738	1.88	5.196	14.821	0.758	1.044	1.044	568.3	0.169
Paving Equipment	1990	176	250	43.262	1.88	5.196	14.821	0.758	1.044	1.044	568.299	0.169
Paving Equipment	2000	16	25	4.652	1.958	4.53	6.358	0.065	0.563	0.563	568.299	0.176
Paving Equipment	2000	26	50	19.86	4.412	9.076	7.101	0.066	0.921	0.921	568.299	0.398
Paving Equipment	2000	51	120	19.826	1.933	4.844	11.122	0.06	0.909	0.909	568.299	0.174
Paving Equipment	2000	121	175	25.015	1.316	4.018	10.15	0.057	0.553	0.553	568.299	0.118
Paving Equipment	2000	176	250	26.974	1.172	3.458	9.895	0.057	0.486	0.486	568.299	0.105
Paving Equipment	2005	16	25	2.184	0.919	2.642	5.412	0.065	0.347	0.347	568.299	0.082
Paving Equipment	2005	26	50	18.352	4.077	8.626	6.73	0.066	0.875	0.875	568.299	0.367
Paving Equipment	2005	51	120	17.633	1.719	4.557	9.754	0.06	0.86	0.86	568.299	0.155
Paving Equipment	2005	121	175	21.589	1.135	3.705	8.873	0.057	0.494	0.494	568.299	0.102
Paving Equipment	2005	176	250	21.201	0.921	2.655	8.548	0.057	0.38	0.38	568.299	0.083
Paving Equipment	2010	16	25	1.378997	1.1587	4.92203	5.35696	0.0054	0.4704	0.4328	578.6236	0.1684
Paving Equipment	2010	26	50	1.378997	1.1587	4.92203	5.35696	0.0054	0.4704	0.4328	578.6236	0.1684
Paving Equipment	2010	51	120	0.934999	0.7857	3.90118	7.23593	0.0049	0.5526	0.5084	526.5834	0.1533
Paving Equipment	2010	121	175	0.573407	0.4818	3.13688	6.09511	0.0049	0.2947	0.2711	523.4127	0.1524
Paving Equipment	2010	176	250	0.486641	0.4089	1.69744	6.03614	0.0049	0.2235	0.2056	524.3728	0.1526
Paving Equipment	2011	16	25	1.380687	1.1602	4.99687	5.36974	0.0054	0.4719	0.4342	577.1303	0.1684
Paving Equipment	2011	26	50	1.380687	1.1602	4.99687	5.36974	0.0054	0.4719	0.4342	577.1303	0.1684
Paving Equipment	2011	51	120	0.895349	0.7523	3.87125	6.99544	0.0049	0.5361	0.4933	524.9269	0.1532
Paving Equipment	2011	121	175	0.56507	0.4748	3.14337	5.97526	0.0049	0.2902	0.267	522.1549	0.1524
Paving Equipment	2011	176	250	0.466258	0.3918	1.64572	5.77978	0.0049	0.2129	0.1958	523.0323	0.1526
Paving Equipment	2012	16	25	1.384947	1.1637	5.06516	5.34363	0.0054	0.4701	0.4325	575.687	0.1684
Paving Equipment	2012	26	50	1.384947	1.1637	5.06516	5.34363	0.0054	0.4701	0.4325	575.687	0.1684
Paving Equipment	2012	51	120	0.910401	0.765	3.90635	7.04165	0.0049	0.5462	0.5025	523.5886	0.1532
Paving Equipment	2012	121	175	0.56544	0.4751	3.15801	5.9326	0.0049	0.2903	0.2671	520.7286	0.1523
Paving Equipment	2012	176	250	0.474854	0.399	1.657	5.81292	0.0049	0.2154	0.1982	521.7154	0.1526
Paving Equipment	2013	16	25	1.327494	1.1155	5.02677	5.2986	0.0054	0.4586	0.4219	572.4644	0.1683
Paving Equipment	2013	26	50	1.327494	1.1155	5.02677	5.2986	0.0054	0.4586	0.4219	572.4644	0.1683
Paving Equipment	2013	51	120	0.845445	0.7104	3.86369	6.6576	0.0049	0.5072	0.4666	520.6724	0.1531
Paving Equipment	2013	121	175	0.532035	0.4471	3.1205	5.60344	0.0049	0.2708	0.2491	517.6606	0.1522
Paving Equipment	2013	176	250	0.40741	0.3423	1.48037	5.25206	0.0049	0.1804	0.166	519.5215	0.1527
Paving Equipment	2014	16	25	1.253528	1.0533	4.95215	5.18385	0.0054	0.4368	0.4019	569.4822	0.1683
Paving Equipment	2014	26	50	1.253528	1.0533	4.95215	5.18385	0.0054	0.4368	0.4019	569.4822	0.1683
Paving Equipment	2014	51	120	0.805438	0.6768	3.83664	6.36952	0.0049	0.4858	0.4469	518.0756	0.1531
Paving Equipment	2014	121	175	0.494038	0.4151	3.09686	5.21567	0.0049	0.2488	0.2289	515.0343	0.1522
Paving Equipment	2014	176	250	0.369032	0.3101	1.37011	4.78232	0.0049	0.1584	0.1457	516.8998	0.1527
Paving Equipment	2015	16	25	1.166929	0.9805	4.86895	5.02757	0.0054	0.4067	0.3742	563.5534	0.1682
Paving Equipment	2015	26	50	1.166929	0.9805	4.86895	5.02757	0.0054	0.4067	0.3742	563.5534	0.1682
Paving Equipment	2015	51	120	0.786628	0.661	3.83329	6.14454	0.0049	0.4707	0.4331	513.1672	0.1532
Paving Equipment	2015	121	175	0.48887	0.4108	3.10403	4.96561	0.0049	0.2423	0.2229	509.8942	0.1522
Paving Equipment	2015	176	250	0.374849	0.315	1.37947	4.77176	0.0049	0.1587	0.146	511.6544	0.1528
Paving Equipment	2016	16	25	1.178909	0.9906	4.93662	4.98487	0.0054	0.4035	0.3712	557.7058	0.1682
Paving Equipment	2016	26	50	1.178909	0.9906	4.93662	4.98487	0.0054	0.4035	0.3712	557.7058	0.1682
Paving Equipment	2016	51	120	0.741701	0.6232	3.79639	5.7333	0.0049	0.4383	0.4033	507.9102	0.1532
Paving Equipment	2016	121	175	0.442497	0.3718	3.08114	4.3217	0.0049	0.2145	0.1973	504.8201	0.1523
Paving Equipment	2016	176	250	0.353542	0.2971	1.33145	4.42821	0.0049	0.1477	0.1359	506.1965	0.1527
Paving Equipment	2017	16	25	1.102141	0.9261	4.80403	4.72756	0.0054	0.3592	0.3305	548.6481	0.1681
Paving Equipment	2017	26	50	1.102141	0.9261	4.80403	4.72756	0.0054	0.3592	0.3305	548.6481	0.1681
Paving Equipment	2017	51	120	0.670017	0.563	3.74146	5.20745	0.0049	0.3905	0.3593	500.1649	0.1532
Paving Equipment	2017	121	175	0.407568	0.3425	3.07321	3.89633	0.0049	0.1946	0.1791	497.148	0.1523
Paving Equipment	2017	176	250	0.342633	0.2879	1.333	4.12109	0.0049	0.1415	0.1302	498.7323	0.1528
Paving Equipment	2018	16	25	0.877571	0.7374	4.41578	4.31244	0.0054	0.286	0.2632	540.6115	0.1683
Paving Equipment	2018	26	50	0.877571	0.7374	4.41578	4.31244	0.0054	0.286	0.2632	540.6115	0.1683
Paving Equipment	2018	51	120	0.534861	0.4494	3.60743	4.27034	0.0049	0.3021	0.278	492.1184	0.1532
Paving Equipment	2018	121	175	0.337615	0.2837	3.02602	3.17208	0.0049	0.1553	0.1429	489.2024	0.1523
Paving Equipment	2018	176	250	0.307374	0.2583	1.28117	3.58656	0.0049	0.1229	0.1131	490.6833	0.1528
Paving Equipment	2019	16	25	0.838543	0.7046	4.40798	4.23779	0.0054	0.2697	0.2481	531.8612	0.1683
Paving Equipment	2019	26	50	0.838543	0.7046	4.40798	4.23779	0.0054	0.2697	0.2481	531.8612	0.1683
Paving Equipment	2019	51	120	0.50594	0.4251	3.59849	4.04152	0.0049	0.2808	0.2584	484.387	0.1533
Paving Equipment	2019	121	175	0.302373	0.2541	3.0109	2.6924	0.0049	0.1336	0.1229	481.2251	0.1523
Paving Equipment	2019	176	250	0.286526	0.2408	1.24449	3.25106	0.0049	0.1116	0.1027	482.6441	0.1527
Paving Equipment	2020	16	25	0.73951	0.6214	4.22322	3.9519	0.0054	0.2169	0.1996	520.1235	0.1682
Paving Equipment	2020	26	50	0.73951	0.6214	4.22322	3.9519	0.0054	0.2169	0.1996	520.1235	0.1682
Paving Equipment	2020	51	120	0.472907	0.3974	3.58172	3.78064	0.0049	0.2558	0.2353	473.3249	0.1531
Paving Equipment	2020	121	175	0.294586	0.2475	3.02393	2.55498	0.0049	0.1278	0.1176	470.7359	0.1522
Paving Equipment	2020	176	250	0.289784	0.2435	1.25215	3.2202	0.0049	0.1107	0.1018	472.1514	0.1527
Paving Equipment	2021	16	25	0.698022	0.5865	4.21072	3.88226	0.0054	0.2004	0.1843	520.3965	0.1683
Paving Equipment	2021	26	50	0.698022	0.5865	4.21072	3.88226	0.0054	0.2004	0.1843	520.3965	0.1683
Paving Equipment	2021	51	120	0.422572	0.3551	3.5537	3.45065	0.0049	0.219	0.2015	473.2205	0.153
Paving Equipment	2021	121	175	0.272687	0.2291	3.03229	2.31505	0.0049	0.1143	0.1052	470.6495	0.1522
Paving Equipment	2021	176	250	0.250607	0.2106	1.20904	2.58202	0.0049	0.0921	0.0848	472.151	0.1527
Paving Equipment	2022	16	25	0.68013	0.5715	4.24448	3.83611	0.0054	0.1883	0.1732	520.6594	0.1684

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Paving Equipment	2022	26	50	0.68013	0.5715	4.24448	3.83611	0.0054	0.1883	0.1732	520.6594	0.1684
Paving Equipment	2022	51	120	0.351718	0.2955	3.50075	2.99968	0.0049	0.171	0.1573	473.4475	0.1531
Paving Equipment	2022	121	175	0.253077	0.2127	3.03777	2.07331	0.0049	0.1011	0.093	470.6646	0.1522
Paving Equipment	2022	176	250	0.232653	0.1955	1.20363	2.22813	0.0049	0.083	0.0764	472.169	0.1527
Paving Equipment	2023	16	25	0.644074	0.5412	4.24108	3.77446	0.0054	0.1731	0.1592	521.1138	0.1685
Paving Equipment	2023	26	50	0.644074	0.5412	4.24108	3.77446	0.0054	0.1731	0.1592	521.1138	0.1685
Paving Equipment	2023	51	120	0.331302	0.2784	3.50331	2.83717	0.0049	0.1525	0.1403	473.427	0.1531
Paving Equipment	2023	121	175	0.242414	0.2037	3.05059	1.91255	0.0049	0.093	0.0856	470.663	0.1522
Paving Equipment	2023	176	250	0.208228	0.175	1.16523	1.88495	0.0049	0.0701	0.0645	472.169	0.1527
Paving Equipment	2024	16	25	0.622364	0.523	4.27468	3.74329	0.0054	0.164	0.1509	521.0575	0.1685
Paving Equipment	2024	26	50	0.622364	0.523	4.27468	3.74329	0.0054	0.164	0.1509	521.0575	0.1685
Paving Equipment	2024	51	120	0.311995	0.2622	3.50288	2.67309	0.0049	0.1354	0.1246	473.1748	0.153
Paving Equipment	2024	121	175	0.233948	0.1966	3.06623	1.78512	0.0049	0.0862	0.0793	470.6614	0.1522
Paving Equipment	2024	176	250	0.164733	0.1384	1.11417	1.29567	0.0049	0.048	0.0441	472.2124	0.1527
Paving Equipment	2025	16	25	0.566694	0.4762	4.20347	3.62672	0.0054	0.1415	0.1302	520.9975	0.1685
Paving Equipment	2025	26	50	0.566694	0.4762	4.20347	3.62672	0.0054	0.1415	0.1302	520.9975	0.1685
Paving Equipment	2025	51	120	0.287394	0.2415	3.48256	2.49628	0.0049	0.1178	0.1084	473.4239	0.1531
Paving Equipment	2025	121	175	0.208465	0.1752	3.03837	1.509	0.0049	0.0746	0.0687	470.4844	0.1522
Paving Equipment	2025	176	250	0.158556	0.1332	1.11653	1.10952	0.0049	0.0434	0.04	472.2341	0.1527
Paving Equipment	2030	16	25	1.628	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Paving Equipment	2030	26	50	3.613	0.802	5.309	3.809	0.007	0.126	0.126	568.299	0.072
Paving Equipment	2030	51	120	4.007	0.39	3.774	2.393	0.006	0.114	0.114	568.3	0.035
Paving Equipment	2030	121	175	5.525	0.29	3.306	1.363	0.006	0.07	0.07	568.299	0.026
Paving Equipment	2030	176	250	5.771	0.25	1.171	1.176	0.006	0.042	0.042	568.299	0.022
Paving Equipment	2035	16	25	1.628	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Paving Equipment	2035	26	50	2.991	0.664	5.181	3.511	0.007	0.07	0.07	568.3	0.059
Paving Equipment	2035	51	120	3.343	0.326	3.753	1.928	0.006	0.064	0.064	568.299	0.029
Paving Equipment	2035	121	175	4.485	0.235	3.303	0.832	0.006	0.04	0.04	568.299	0.021
Paving Equipment	2035	176	250	4.886	0.212	1.14	0.714	0.006	0.024	0.024	568.299	0.019
Paving Equipment	2040	16	25	1.628	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Paving Equipment	2040	26	50	2.651	0.589	5.111	3.361	0.007	0.042	0.042	568.3	0.053
Paving Equipment	2040	51	120	2.989	0.291	3.744	1.687	0.006	0.039	0.039	568.299	0.026
Paving Equipment	2040	121	175	3.901	0.205	3.304	0.536	0.006	0.025	0.025	568.299	0.018
Paving Equipment	2040	176	250	4.452	0.193	1.127	0.485	0.006	0.017	0.017	568.299	0.017
Plate Compactors	1990	6	15	2.156	1.804	4.999	9.999	1.049	0.975	0.975	568.299	0.162
Plate Compactors	2000	6	15	1.852	1.55	4.606	8.519	0.079	0.708	0.708	568.299	0.139
Plate Compactors	2005	6	15	0.955	0.799	3.503	5.435	0.079	0.377	0.377	568.299	0.072
Plate Compactors	2010	6	15	0.794	0.664	3.469	4.178	0.008	0.198	0.198	568.299	0.059
Plate Compactors	2011	6	15	0.791	0.662	3.469	4.15	0.008	0.172	0.172	568.299	0.059
Plate Compactors	2012	6	15	0.79	0.661	3.469	4.142	0.008	0.165	0.165	568.3	0.059
Plate Compactors	2013	6	15	0.79	0.661	3.469	4.142	0.008	0.162	0.162	568.3	0.059
Plate Compactors	2014	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2015	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2016	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2017	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2018	6	15	0.79	0.661	3.47	4.142	0.008	0.161	0.161	568.3	0.059
Plate Compactors	2019	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2020	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2021	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2022	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2023	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2024	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2025	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2030	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2035	6	15	0.79	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
Plate Compactors	2040	6	15	0.79	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Pressure Washers	1990	6	15	4.972	1.804	4.999	9.999	1.018	0.974	0.974	568.299	0.162
Pressure Washers	1990	16	25	8.915	2.213	5	6.92	0.83	0.74	0.74	568.3	0.199
Pressure Washers	1990	26	50	20.959	2.601	5.721	7.129	0.846	0.821	0.821	568.299	0.234
Pressure Washers	1990	51	120	23.659	1.743	4.735	12.634	0.768	0.874	0.874	568.299	0.157
Pressure Washers	1990	121	175	82.001	1.272	4.353	11.763	1.123	0.649	0.649	568.299	0.114
Pressure Washers	1990	176	250	77.237	0.953	3.084	9.035	1.077	0.476	0.476	568.299	0.086
Pressure Washers	2000	6	15	4.186	1.518	4.875	8.846	0.079	0.613	0.613	568.299	0.137
Pressure Washers	2000	16	25	6.717	1.667	4.783	6.405	0.065	0.51	0.51	568.299	0.15
Pressure Washers	2000	26	50	19.934	2.474	5.524	6.381	0.066	0.615	0.615	568.3	0.223
Pressure Washers	2000	51	120	19.23	1.417	3.967	9.062	0.06	0.613	0.613	568.3	0.127
Pressure Washers	2000	121	175	66.055	1.024	3.38	8.685	0.059	0.399	0.399	568.299	0.092
Pressure Washers	2000	176	250	35.508	0.438	1.005	6.315	0.058	0.143	0.143	568.299	0.039
Pressure Washers	2005	6	15	3.341	1.212	4.38	7.615	0.079	0.505	0.505	568.3	0.109
Pressure Washers	2005	16	25	5.048	1.253	3.922	6.014	0.065	0.432	0.432	568.299	0.113
Pressure Washers	2005	26	50	17.362	2.154	5.075	5.932	0.066	0.566	0.566	568.299	0.194
Pressure Washers	2005	51	120	16.424	1.21	3.682	7.651	0.06	0.566	0.566	568.299	0.109
Pressure Washers	2005	121	175	55.65	0.863	3.072	7.441	0.059	0.349	0.349	568.299	0.077

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Pressure Washers	2005	176	250	21.871	0.27	0.986	4.822	0.058	0.111	0.111	568.299	0.024
Pressure Washers	2010	6	15	2.628	0.953	4.027	6.387	0.008	0.38	0.38	568.299	0.086
Pressure Washers	2010	16	25	3.872	0.961	3.309	5.477	0.007	0.342	0.342	568.299	0.086
Pressure Washers	2010	26	50	13.073	1.622	4.517	5.501	0.007	0.453	0.453	568.299	0.146
Pressure Washers	2010	51	120	12.296	0.906	3.503	6.273	0.006	0.451	0.451	568.299	0.081
Pressure Washers	2010	121	175	41.062	0.637	2.967	5.773	0.006	0.275	0.275	568.299	0.057
Pressure Washers	2010	176	250	16.502	0.203	0.986	2.5	0.006	0.1	0.1	568.299	0.018
Pressure Washers	2011	6	15	2.504	0.908	3.952	6.134	0.008	0.358	0.358	568.299	0.081
Pressure Washers	2011	16	25	3.706	0.92	3.179	5.36	0.007	0.325	0.325	568.299	0.083
Pressure Washers	2011	26	50	12.056	1.496	4.382	5.405	0.007	0.428	0.428	568.299	0.135
Pressure Washers	2011	51	120	11.392	0.839	3.468	5.939	0.006	0.43	0.43	568.299	0.075
Pressure Washers	2011	121	175	38.303	0.594	2.953	5.441	0.006	0.263	0.263	568.299	0.053
Pressure Washers	2011	176	250	15.247	0.188	0.986	2.086	0.006	0.072	0.072	568.299	0.016
Pressure Washers	2012	6	15	2.385	0.865	3.874	5.874	0.008	0.338	0.338	568.299	0.078
Pressure Washers	2012	16	25	3.564	0.884	3.043	5.239	0.007	0.307	0.307	568.299	0.079
Pressure Washers	2012	26	50	10.983	1.363	4.238	5.306	0.007	0.402	0.402	568.299	0.123
Pressure Washers	2012	51	120	10.457	0.77	3.433	5.578	0.006	0.4	0.4	568.299	0.069
Pressure Washers	2012	121	175	35.56	0.551	2.941	5.109	0.006	0.244	0.244	568.299	0.049
Pressure Washers	2012	176	250	13.887	0.171	0.986	1.749	0.006	0.046	0.046	568.299	0.015
Pressure Washers	2013	6	15	2.27	0.823	3.796	5.616	0.008	0.318	0.318	568.299	0.074
Pressure Washers	2013	16	25	3.431	0.851	2.907	5.117	0.007	0.289	0.289	568.299	0.076
Pressure Washers	2013	26	50	9.897	1.228	4.092	5.086	0.007	0.367	0.367	568.299	0.11
Pressure Washers	2013	51	120	9.523	0.701	3.399	5.226	0.006	0.366	0.366	568.299	0.063
Pressure Washers	2013	121	175	32.885	0.51	2.931	4.803	0.006	0.225	0.225	568.299	0.046
Pressure Washers	2013	176	250	12.508	0.154	0.986	1.468	0.006	0.021	0.021	568.299	0.013
Pressure Washers	2014	6	15	2.16	0.783	3.723	5.369	0.008	0.298	0.298	568.299	0.07
Pressure Washers	2014	16	25	3.308	0.821	2.78	5	0.007	0.272	0.272	568.299	0.074
Pressure Washers	2014	26	50	8.833	1.096	3.951	4.873	0.007	0.332	0.332	568.299	0.098
Pressure Washers	2014	51	120	8.608	0.634	3.367	4.912	0.006	0.332	0.332	568.299	0.057
Pressure Washers	2014	121	175	30.292	0.469	2.923	4.513	0.006	0.206	0.206	568.299	0.042
Pressure Washers	2014	176	250	11.167	0.137	0.986	1.047	0.006	0.014	0.014	568.299	0.012
Pressure Washers	2015	6	15	2.059	0.747	3.657	5.141	0.008	0.28	0.28	568.299	0.067
Pressure Washers	2015	16	25	3.196	0.793	2.666	4.89	0.007	0.256	0.256	568.299	0.071
Pressure Washers	2015	26	50	7.868	0.976	3.833	4.685	0.007	0.3	0.3	568.299	0.088
Pressure Washers	2015	51	120	7.703	0.567	3.336	4.551	0.006	0.297	0.297	568.299	0.051
Pressure Washers	2015	121	175	27.567	0.427	2.917	4.115	0.006	0.187	0.187	568.299	0.038
Pressure Washers	2015	176	250	9.864	0.121	0.986	0.69	0.006	0.01	0.01	568.299	0.01
Pressure Washers	2016	6	15	1.986	0.72	3.622	4.978	0.008	0.264	0.264	568.299	0.065
Pressure Washers	2016	16	25	3.116	0.773	2.604	4.803	0.007	0.244	0.244	568.299	0.069
Pressure Washers	2016	26	50	6.97	0.865	3.729	4.515	0.007	0.269	0.269	568.299	0.078
Pressure Washers	2016	51	120	6.839	0.504	3.308	4.209	0.006	0.264	0.264	568.299	0.045
Pressure Washers	2016	121	175	24.906	0.386	2.913	3.726	0.006	0.168	0.168	568.299	0.034
Pressure Washers	2016	176	250	8.667	0.107	0.986	0.399	0.006	0.009	0.009	568.299	0.009
Pressure Washers	2017	6	15	1.927	0.699	3.599	4.847	0.008	0.25	0.25	568.299	0.063
Pressure Washers	2017	16	25	3.053	0.757	2.564	4.729	0.007	0.233	0.233	568.299	0.068
Pressure Washers	2017	26	50	6.126	0.76	3.632	4.355	0.007	0.24	0.24	568.299	0.068
Pressure Washers	2017	51	120	6.031	0.444	3.283	3.888	0.006	0.233	0.233	568.3	0.04
Pressure Washers	2017	121	175	22.349	0.346	2.91	3.349	0.006	0.149	0.149	568.299	0.031
Pressure Washers	2017	176	250	8.288	0.102	0.986	0.317	0.006	0.009	0.009	568.299	0.009
Pressure Washers	2018	6	15	1.874	0.679	3.58	4.728	0.008	0.237	0.237	568.299	0.061
Pressure Washers	2018	16	25	2.997	0.744	2.531	4.661	0.007	0.224	0.224	568.299	0.067
Pressure Washers	2018	26	50	5.332	0.661	3.542	4.202	0.007	0.212	0.212	568.299	0.059
Pressure Washers	2018	51	120	5.276	0.388	3.26	3.584	0.006	0.203	0.203	568.299	0.035
Pressure Washers	2018	121	175	19.96	0.309	2.908	2.989	0.006	0.132	0.132	568.299	0.027
Pressure Washers	2018	176	250	8.072	0.099	0.986	0.277	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2019	6	15	1.824	0.662	3.562	4.617	0.008	0.224	0.224	568.299	0.059
Pressure Washers	2019	16	25	2.947	0.731	2.501	4.596	0.007	0.214	0.214	568.299	0.066
Pressure Washers	2019	26	50	4.585	0.569	3.457	4.053	0.007	0.184	0.184	568.299	0.051
Pressure Washers	2019	51	120	4.575	0.337	3.24	3.295	0.006	0.174	0.174	568.299	0.03
Pressure Washers	2019	121	175	18.102	0.28	2.907	2.67	0.006	0.117	0.117	568.299	0.025
Pressure Washers	2019	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2020	6	15	1.78	0.646	3.546	4.516	0.008	0.212	0.212	568.299	0.058
Pressure Washers	2020	16	25	2.904	0.721	2.473	4.538	0.007	0.205	0.205	568.299	0.065
Pressure Washers	2020	26	50	4.025	0.499	3.393	3.917	0.007	0.161	0.161	568.299	0.045
Pressure Washers	2020	51	120	4.048	0.298	3.225	3.036	0.006	0.151	0.151	568.299	0.026
Pressure Washers	2020	121	175	16.638	0.258	2.907	2.383	0.006	0.104	0.104	568.299	0.023
Pressure Washers	2020	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2021	6	15	1.747	0.634	3.531	4.441	0.008	0.201	0.201	568.299	0.057
Pressure Washers	2021	16	25	2.87	0.712	2.446	4.497	0.007	0.196	0.196	568.299	0.064
Pressure Washers	2021	26	50	3.542	0.439	3.329	3.765	0.007	0.136	0.136	568.299	0.039
Pressure Washers	2021	51	120	3.592	0.264	3.21	2.766	0.006	0.129	0.129	568.299	0.023
Pressure Washers	2021	121	175	15.389	0.238	2.907	2.118	0.006	0.093	0.093	568.299	0.021
Pressure Washers	2021	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Pressure Washers	2022	6	15	1.725	0.626	3.519	4.39	0.008	0.193	0.193	568.299	0.056
Pressure Washers	2022	16	25	2.847	0.706	2.426	4.47	0.007	0.188	0.188	568.299	0.063
Pressure Washers	2022	26	50	3.213	0.398	3.291	3.649	0.007	0.117	0.117	568.3	0.035
Pressure Washers	2022	51	120	3.281	0.241	3.202	2.56	0.006	0.112	0.112	568.299	0.021
Pressure Washers	2022	121	175	14.252	0.221	2.907	1.871	0.006	0.082	0.082	568.299	0.019
Pressure Washers	2022	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2023	6	15	1.706	0.618	3.508	4.345	0.008	0.186	0.186	568.299	0.055
Pressure Washers	2023	16	25	2.827	0.701	2.407	4.447	0.007	0.182	0.182	568.299	0.063
Pressure Washers	2023	26	50	2.928	0.363	3.26	3.541	0.007	0.101	0.101	568.299	0.032
Pressure Washers	2023	51	120	3.012	0.222	3.196	2.377	0.006	0.097	0.097	568.299	0.02
Pressure Washers	2023	121	175	13.244	0.205	2.907	1.665	0.006	0.072	0.072	568.299	0.018
Pressure Washers	2023	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2024	6	15	1.689	0.612	3.499	4.305	0.008	0.181	0.181	568.299	0.055
Pressure Washers	2024	16	25	2.811	0.697	2.39	4.426	0.007	0.178	0.178	568.299	0.062
Pressure Washers	2024	26	50	2.685	0.333	3.233	3.441	0.007	0.087	0.087	568.299	0.03
Pressure Washers	2024	51	120	2.78	0.204	3.191	2.229	0.006	0.084	0.084	568.299	0.018
Pressure Washers	2024	121	175	12.332	0.191	2.907	1.482	0.006	0.062	0.062	568.299	0.017
Pressure Washers	2024	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2025	6	15	1.674	0.607	3.491	4.269	0.008	0.178	0.178	568.299	0.054
Pressure Washers	2025	16	25	2.797	0.694	2.376	4.407	0.007	0.175	0.175	568.299	0.062
Pressure Washers	2025	26	50	2.472	0.306	3.21	3.344	0.007	0.075	0.075	568.299	0.027
Pressure Washers	2025	51	120	2.575	0.189	3.186	2.1	0.006	0.072	0.072	568.299	0.017
Pressure Washers	2025	121	175	11.476	0.178	2.907	1.31	0.006	0.053	0.053	568.299	0.016
Pressure Washers	2025	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2030	6	15	1.632	0.592	3.47	4.164	0.008	0.166	0.166	568.3	0.053
Pressure Washers	2030	16	25	2.766	0.686	2.34	4.347	0.007	0.165	0.165	568.299	0.061
Pressure Washers	2030	26	50	1.735	0.215	3.124	2.989	0.007	0.03	0.03	568.299	0.019
Pressure Washers	2030	51	120	1.821	0.134	3.167	1.594	0.006	0.028	0.028	568.3	0.012
Pressure Washers	2030	121	175	8.178	0.126	2.907	0.619	0.006	0.024	0.024	568.299	0.011
Pressure Washers	2030	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2035	6	15	1.624	0.589	3.47	4.143	0.008	0.162	0.162	568.3	0.053
Pressure Washers	2035	16	25	2.761	0.685	2.34	4.332	0.007	0.162	0.162	568.299	0.061
Pressure Washers	2035	26	50	1.515	0.188	3.101	2.882	0.007	0.015	0.015	568.299	0.016
Pressure Washers	2035	51	120	1.58	0.116	3.161	1.421	0.006	0.014	0.014	568.299	0.01
Pressure Washers	2035	121	175	7.052	0.109	2.907	0.382	0.006	0.013	0.013	568.299	0.009
Pressure Washers	2035	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pressure Washers	2040	6	15	1.624	0.589	3.469	4.142	0.008	0.161	0.161	568.299	0.053
Pressure Washers	2040	16	25	2.761	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Pressure Washers	2040	26	50	1.5	0.186	3.098	2.836	0.007	0.01	0.01	568.299	0.016
Pressure Washers	2040	51	120	1.54	0.113	3.16	1.365	0.006	0.01	0.01	568.299	0.01
Pressure Washers	2040	121	175	6.649	0.103	2.907	0.293	0.006	0.01	0.01	568.299	0.009
Pressure Washers	2040	176	250	8.005	0.098	0.986	0.265	0.006	0.009	0.009	568.299	0.008
Pumps	1990	6	15	3.929	1.804	4.999	10	1.018	0.974	0.974	568.299	0.162
Pumps	1990	16	25	12.652	2.213	4.999	6.92	0.83	0.74	0.74	568.299	0.199
Pumps	1990	26	50	33.318	3.307	7.004	7.391	0.846	0.964	0.964	568.299	0.298
Pumps	1990	51	120	44.398	1.941	5.049	13.378	0.768	1.022	1.022	568.299	0.175
Pumps	1990	121	175	54.599	1.328	4.466	12.036	0.736	0.678	0.678	568.299	0.119
Pumps	1990	176	250	78.462	1.328	4.466	12.036	0.736	0.678	0.678	568.299	0.119
Pumps	1990	251	500	123.784	1.222	7.034	11.736	0.642	0.614	0.614	568.3	0.11
Pumps	1990	501	750	204.643	1.222	7.034	11.736	0.658	0.614	0.614	568.299	0.11
Pumps	1990	1001	9999	484.933	1.22	7.034	11.736	0.658	0.612	0.612	568.299	0.11
Pumps	2000	6	15	3.754	1.723	4.875	9.08	0.079	0.747	0.747	568.299	0.155
Pumps	2000	16	25	11.979	2.095	4.783	6.405	0.065	0.569	0.569	568.299	0.189
Pumps	2000	26	50	31.461	3.123	6.715	6.608	0.066	0.718	0.718	568.299	0.281
Pumps	2000	51	120	36.02	1.575	4.223	9.604	0.06	0.711	0.711	568.3	0.142
Pumps	2000	121	175	43.406	1.055	3.435	8.734	0.057	0.419	0.419	568.299	0.095
Pumps	2000	176	250	51.67	0.874	2.707	8.397	0.057	0.339	0.339	568.299	0.078
Pumps	2000	251	500	83.09	0.82	3.956	8.188	0.05	0.311	0.311	568.299	0.074
Pumps	2000	501	750	137.368	0.82	3.956	8.188	0.051	0.311	0.311	568.299	0.074
Pumps	2000	1001	9999	372.377	0.936	4.533	8.775	0.051	0.351	0.351	568.299	0.084
Pumps	2005	6	15	3.036	1.394	4.38	7.817	0.079	0.621	0.621	568.299	0.125
Pumps	2005	16	25	9.278	1.622	3.922	6.014	0.065	0.483	0.483	568.299	0.146
Pumps	2005	26	50	27.809	2.76	6.203	6.155	0.066	0.664	0.664	568.299	0.249
Pumps	2005	51	120	30.825	1.348	3.91	8.1	0.06	0.657	0.657	568.3	0.121
Pumps	2005	121	175	36.106	0.878	3.114	7.408	0.057	0.363	0.363	568.299	0.079
Pumps	2005	176	250	36.853	0.623	1.836	6.99	0.057	0.239	0.239	568.299	0.056
Pumps	2005	251	500	56.766	0.56	2.32	6.535	0.05	0.219	0.219	568.299	0.05
Pumps	2005	501	750	96.43	0.575	2.32	6.679	0.051	0.221	0.221	568.299	0.051
Pumps	2005	1001	9999	289.357	0.728	2.838	7.658	0.051	0.258	0.258	568.299	0.065
Pumps	2010	6	15	2.449	1.124	4.027	6.554	0.008	0.473	0.473	568.299	0.101
Pumps	2010	16	25	7.245	1.267	3.309	5.477	0.007	0.384	0.384	568.299	0.114
Pumps	2010	26	50	22.041	2.188	5.634	5.74	0.007	0.545	0.545	568.3	0.197
Pumps	2010	51	120	23.77	1.039	3.735	6.675	0.006	0.538	0.538	568.299	0.093

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Pumps	2010	121	175	28.171	0.685	3.033	5.961	0.006	0.298	0.298	568.299	0.061
Pumps	2010	176	250	26.273	0.444	1.359	5.586	0.006	0.17	0.17	568.299	0.04
Pumps	2010	251	500	40.384	0.398	1.536	5.074	0.005	0.158	0.158	568.299	0.035
Pumps	2010	501	750	68.724	0.41	1.536	5.207	0.005	0.161	0.161	568.299	0.037
Pumps	2010	1001	9999	218.911	0.55	1.991	6.617	0.005	0.196	0.196	568.299	0.049
Pumps	2011	6	15	2.324	1.067	3.952	6.283	0.008	0.441	0.441	568.299	0.096
Pumps	2011	16	25	6.815	1.192	3.179	5.36	0.007	0.361	0.361	568.299	0.107
Pumps	2011	26	50	20.53	2.038	5.474	5.645	0.007	0.518	0.518	568.299	0.183
Pumps	2011	51	120	22.177	0.969	3.698	6.322	0.006	0.514	0.514	568.299	0.087
Pumps	2011	121	175	26.426	0.642	3.02	5.63	0.006	0.286	0.286	568.299	0.058
Pumps	2011	176	250	24.051	0.407	1.272	5.206	0.006	0.153	0.153	568.299	0.036
Pumps	2011	251	500	36.969	0.365	1.405	4.71	0.005	0.143	0.143	568.299	0.032
Pumps	2011	501	750	62.964	0.376	1.405	4.841	0.005	0.145	0.145	568.299	0.033
Pumps	2011	1001	9999	203.755	0.512	1.835	6.273	0.005	0.183	0.183	568.299	0.046
Pumps	2012	6	15	2.194	1.007	3.874	5.999	0.008	0.407	0.407	568.299	0.09
Pumps	2012	16	25	6.363	1.113	3.043	5.239	0.007	0.337	0.337	568.299	0.1
Pumps	2012	26	50	18.887	1.875	5.296	5.545	0.007	0.488	0.488	568.299	0.169
Pumps	2012	51	120	20.51	0.896	3.66	5.939	0.006	0.481	0.481	568.299	0.08
Pumps	2012	121	175	24.576	0.597	3.009	5.28	0.006	0.265	0.265	568.299	0.053
Pumps	2012	176	250	22.301	0.377	1.218	4.846	0.006	0.139	0.139	568.299	0.034
Pumps	2012	251	500	34.322	0.338	1.311	4.367	0.005	0.13	0.13	568.299	0.03
Pumps	2012	501	750	58.469	0.349	1.311	4.495	0.005	0.132	0.132	568.299	0.031
Pumps	2012	1001	9999	188.287	0.473	1.682	5.916	0.005	0.168	0.168	568.299	0.042
Pumps	2013	6	15	2.065	0.948	3.796	5.716	0.008	0.373	0.373	568.299	0.085
Pumps	2013	16	25	5.914	1.034	2.907	5.117	0.007	0.314	0.314	568.3	0.093
Pumps	2013	26	50	17.185	1.706	5.11	5.323	0.007	0.448	0.448	568.299	0.153
Pumps	2013	51	120	18.831	0.823	3.623	5.563	0.006	0.443	0.443	568.299	0.074
Pumps	2013	121	175	22.712	0.552	2.998	4.949	0.006	0.244	0.244	568.299	0.049
Pumps	2013	176	250	20.801	0.352	1.181	4.498	0.006	0.127	0.127	568.3	0.031
Pumps	2013	251	500	32.081	0.316	1.241	4.037	0.005	0.119	0.119	568.299	0.028
Pumps	2013	501	750	54.658	0.326	1.241	4.163	0.005	0.121	0.121	568.299	0.029
Pumps	2013	1001	9999	173.151	0.435	1.538	5.558	0.005	0.154	0.154	568.299	0.039
Pumps	2014	6	15	1.942	0.891	3.723	5.445	0.008	0.341	0.341	568.299	0.08
Pumps	2014	16	25	5.492	0.96	2.78	5	0.007	0.291	0.291	568.299	0.086
Pumps	2014	26	50	15.493	1.538	4.929	5.107	0.007	0.409	0.409	568.299	0.138
Pumps	2014	51	120	17.179	0.751	3.587	5.226	0.006	0.403	0.403	568.299	0.067
Pumps	2014	121	175	20.895	0.508	2.989	4.635	0.006	0.222	0.222	568.299	0.045
Pumps	2014	176	250	19.3	0.326	1.149	4.09	0.006	0.115	0.115	568.299	0.029
Pumps	2014	251	500	29.829	0.294	1.181	3.648	0.005	0.108	0.108	568.299	0.026
Pumps	2014	501	750	50.824	0.303	1.181	3.77	0.005	0.11	0.11	568.299	0.027
Pumps	2014	1001	9999	158.959	0.399	1.406	5.21	0.005	0.141	0.141	568.299	0.036
Pumps	2015	6	15	1.831	0.84	3.658	5.196	0.008	0.311	0.311	568.299	0.075
Pumps	2015	16	25	5.112	0.894	2.666	4.89	0.007	0.27	0.27	568.299	0.08
Pumps	2015	26	50	13.946	1.384	4.775	4.916	0.007	0.371	0.371	568.3	0.124
Pumps	2015	51	120	15.537	0.679	3.554	4.842	0.006	0.364	0.364	568.3	0.061
Pumps	2015	121	175	18.983	0.461	2.983	4.202	0.006	0.2	0.2	568.299	0.041
Pumps	2015	176	250	17.881	0.302	1.122	3.693	0.006	0.104	0.104	568.299	0.027
Pumps	2015	251	500	27.722	0.273	1.134	3.272	0.005	0.097	0.097	568.299	0.024
Pumps	2015	501	750	47.213	0.281	1.134	3.389	0.005	0.099	0.099	568.299	0.025
Pumps	2015	1001	9999	144.304	0.363	1.293	4.878	0.005	0.127	0.127	568.299	0.032
Pumps	2016	6	15	1.762	0.809	3.622	5.023	0.008	0.289	0.289	568.299	0.073
Pumps	2016	16	25	4.893	0.855	2.604	4.803	0.007	0.255	0.255	568.299	0.077
Pumps	2016	26	50	12.497	1.24	4.64	4.742	0.007	0.335	0.335	568.299	0.111
Pumps	2016	51	120	13.964	0.61	3.523	4.478	0.006	0.325	0.325	568.299	0.055
Pumps	2016	121	175	17.155	0.417	2.978	3.789	0.006	0.179	0.179	568.299	0.037
Pumps	2016	176	250	16.558	0.28	1.099	3.313	0.006	0.094	0.094	568.299	0.025
Pumps	2016	251	500	25.804	0.254	1.093	2.919	0.005	0.088	0.088	568.299	0.022
Pumps	2016	501	750	43.884	0.262	1.093	3.028	0.005	0.089	0.089	568.299	0.023
Pumps	2016	1001	9999	133.448	0.335	1.223	4.596	0.005	0.116	0.116	568.3	0.03
Pumps	2017	6	15	1.713	0.786	3.599	4.887	0.008	0.272	0.272	568.299	0.07
Pumps	2017	16	25	4.745	0.83	2.564	4.729	0.007	0.243	0.243	568.299	0.074
Pumps	2017	26	50	11.12	1.104	4.514	4.578	0.007	0.301	0.301	568.299	0.099
Pumps	2017	51	120	12.49	0.546	3.495	4.134	0.006	0.287	0.287	568.299	0.049
Pumps	2017	121	175	15.466	0.376	2.975	3.4	0.006	0.159	0.159	568.299	0.033
Pumps	2017	176	250	15.375	0.26	1.08	2.958	0.006	0.084	0.084	568.299	0.023
Pumps	2017	251	500	24.243	0.239	1.062	2.613	0.005	0.079	0.079	568.299	0.021
Pumps	2017	501	750	40.958	0.244	1.062	2.695	0.005	0.08	0.08	568.299	0.022
Pumps	2017	1001	9999	124.604	0.313	1.177	4.343	0.005	0.106	0.106	568.299	0.028
Pumps	2018	6	15	1.669	0.766	3.58	4.762	0.008	0.256	0.256	568.299	0.069
Pumps	2018	16	25	4.618	0.807	2.531	4.661	0.007	0.232	0.232	568.299	0.072
Pumps	2018	26	50	9.809	0.973	4.397	4.422	0.007	0.267	0.267	568.299	0.087
Pumps	2018	51	120	11.107	0.485	3.471	3.808	0.006	0.252	0.252	568.299	0.043
Pumps	2018	121	175	13.918	0.338	2.974	3.035	0.006	0.14	0.14	568.299	0.03

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Pumps	2018	176	250	14.304	0.242	1.065	2.624	0.006	0.075	0.075	568.299	0.021
Pumps	2018	251	500	22.927	0.226	1.041	2.34	0.005	0.071	0.071	568.299	0.02
Pumps	2018	501	750	38.511	0.23	1.041	2.401	0.005	0.072	0.072	568.299	0.02
Pumps	2018	1001	9999	116.529	0.293	1.144	4.105	0.005	0.098	0.098	568.299	0.026
Pumps	2019	6	15	1.63	0.748	3.562	4.647	0.008	0.241	0.241	568.3	0.067
Pumps	2019	16	25	4.503	0.787	2.501	4.596	0.007	0.222	0.222	568.3	0.071
Pumps	2019	26	50	8.56	0.849	4.284	4.269	0.007	0.235	0.235	568.299	0.076
Pumps	2019	51	120	9.812	0.429	3.449	3.497	0.006	0.217	0.217	568.299	0.038
Pumps	2019	121	175	12.706	0.309	2.974	2.711	0.006	0.124	0.124	568.299	0.027
Pumps	2019	176	250	13.378	0.226	1.052	2.323	0.006	0.067	0.067	568.299	0.02
Pumps	2019	251	500	21.711	0.214	1.027	2.084	0.005	0.064	0.064	568.3	0.019
Pumps	2019	501	750	36.35	0.217	1.027	2.133	0.005	0.065	0.065	568.299	0.019
Pumps	2019	1001	9999	108.825	0.273	1.118	3.873	0.005	0.089	0.089	568.299	0.024
Pumps	2020	6	15	1.593	0.731	3.546	4.542	0.008	0.227	0.227	568.299	0.066
Pumps	2020	16	25	4.396	0.769	2.473	4.538	0.007	0.212	0.212	568.299	0.069
Pumps	2020	26	50	7.613	0.755	4.197	4.128	0.007	0.206	0.206	568.299	0.068
Pumps	2020	51	120	8.832	0.386	3.432	3.219	0.006	0.189	0.189	568.299	0.034
Pumps	2020	121	175	11.744	0.285	2.974	2.418	0.006	0.111	0.111	568.299	0.025
Pumps	2020	176	250	12.575	0.212	1.042	2.05	0.006	0.06	0.06	568.299	0.019
Pumps	2020	251	500	20.565	0.203	1.017	1.841	0.005	0.057	0.057	568.3	0.018
Pumps	2020	501	750	34.373	0.205	1.017	1.884	0.005	0.058	0.058	568.299	0.018
Pumps	2020	1001	9999	101.462	0.255	1.096	3.649	0.005	0.081	0.081	568.3	0.023
Pumps	2021	6	15	1.563	0.717	3.531	4.462	0.008	0.214	0.214	568.299	0.064
Pumps	2021	16	25	4.302	0.752	2.446	4.497	0.007	0.201	0.201	568.299	0.067
Pumps	2021	26	50	6.761	0.671	4.099	3.966	0.007	0.175	0.175	568.299	0.06
Pumps	2021	51	120	7.94	0.347	3.412	2.928	0.006	0.162	0.162	568.3	0.031
Pumps	2021	121	175	10.713	0.26	2.968	2.101	0.006	0.096	0.096	568.299	0.023
Pumps	2021	176	250	11.658	0.197	1.031	1.759	0.006	0.052	0.052	568.299	0.017
Pumps	2021	251	500	19.186	0.189	1.007	1.584	0.005	0.05	0.05	568.299	0.017
Pumps	2021	501	750	32.005	0.191	1.007	1.618	0.005	0.05	0.05	568.299	0.017
Pumps	2021	1001	9999	92.954	0.233	1.074	3.409	0.005	0.072	0.072	568.3	0.021
Pumps	2022	6	15	1.54	0.707	3.519	4.408	0.008	0.203	0.203	568.299	0.063
Pumps	2022	16	25	4.229	0.739	2.426	4.47	0.007	0.193	0.193	568.299	0.066
Pumps	2022	26	50	6.194	0.614	4.048	3.846	0.007	0.152	0.152	568.299	0.055
Pumps	2022	51	120	7.351	0.321	3.404	2.708	0.006	0.142	0.142	568.299	0.029
Pumps	2022	121	175	9.985	0.242	2.969	1.86	0.006	0.085	0.085	568.299	0.021
Pumps	2022	176	250	11.025	0.186	1.025	1.534	0.006	0.045	0.045	568.299	0.016
Pumps	2022	251	500	18.249	0.18	1.001	1.404	0.005	0.044	0.044	568.3	0.016
Pumps	2022	501	750	30.396	0.181	1.001	1.432	0.005	0.044	0.044	568.3	0.016
Pumps	2022	1001	9999	87.313	0.219	1.058	3.236	0.005	0.065	0.065	568.299	0.019
Pumps	2023	6	15	1.521	0.698	3.508	4.359	0.008	0.194	0.194	568.299	0.063
Pumps	2023	16	25	4.165	0.728	2.407	4.447	0.007	0.186	0.186	568.299	0.065
Pumps	2023	26	50	5.699	0.565	4.007	3.734	0.007	0.131	0.131	568.299	0.051
Pumps	2023	51	120	6.838	0.299	3.398	2.511	0.006	0.123	0.123	568.299	0.026
Pumps	2023	121	175	9.349	0.227	2.971	1.662	0.006	0.075	0.075	568.299	0.02
Pumps	2023	176	250	10.47	0.177	1.021	1.351	0.006	0.04	0.04	568.299	0.015
Pumps	2023	251	500	17.411	0.171	0.998	1.246	0.005	0.038	0.038	568.3	0.015
Pumps	2023	501	750	28.971	0.173	0.998	1.271	0.005	0.039	0.039	568.299	0.015
Pumps	2023	1001	9999	82.523	0.207	1.043	3.09	0.005	0.059	0.059	568.299	0.018
Pumps	2024	6	15	1.503	0.69	3.499	4.316	0.008	0.188	0.188	568.299	0.062
Pumps	2024	16	25	4.107	0.718	2.39	4.426	0.007	0.181	0.181	568.299	0.064
Pumps	2024	26	50	5.272	0.523	3.974	3.63	0.007	0.114	0.114	568.299	0.047
Pumps	2024	51	120	6.391	0.279	3.393	2.352	0.006	0.107	0.107	568.299	0.025
Pumps	2024	121	175	8.769	0.213	2.973	1.486	0.006	0.065	0.065	568.299	0.019
Pumps	2024	176	250	9.948	0.168	1.018	1.189	0.006	0.034	0.034	568.3	0.015
Pumps	2024	251	500	16.61	0.164	0.994	1.098	0.005	0.033	0.033	568.299	0.014
Pumps	2024	501	750	27.614	0.164	0.994	1.12	0.005	0.034	0.034	568.299	0.014
Pumps	2024	1001	9999	78.184	0.196	1.031	2.96	0.005	0.054	0.054	568.299	0.017
Pumps	2025	6	15	1.488	0.683	3.491	4.278	0.008	0.183	0.183	568.299	0.061
Pumps	2025	16	25	4.058	0.709	2.376	4.407	0.007	0.177	0.177	568.299	0.064
Pumps	2025	26	50	4.891	0.485	3.943	3.528	0.007	0.099	0.099	568.299	0.043
Pumps	2025	51	120	5.988	0.261	3.389	2.213	0.006	0.092	0.092	568.299	0.023
Pumps	2025	121	175	8.209	0.199	2.974	1.318	0.006	0.056	0.056	568.3	0.018
Pumps	2025	176	250	9.449	0.159	1.016	1.038	0.006	0.029	0.029	568.299	0.014
Pumps	2025	251	500	15.837	0.156	0.992	0.958	0.005	0.028	0.028	568.3	0.014
Pumps	2025	501	750	26.308	0.157	0.992	0.977	0.005	0.029	0.029	568.3	0.014
Pumps	2025	1001	9999	74.054	0.186	1.02	2.84	0.005	0.049	0.049	568.299	0.016
Pumps	2030	6	15	1.445	0.663	3.47	4.164	0.008	0.166	0.166	568.299	0.059
Pumps	2030	16	25	3.928	0.687	2.34	4.347	0.007	0.165	0.165	568.3	0.061
Pumps	2030	26	50	3.513	0.348	3.814	3.146	0.007	0.04	0.04	568.299	0.031
Pumps	2030	51	120	4.416	0.193	3.367	1.662	0.006	0.036	0.036	568.299	0.017
Pumps	2030	121	175	5.842	0.142	2.973	0.61	0.006	0.024	0.024	568.299	0.012
Pumps	2030	176	250	7.699	0.13	1.013	0.511	0.006	0.016	0.016	568.299	0.011

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Pumps	2030	251	500	13.115	0.129	0.989	0.482	0.005	0.016	0.016	568.299	0.011
Pumps	2030	501	750	21.709	0.129	0.989	0.488	0.005	0.016	0.016	568.299	0.011
Pumps	2030	1001	9999	55.475	0.139	0.99	2.504	0.005	0.03	0.03	568.299	0.012
Pumps	2035	6	15	1.44	0.661	3.469	4.143	0.008	0.162	0.162	568.299	0.059
Pumps	2035	16	25	3.919	0.685	2.34	4.332	0.007	0.162	0.162	568.299	0.061
Pumps	2035	26	50	3.089	0.306	3.778	3.028	0.007	0.019	0.019	568.299	0.027
Pumps	2035	51	120	3.891	0.17	3.36	1.47	0.006	0.017	0.017	568.299	0.015
Pumps	2035	121	175	5.059	0.123	2.973	0.377	0.006	0.014	0.014	568.299	0.011
Pumps	2035	176	250	7.07	0.119	1.012	0.335	0.006	0.011	0.011	568.299	0.01
Pumps	2035	251	500	12.118	0.119	0.989	0.331	0.005	0.011	0.011	568.299	0.01
Pumps	2035	501	750	20.034	0.119	0.989	0.331	0.005	0.011	0.011	568.299	0.01
Pumps	2035	1001	9999	49.373	0.124	0.989	2.38	0.005	0.023	0.023	568.299	0.011
Pumps	2040	6	15	1.44	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Pumps	2040	16	25	3.919	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Pumps	2040	26	50	3.056	0.303	3.77	2.976	0.007	0.013	0.013	568.299	0.027
Pumps	2040	51	120	3.777	0.165	3.358	1.41	0.006	0.012	0.012	568.299	0.014
Pumps	2040	121	175	4.771	0.116	2.971	0.295	0.006	0.01	0.01	568.299	0.01
Pumps	2040	176	250	6.779	0.114	1.012	0.279	0.006	0.009	0.009	568.299	0.01
Pumps	2040	251	500	11.622	0.114	0.989	0.279	0.005	0.009	0.009	568.299	0.01
Pumps	2040	501	750	19.214	0.114	0.989	0.279	0.005	0.009	0.009	568.299	0.01
Pumps	2040	1001	9999	46.343	0.116	0.989	2.347	0.005	0.02	0.02	568.299	0.01
Rollers	1990	6	15	4.21	1.804	4.999	9.999	1.049	0.975	0.975	568.299	0.162
Rollers	1990	16	25	10.903	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Rollers	1990	26	50	45.466	4.738	9.598	7.927	0.871	1.256	1.256	568.299	0.427
Rollers	1990	51	120	51.677	2.372	5.756	15.111	0.791	1.332	1.332	568.3	0.214
Rollers	1990	121	175	75.451	1.889	5.165	14.858	0.758	1.046	1.046	568.299	0.17
Rollers	1990	176	250	106.808	1.889	5.165	14.858	0.758	1.046	1.046	568.299	0.17
Rollers	1990	251	500	135.093	1.669	11.266	14.103	0.662	0.896	0.896	568.299	0.15
Rollers	2000	6	15	3.444	1.475	4.49	8.242	0.079	0.676	0.676	568.3	0.133
Rollers	2000	16	25	9.648	1.958	4.53	6.358	0.065	0.563	0.563	568.299	0.176
Rollers	2000	26	50	38.643	4.027	8.379	6.941	0.066	0.861	0.861	568.299	0.363
Rollers	2000	51	120	39.062	1.793	4.585	10.425	0.06	0.844	0.844	568.299	0.161
Rollers	2000	121	175	48.357	1.21	3.749	9.501	0.057	0.503	0.503	568.299	0.109
Rollers	2000	176	250	59.24	1.047	3.108	9.211	0.057	0.427	0.427	568.299	0.094
Rollers	2000	251	500	77.413	0.956	5.254	8.821	0.05	0.379	0.379	568.299	0.086
Rollers	2005	6	15	1.788	0.766	3.469	5.228	0.079	0.361	0.361	568.299	0.069
Rollers	2005	16	25	4.53	0.919	2.642	5.412	0.065	0.347	0.347	568.299	0.082
Rollers	2005	26	50	34.997	3.647	7.864	6.51	0.066	0.808	0.808	568.299	0.329
Rollers	2005	51	120	34.046	1.563	4.289	8.963	0.06	0.79	0.79	568.299	0.141
Rollers	2005	121	175	40.854	1.023	3.44	8.18	0.057	0.441	0.441	568.299	0.092
Rollers	2005	176	250	44.594	0.788	2.262	7.822	0.057	0.319	0.319	568.299	0.071
Rollers	2005	251	500	56.466	0.697	3.183	7.196	0.05	0.282	0.282	568.299	0.062
Rollers	2010	6	15	1.637529	1.376	5.19619	5.58863	0.0054	0.5161	0.4748	584.6125	0.1702
Rollers	2010	16	25	1.637529	1.376	5.19619	5.58863	0.0054	0.5161	0.4748	584.6125	0.1702
Rollers	2010	26	50	1.637529	1.376	5.19619	5.58863	0.0054	0.5161	0.4748	584.6125	0.1702
Rollers	2010	51	120	0.983879	0.8267	3.91429	7.50147	0.0049	0.5604	0.5155	527.6279	0.1536
Rollers	2010	121	175	0.511697	0.43	3.00505	5.60543	0.0049	0.2643	0.2432	524.1952	0.1526
Rollers	2010	176	250	0.616159	0.5177	2.19572	7.34127	0.0049	0.2682	0.2467	526.2539	0.1532
Rollers	2010	251	500	0.682816	0.5738	4.92169	7.52047	0.005	0.313	0.2879	533.878	0.1554
Rollers	2011	6	15	1.599963	1.3444	5.18315	5.5647	0.0054	0.5076	0.467	583.1085	0.1702
Rollers	2011	16	25	1.599963	1.3444	5.18315	5.5647	0.0054	0.5076	0.467	583.1085	0.1702
Rollers	2011	26	50	1.599963	1.3444	5.18315	5.5647	0.0054	0.5076	0.467	583.1085	0.1702
Rollers	2011	51	120	0.924436	0.7768	3.86451	7.13388	0.0049	0.5333	0.4906	525.9391	0.1535
Rollers	2011	121	175	0.498798	0.4191	3.00845	5.44712	0.0049	0.2574	0.2368	522.9396	0.1526
Rollers	2011	176	250	0.556319	0.4675	2.03431	6.69107	0.0049	0.2418	0.2225	524.8924	0.1532
Rollers	2011	251	500	0.597293	0.5019	4.46947	6.64358	0.0049	0.2752	0.2532	529.5965	0.1545
Rollers	2012	6	15	1.624226	1.3648	5.26844	5.568	0.0054	0.5114	0.4705	581.6678	0.1702
Rollers	2012	16	25	1.624226	1.3648	5.26844	5.568	0.0054	0.5114	0.4705	581.6678	0.1702
Rollers	2012	26	50	1.624226	1.3648	5.26844	5.568	0.0054	0.5114	0.4705	581.6678	0.1702
Rollers	2012	51	120	0.924087	0.7765	3.87893	7.08604	0.0049	0.5337	0.491	524.5269	0.1534
Rollers	2012	121	175	0.497788	0.4183	3.02294	5.38313	0.0049	0.2553	0.2349	521.5511	0.1526
Rollers	2012	176	250	0.555818	0.467	2.02691	6.64215	0.0049	0.2409	0.2217	523.5608	0.1532
Rollers	2012	251	500	0.604557	0.508	4.53336	6.66671	0.0049	0.2778	0.2556	528.1357	0.1545
Rollers	2013	6	15	1.5981	1.3428	5.27142	5.50162	0.0054	0.5	0.46	578.8662	0.1702
Rollers	2013	16	25	1.5981	1.3428	5.27142	5.50162	0.0054	0.5	0.46	578.8662	0.1702
Rollers	2013	26	50	1.5981	1.3428	5.27142	5.50162	0.0054	0.5	0.46	578.8662	0.1702
Rollers	2013	51	120	0.873627	0.7341	3.84356	6.74964	0.0049	0.5039	0.4636	521.8163	0.1534
Rollers	2013	121	175	0.468308	0.3935	3.00794	5.11335	0.0049	0.2377	0.2187	519.0689	0.1526
Rollers	2013	176	250	0.495332	0.4162	1.86858	5.94235	0.0049	0.2127	0.1957	520.4083	0.153
Rollers	2013	251	500	0.470274	0.3952	3.53436	5.43748	0.0049	0.2133	0.1962	524.7654	0.1543
Rollers	2014	6	15	1.556684	1.308	5.24275	5.39309	0.0054	0.4836	0.4449	575.7953	0.1702
Rollers	2014	16	25	1.556684	1.308	5.24275	5.39309	0.0054	0.4836	0.4449	575.7953	0.1702
Rollers	2014	26	50	1.556684	1.308	5.24275	5.39309	0.0054	0.4836	0.4449	575.7953	0.1702

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Rollers	2014	51	120	0.827072	0.695	3.80915	6.39036	0.0049	0.4759	0.4378	518.7866	0.1533
Rollers	2014	121	175	0.43778	0.3679	2.99804	4.72375	0.0049	0.2191	0.2016	516.591	0.1527
Rollers	2014	176	250	0.453642	0.3812	1.75988	5.40344	0.0049	0.1914	0.1761	517.8111	0.153
Rollers	2014	251	500	0.449616	0.3778	3.3182	5.18322	0.0049	0.2015	0.1854	522.0518	0.1543
Rollers	2015	6	15	1.559602	1.3105	5.29043	5.36547	0.0054	0.4811	0.4427	569.9207	0.1701
Rollers	2015	16	25	1.559602	1.3105	5.29043	5.36547	0.0054	0.4811	0.4427	569.9207	0.1701
Rollers	2015	26	50	1.559602	1.3105	5.29043	5.36547	0.0054	0.4811	0.4427	569.9207	0.1701
Rollers	2015	51	120	0.813228	0.6833	3.80891	6.27158	0.0049	0.4674	0.43	513.5052	0.1533
Rollers	2015	121	175	0.433087	0.3639	3.00605	4.63035	0.0049	0.2155	0.1982	511.3935	0.1527
Rollers	2015	176	250	0.41293	0.347	1.65049	4.93191	0.0049	0.1708	0.1572	512.8234	0.1531
Rollers	2015	251	500	0.441373	0.3709	3.24549	5.03147	0.0049	0.195	0.1794	517.2848	0.1544
Rollers	2016	6	15	1.498736	1.2594	5.23066	5.2356	0.0054	0.4594	0.4226	563.9722	0.1701
Rollers	2016	16	25	1.498736	1.2594	5.23066	5.2356	0.0054	0.4594	0.4226	563.9722	0.1701
Rollers	2016	26	50	1.498736	1.2594	5.23066	5.2356	0.0054	0.4594	0.4226	563.9722	0.1701
Rollers	2016	51	120	0.747631	0.6282	3.75537	5.80563	0.0049	0.4275	0.3933	508.1987	0.1533
Rollers	2016	121	175	0.402004	0.3378	2.99334	4.23872	0.0049	0.197	0.1812	505.9041	0.1526
Rollers	2016	176	250	0.366563	0.308	1.50673	4.39492	0.0049	0.15	0.138	507.6939	0.1531
Rollers	2016	251	500	0.397483	0.334	2.95647	4.45617	0.0049	0.1731	0.1592	513.4154	0.1549
Rollers	2017	6	15	1.425352	1.1977	5.14727	5.09771	0.0054	0.4357	0.4008	555.0199	0.1701
Rollers	2017	16	25	1.425352	1.1977	5.14727	5.09771	0.0054	0.4357	0.4008	555.0199	0.1701
Rollers	2017	26	50	1.425352	1.1977	5.14727	5.09771	0.0054	0.4357	0.4008	555.0199	0.1701
Rollers	2017	51	120	0.690109	0.5799	3.71315	5.4114	0.0049	0.3921	0.3607	500.1525	0.1532
Rollers	2017	121	175	0.373471	0.3138	2.98069	3.87384	0.0049	0.1804	0.1659	497.9088	0.1526
Rollers	2017	176	250	0.326364	0.2742	1.40849	3.92097	0.0049	0.1294	0.1191	499.7021	0.1531
Rollers	2017	251	500	0.353236	0.2968	2.68487	3.84047	0.0049	0.1501	0.1381	505.8318	0.155
Rollers	2018	6	15	1.26668	1.0644	4.92335	4.8416	0.0054	0.3867	0.3557	546.2905	0.1701
Rollers	2018	16	25	1.26668	1.0644	4.92335	4.8416	0.0054	0.3867	0.3557	546.2905	0.1701
Rollers	2018	26	50	1.26668	1.0644	4.92335	4.8416	0.0054	0.3867	0.3557	546.2905	0.1701
Rollers	2018	51	120	0.572467	0.481	3.60981	4.65049	0.0049	0.32	0.2944	492.2118	0.1532
Rollers	2018	121	175	0.315632	0.2652	2.94895	3.18126	0.0049	0.1472	0.1355	490.1805	0.1526
Rollers	2018	176	250	0.251419	0.2113	1.24341	2.99492	0.0049	0.0938	0.0863	491.6643	0.1531
Rollers	2018	251	500	0.291314	0.2448	2.23145	3.09814	0.005	0.1191	0.1095	497.9962	0.155
Rollers	2019	6	15	1.156606	0.9719	4.77841	4.64491	0.0054	0.3493	0.3213	537.546	0.1701
Rollers	2019	16	25	1.156606	0.9719	4.77841	4.64491	0.0054	0.3493	0.3213	537.546	0.1701
Rollers	2019	26	50	1.156606	0.9719	4.77841	4.64491	0.0054	0.3493	0.3213	537.546	0.1701
Rollers	2019	51	120	0.502836	0.4225	3.55726	4.17949	0.0049	0.2748	0.2528	484.3362	0.1532
Rollers	2019	121	175	0.27475	0.2309	2.93251	2.69941	0.0049	0.1239	0.114	482.4531	0.1526
Rollers	2019	176	250	0.250477	0.2105	1.24854	2.88327	0.0049	0.0918	0.0844	483.7769	0.1531
Rollers	2019	251	500	0.278634	0.2341	2.10142	2.90839	0.005	0.1109	0.102	489.9774	0.155
Rollers	2020	6	15	1.102095	0.9261	4.72504	4.53426	0.0054	0.3289	0.3026	525.8798	0.1701
Rollers	2020	16	25	1.102095	0.9261	4.72504	4.53426	0.0054	0.3289	0.3026	525.8798	0.1701
Rollers	2020	26	50	1.102095	0.9261	4.72504	4.53426	0.0054	0.3289	0.3026	525.8798	0.1701
Rollers	2020	51	120	0.462004	0.3882	3.53135	3.88153	0.0049	0.2475	0.2277	473.8594	0.1533
Rollers	2020	121	175	0.256128	0.2152	2.93333	2.45176	0.0049	0.1126	0.1036	471.9177	0.1526
Rollers	2020	176	250	0.248138	0.2085	1.25343	2.75095	0.0049	0.0892	0.082	473.3669	0.1531
Rollers	2020	251	500	0.279691	0.235	2.11346	2.82823	0.005	0.1094	0.1007	479.3254	0.155
Rollers	2021	6	15	1.008559	0.8475	4.59681	4.35097	0.0054	0.2938	0.2703	525.7908	0.1701
Rollers	2021	16	25	1.008559	0.8475	4.59681	4.35097	0.0054	0.2938	0.2703	525.7908	0.1701
Rollers	2021	26	50	1.008559	0.8475	4.59681	4.35097	0.0054	0.2938	0.2703	525.7908	0.1701
Rollers	2021	51	120	0.42061	0.3534	3.50719	3.5889	0.0049	0.2194	0.2018	473.9012	0.1533
Rollers	2021	121	175	0.229571	0.1929	2.9256	2.11691	0.0049	0.0973	0.0895	471.9799	0.1526
Rollers	2021	176	250	0.23384	0.1965	1.22849	2.49332	0.0049	0.081	0.0746	473.4704	0.1531
Rollers	2021	251	500	0.26246	0.2205	1.94995	2.58936	0.005	0.0997	0.0918	479.3294	0.155
Rollers	2022	6	15	0.878567	0.7382	4.40241	4.12773	0.0054	0.2501	0.2301	525.691	0.17
Rollers	2022	16	25	0.878567	0.7382	4.40241	4.12773	0.0054	0.2501	0.2301	525.691	0.17
Rollers	2022	26	50	0.878567	0.7382	4.40241	4.12773	0.0054	0.2501	0.2301	525.691	0.17
Rollers	2022	51	120	0.369089	0.3101	3.46973	3.21896	0.0049	0.1855	0.1707	473.9291	0.1533
Rollers	2022	121	175	0.195547	0.1643	2.91331	1.71408	0.0049	0.0787	0.0724	471.9475	0.1526
Rollers	2022	176	250	0.221959	0.1865	1.22821	2.2116	0.0049	0.0768	0.0707	473.5135	0.1531
Rollers	2022	251	500	0.259221	0.2178	1.95495	2.46341	0.0049	0.0972	0.0894	478.9817	0.1549
Rollers	2023	6	15	0.786211	0.6606	4.25236	3.9211	0.0054	0.2115	0.1946	525.8616	0.1701
Rollers	2023	16	25	0.786211	0.6606	4.25236	3.9211	0.0054	0.2115	0.1946	525.8616	0.1701
Rollers	2023	26	50	0.786211	0.6606	4.25236	3.9211	0.0054	0.2115	0.1946	525.8616	0.1701
Rollers	2023	51	120	0.341189	0.2867	3.45461	3.00302	0.0049	0.1652	0.152	473.9363	0.1533
Rollers	2023	121	175	0.1784	0.1499	2.90949	1.4833	0.0049	0.0677	0.0622	471.9351	0.1526
Rollers	2023	176	250	0.223864	0.1881	1.23448	2.17272	0.0049	0.0763	0.0702	473.5164	0.1531
Rollers	2023	251	500	0.25159	0.2114	1.95626	2.29003	0.0049	0.0926	0.0852	478.3028	0.1547
Rollers	2024	6	15	0.738433	0.6205	4.20667	3.82449	0.0054	0.1925	0.1771	525.9565	0.1701
Rollers	2024	16	25	0.738433	0.6205	4.20667	3.82449	0.0054	0.1925	0.1771	525.9565	0.1701
Rollers	2024	26	50	0.738433	0.6205	4.20667	3.82449	0.0054	0.1925	0.1771	525.9565	0.1701
Rollers	2024	51	120	0.323417	0.2718	3.45055	2.843	0.0049	0.1505	0.1384	474.0072	0.1533
Rollers	2024	121	175	0.168235	0.1414	2.91426	1.32428	0.0049	0.0605	0.0557	472.012	0.1527
Rollers	2024	176	250	0.213553	0.1794	1.21417	1.97675	0.0049	0.0696	0.064	473.512	0.1531

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Rollers	2024	251	500	0.24978	0.2099	1.96121	2.21612	0.0049	0.0901	0.0829	477.9001	0.1546
Rollers	2025	6	15	0.677074	0.5689	4.12543	3.68893	0.0054	0.167	0.1536	526.1406	0.1702
Rollers	2025	16	25	0.677074	0.5689	4.12543	3.68893	0.0054	0.167	0.1536	526.1406	0.1702
Rollers	2025	26	50	0.677074	0.5689	4.12543	3.68893	0.0054	0.167	0.1536	526.1406	0.1702
Rollers	2025	51	120	0.303987	0.2554	3.44432	2.69137	0.0049	0.1354	0.1245	473.851	0.1533
Rollers	2025	121	175	0.150791	0.1267	2.90859	1.10088	0.0049	0.0494	0.0455	471.9696	0.1526
Rollers	2025	176	250	0.205768	0.1729	1.21477	1.78252	0.0049	0.0656	0.0603	473.6813	0.1532
Rollers	2025	251	500	0.251787	0.2116	1.96754	2.19998	0.0049	0.0905	0.0832	477.5732	0.1545
Rollers	2030	6	15	1.543	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Rollers	2030	16	25	3.377	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Rollers	2030	26	50	5.638	0.587	4.784	3.48	0.007	0.073	0.073	568.299	0.053
Rollers	2030	51	120	6.528	0.299	3.639	1.95	0.006	0.066	0.066	568.299	0.027
Rollers	2030	121	175	8.923	0.223	3.203	0.907	0.006	0.042	0.042	568.299	0.02
Rollers	2030	176	250	11.047	0.195	1.099	0.745	0.006	0.024	0.024	568.299	0.017
Rollers	2030	251	500	15.637	0.193	1.056	0.697	0.005	0.023	0.023	568.299	0.017
Rollers	2035	6	15	1.543	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Rollers	2035	16	25	3.377	0.685	2.34	4.332	0.007	0.161	0.161	568.3	0.061
Rollers	2035	26	50	4.867	0.507	4.711	3.28	0.007	0.038	0.038	568.299	0.045
Rollers	2035	51	120	5.632	0.258	3.629	1.65	0.006	0.035	0.035	568.299	0.023
Rollers	2035	121	175	7.351	0.184	3.204	0.523	0.006	0.023	0.023	568.299	0.016
Rollers	2035	176	250	9.79	0.173	1.091	0.465	0.006	0.016	0.016	568.299	0.015
Rollers	2035	251	500	13.949	0.172	1.048	0.442	0.005	0.016	0.016	568.3	0.015
Rollers	2040	6	15	1.543	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Rollers	2040	16	25	3.377	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Rollers	2040	26	50	4.508	0.469	4.682	3.207	0.007	0.024	0.024	568.299	0.042
Rollers	2040	51	120	5.228	0.24	3.625	1.525	0.006	0.021	0.021	568.299	0.021
Rollers	2040	121	175	6.731	0.168	3.205	0.373	0.006	0.015	0.015	568.299	0.015
Rollers	2040	176	250	9.355	0.165	1.092	0.348	0.006	0.012	0.012	568.299	0.014
Rollers	2040	251	500	13.378	0.165	1.048	0.341	0.005	0.012	0.012	568.299	0.014
Rough Terrain Forklifts	1990	26	50	13.299	5.191	10.416	8.098	0.871	1.348	1.348	568.299	0.468
Rough Terrain Forklifts	1990	51	120	11.91	2.52	6.008	15.753	0.791	1.432	1.432	568.299	0.227
Rough Terrain Forklifts	1990	121	175	19.775	2.092	5.422	15.888	0.758	1.178	1.178	568.299	0.188
Rough Terrain Forklifts	1990	176	250	27.042	2.092	5.422	15.888	0.758	1.178	1.178	568.299	0.188
Rough Terrain Forklifts	1990	251	500	35.607	1.834	12.637	14.986	0.662	0.998	0.998	568.299	0.165
Rough Terrain Forklifts	2000	26	50	11.216	4.378	9.045	7.041	0.066	0.919	0.919	568.3	0.395
Rough Terrain Forklifts	2000	51	120	8.517	1.802	4.574	10.225	0.06	0.881	0.881	568.299	0.162
Rough Terrain Forklifts	2000	121	175	11.484	1.215	3.676	9.36	0.057	0.511	0.511	568.3	0.109
Rough Terrain Forklifts	2000	176	250	13.186	1.02	2.927	9.021	0.057	0.418	0.418	568.299	0.092
Rough Terrain Forklifts	2000	251	500	18.049	0.929	4.415	8.59	0.05	0.37	0.37	568.299	0.083
Rough Terrain Forklifts	2005	26	50	9.835	3.839	8.285	6.528	0.066	0.844	0.844	568.299	0.346
Rough Terrain Forklifts	2005	51	120	7.351	1.555	4.289	8.677	0.06	0.82	0.82	568.299	0.14
Rough Terrain Forklifts	2005	121	175	9.61	1.016	3.403	7.941	0.057	0.447	0.447	568.3	0.091
Rough Terrain Forklifts	2005	176	250	9.418	0.728	1.995	7.52	0.057	0.289	0.289	568.299	0.065
Rough Terrain Forklifts	2005	251	500	12.496	0.643	2.406	6.82	0.05	0.258	0.258	568.299	0.058
Rough Terrain Forklifts	2010	26	50	1.514602	1.2727	4.9076	5.57504	0.0054	0.4947	0.4551	583.8316	0.1699
Rough Terrain Forklifts	2010	51	120	0.607871	0.5108	3.47103	5.81073	0.0049	0.3855	0.3547	525.5318	0.153
Rough Terrain Forklifts	2010	121	175	0.37661	0.3165	2.9137	4.78775	0.0049	0.2124	0.1954	524.1127	0.1526
Rough Terrain Forklifts	2010	176	250	0.759196	0.6379	2.86785	7.87723	0.0049	0.3508	0.3228	527.6921	0.1536
Rough Terrain Forklifts	2010	251	500	0.386691	0.3249	1.82955	5.79984	0.0048	0.1682	0.1548	518.8116	0.151
Rough Terrain Forklifts	2011	26	50	1.444446	1.2137	4.83823	5.52279	0.0054	0.4799	0.4415	582.3751	0.1699
Rough Terrain Forklifts	2011	51	120	0.549079	0.4614	3.4365	5.4371	0.0049	0.3519	0.3238	524.0504	0.1529
Rough Terrain Forklifts	2011	121	175	0.339518	0.2853	2.87624	4.45534	0.0049	0.1925	0.1771	522.735	0.1525
Rough Terrain Forklifts	2011	176	250	0.686556	0.5769	2.63351	7.1588	0.0049	0.317	0.2916	525.8441	0.1534
Rough Terrain Forklifts	2011	251	500	0.390538	0.3282	1.84589	5.81691	0.0048	0.1697	0.1561	517.5182	0.151
Rough Terrain Forklifts	2012	26	50	1.441034	1.2109	4.88018	5.49331	0.0054	0.4762	0.4381	580.9231	0.1699
Rough Terrain Forklifts	2012	51	120	0.530399	0.4457	3.43501	5.29115	0.0049	0.3397	0.3125	522.6299	0.1529
Rough Terrain Forklifts	2012	121	175	0.336361	0.2826	2.88643	4.38447	0.0049	0.1886	0.1735	521.4414	0.1525
Rough Terrain Forklifts	2012	176	250	0.693119	0.5824	2.65596	7.11155	0.0049	0.3186	0.2932	524.4406	0.1534
Rough Terrain Forklifts	2012	251	500	0.394706	0.3317	1.86253	5.83389	0.0048	0.1711	0.1574	516.2249	0.151
Rough Terrain Forklifts	2013	26	50	1.427232	1.1993	4.88715	5.34043	0.0054	0.4536	0.4173	578.2559	0.17
Rough Terrain Forklifts	2013	51	120	0.469882	0.3948	3.39906	4.92337	0.0049	0.2987	0.2748	519.906	0.1529
Rough Terrain Forklifts	2013	121	175	0.283862	0.2385	2.86094	3.90677	0.0049	0.153	0.1408	518.7027	0.1525
Rough Terrain Forklifts	2013	176	250	0.418518	0.3517	1.88921	4.79966	0.0049	0.1835	0.1688	521.6392	0.1534
Rough Terrain Forklifts	2013	251	500	0.334838	0.2814	1.86541	4.62017	0.0048	0.1406	0.1294	514.2815	0.1512
Rough Terrain Forklifts	2014	26	50	1.40671	1.182	4.88713	5.22634	0.0054	0.4359	0.401	575.3526	0.17
Rough Terrain Forklifts	2014	51	120	0.417386	0.3507	3.36705	4.46728	0.0049	0.261	0.2401	517.2602	0.1529
Rough Terrain Forklifts	2014	121	175	0.263476	0.2214	2.85182	3.59442	0.0049	0.1395	0.1283	516.0907	0.1525
Rough Terrain Forklifts	2014	176	250	0.221616	0.1862	1.21218	2.98369	0.0049	0.0871	0.0801	517.7663	0.153
Rough Terrain Forklifts	2014	251	500	0.202465	0.1701	0.95399	3.49973	0.0048	0.0761	0.0701	511.6567	0.1512
Rough Terrain Forklifts	2015	26	50	1.414803	1.1888	4.93325	5.18984	0.0054	0.4314	0.3969	569.4875	0.17
Rough Terrain Forklifts	2015	51	120	0.401892	0.3377	3.36619	4.28003	0.0049	0.2474	0.2276	512.0859	0.1529
Rough Terrain Forklifts	2015	121	175	0.25808	0.2169	2.85917	3.42042	0.0049	0.1326	0.122	510.8541	0.1525
Rough Terrain Forklifts	2015	176	250	0.166466	0.1399	1.01164	2.4626	0.0049	0.0582	0.0535	512.1638	0.1529

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Rough Terrain Forklifts	2015	251	500	0.207111	0.174	0.95822	3.52067	0.0048	0.0771	0.071	506.4349	0.1512
Rough Terrain Forklifts	2016	26	50	1.378654	1.1585	4.91773	5.09924	0.0054	0.4149	0.3817	563.3598	0.1699
Rough Terrain Forklifts	2016	51	120	0.358928	0.3016	3.34169	3.84005	0.0049	0.2131	0.1961	507.0659	0.1529
Rough Terrain Forklifts	2016	121	175	0.248476	0.2088	2.865	3.2087	0.0049	0.1244	0.1145	505.596	0.1525
Rough Terrain Forklifts	2016	176	250	0.171278	0.1439	1.0177	2.46843	0.0049	0.0587	0.054	506.8956	0.1529
Rough Terrain Forklifts	2016	251	500	0.211667	0.1779	0.96236	3.54169	0.0048	0.0781	0.0718	501.2134	0.1512
Rough Terrain Forklifts	2017	26	50	1.318488	1.1079	4.83344	4.90253	0.0054	0.3821	0.3515	554.6234	0.1699
Rough Terrain Forklifts	2017	51	120	0.322506	0.271	3.31778	3.41759	0.0049	0.1816	0.1671	499.1682	0.1529
Rough Terrain Forklifts	2017	121	175	0.231401	0.1944	2.86636	2.90167	0.0049	0.1121	0.1031	497.7766	0.1525
Rough Terrain Forklifts	2017	176	250	0.175965	0.1479	1.02362	2.47389	0.0049	0.0592	0.0544	499.0007	0.1529
Rough Terrain Forklifts	2017	251	500	0.216551	0.182	0.96636	3.56771	0.0048	0.0792	0.0728	493.3362	0.1512
Rough Terrain Forklifts	2018	26	50	1.273116	1.0698	4.76839	4.73469	0.0054	0.3585	0.3298	545.8693	0.1699
Rough Terrain Forklifts	2018	51	120	0.264415	0.2222	3.26976	2.84496	0.0049	0.136	0.1251	491.2107	0.1529
Rough Terrain Forklifts	2018	121	175	0.194786	0.1637	2.84245	2.34168	0.0049	0.0876	0.0806	489.9869	0.1525
Rough Terrain Forklifts	2018	176	250	0.181003	0.1521	1.02948	2.48748	0.0049	0.0598	0.055	491.0997	0.1529
Rough Terrain Forklifts	2018	251	500	0.172771	0.1452	0.95802	2.70063	0.0048	0.0599	0.0551	485.9543	0.1513
Rough Terrain Forklifts	2019	26	50	1.200779	1.009	4.67405	4.55745	0.0054	0.3277	0.3015	537.3287	0.17
Rough Terrain Forklifts	2019	51	120	0.240277	0.2019	3.25848	2.6222	0.0049	0.1168	0.1075	483.3105	0.1529
Rough Terrain Forklifts	2019	121	175	0.177689	0.1493	2.84092	2.05752	0.0049	0.0753	0.0693	482.1188	0.1525
Rough Terrain Forklifts	2019	176	250	0.130153	0.1094	0.97423	1.63905	0.0049	0.0364	0.0335	483.0882	0.1528
Rough Terrain Forklifts	2019	251	500	0.138302	0.1162	0.95034	1.96109	0.0048	0.0429	0.0395	477.2539	0.151
Rough Terrain Forklifts	2020	26	50	1.188595	0.9987	4.68594	4.4946	0.0054	0.3164	0.2911	525.6222	0.17
Rough Terrain Forklifts	2020	51	120	0.225188	0.1892	3.25575	2.45218	0.0049	0.1026	0.0944	472.9842	0.153
Rough Terrain Forklifts	2020	121	175	0.170092	0.1429	2.84466	1.86888	0.0049	0.0684	0.0629	471.7152	0.1526
Rough Terrain Forklifts	2020	176	250	0.132727	0.1115	0.97848	1.60906	0.0049	0.0366	0.0337	472.5671	0.1528
Rough Terrain Forklifts	2020	251	500	0.105484	0.0886	0.94184	1.30199	0.0048	0.0281	0.0258	465.7709	0.1506
Rough Terrain Forklifts	2021	26	50	1.152538	0.9685	4.65658	4.41145	0.0054	0.3038	0.2795	525.3844	0.1699
Rough Terrain Forklifts	2021	51	120	0.207836	0.1746	3.25191	2.28534	0.0049	0.0885	0.0815	473.11	0.153
Rough Terrain Forklifts	2021	121	175	0.154972	0.1302	2.8447	1.61661	0.0049	0.0596	0.0548	471.7575	0.1526
Rough Terrain Forklifts	2021	176	250	0.136824	0.115	0.98379	1.61186	0.0049	0.0368	0.0339	472.5469	0.1528
Rough Terrain Forklifts	2021	251	500	0.109168	0.0917	0.94604	1.30199	0.0048	0.0282	0.026	465.7442	0.1506
Rough Terrain Forklifts	2022	26	50	0.93878	0.7888	4.3038	4.04131	0.0054	0.2375	0.2185	525.0151	0.1698
Rough Terrain Forklifts	2022	51	120	0.18871	0.1586	3.24374	2.0983	0.0049	0.0732	0.0673	473.089	0.153
Rough Terrain Forklifts	2022	121	175	0.142314	0.1196	2.84439	1.40475	0.0049	0.0512	0.0471	471.6773	0.1525
Rough Terrain Forklifts	2022	176	250	0.140994	0.1185	0.98924	1.61688	0.0049	0.0371	0.0342	472.5408	0.1528
Rough Terrain Forklifts	2022	251	500	0.081218	0.0682	0.93709	0.55798	0.0048	0.0089	0.0082	466.5598	0.1509
Rough Terrain Forklifts	2023	26	50	0.82158	0.6904	4.12519	3.85338	0.0054	0.2036	0.1873	524.8024	0.1697
Rough Terrain Forklifts	2023	51	120	0.178416	0.1499	3.24217	1.9836	0.0049	0.0637	0.0586	473.1584	0.153
Rough Terrain Forklifts	2023	121	175	0.132417	0.1113	2.84289	1.21796	0.0049	0.0435	0.04	471.6217	0.1525
Rough Terrain Forklifts	2023	176	250	0.137509	0.1155	0.98987	1.47399	0.0049	0.0344	0.0317	472.7784	0.1529
Rough Terrain Forklifts	2023	251	500	0.082146	0.069	0.93788	0.55845	0.0048	0.0089	0.0082	466.554	0.1509
Rough Terrain Forklifts	2024	26	50	0.678189	0.5699	3.91822	3.65343	0.0054	0.1655	0.1523	524.9235	0.1698
Rough Terrain Forklifts	2024	51	120	0.172725	0.1451	3.24468	1.91392	0.0049	0.0583	0.0536	473.0631	0.153
Rough Terrain Forklifts	2024	121	175	0.122467	0.1029	2.83416	1.04413	0.0049	0.0386	0.0355	471.5346	0.1525
Rough Terrain Forklifts	2024	176	250	0.141528	0.1189	0.99524	1.48012	0.0049	0.0348	0.0321	472.8527	0.1529
Rough Terrain Forklifts	2024	251	500	0.078846	0.0663	0.93746	0.47582	0.0048	0.0089	0.0082	466.5479	0.1509
Rough Terrain Forklifts	2025	26	50	0.542352	0.4557	3.74002	3.47668	0.0054	0.1279	0.1177	525.027	0.1698
Rough Terrain Forklifts	2025	51	120	0.16354	0.1374	3.23971	1.82053	0.0049	0.0511	0.047	473.0366	0.153
Rough Terrain Forklifts	2025	121	175	0.103861	0.0873	2.82091	0.78628	0.0049	0.0299	0.0275	471.4745	0.1525
Rough Terrain Forklifts	2025	176	250	0.145736	0.1225	1.00073	1.48888	0.0049	0.0354	0.0326	472.9267	0.153
Rough Terrain Forklifts	2025	251	500	0.081817	0.0687	0.94151	0.47663	0.0048	0.009	0.0083	466.5414	0.1509
Rough Terrain Forklifts	2030	26	50	1.404	0.548	5.031	3.359	0.007	0.039	0.039	568.299	0.049
Rough Terrain Forklifts	2030	51	120	1.321	0.279	3.725	1.671	0.006	0.034	0.034	568.299	0.025
Rough Terrain Forklifts	2030	121	175	1.898	0.2	3.291	0.537	0.006	0.023	0.023	568.299	0.018
Rough Terrain Forklifts	2030	176	250	2.47	0.191	1.121	0.463	0.006	0.016	0.016	568.299	0.017
Rough Terrain Forklifts	2030	251	500	3.702	0.19	1.07	0.443	0.005	0.016	0.016	568.3	0.017
Rough Terrain Forklifts	2035	26	50	1.335	0.521	5.011	3.267	0.007	0.022	0.022	568.299	0.047
Rough Terrain Forklifts	2035	51	120	1.24	0.262	3.722	1.53	0.006	0.02	0.02	568.299	0.023
Rough Terrain Forklifts	2035	121	175	1.742	0.184	3.292	0.364	0.006	0.015	0.015	568.299	0.016
Rough Terrain Forklifts	2035	176	250	2.346	0.181	1.121	0.334	0.006	0.012	0.012	568.299	0.016
Rough Terrain Forklifts	2035	251	500	3.524	0.181	1.071	0.331	0.005	0.012	0.012	568.3	0.016
Rough Terrain Forklifts	2040	26	50	1.331	0.519	5.01	3.228	0.007	0.017	0.017	568.3	0.046
Rough Terrain Forklifts	2040	51	120	1.222	0.258	3.722	1.485	0.006	0.016	0.016	568.299	0.023
Rough Terrain Forklifts	2040	121	175	1.687	0.178	3.292	0.303	0.006	0.012	0.012	568.3	0.016
Rough Terrain Forklifts	2040	176	250	2.296	0.177	1.121	0.292	0.006	0.011	0.011	568.299	0.016
Rough Terrain Forklifts	2040	251	500	3.449	0.177	1.071	0.292	0.005	0.011	0.011	568.299	0.016
Rubber Tired Dozers	1990	121	175	6.172	1.886	5.29	14.831	0.758	1.059	1.059	568.299	0.17
Rubber Tired Dozers	1990	176	250	8.746	1.886	5.29	14.831	0.758	1.059	1.059	568.299	0.17
Rubber Tired Dozers	1990	251	500	11.084	1.655	12.26	13.986	0.662	0.899	0.899	568.299	0.149
Rubber Tired Dozers	1990	501	750	16.688	1.655	12.26	13.986	1.018	0.915	0.915	568.3	0.149
Rubber Tired Dozers	1990	751	1000	24.619	1.645	12.26	13.986	1.018	0.903	0.903	568.299	0.148
Rubber Tired Dozers	2000	121	175	4.761	1.454	4.295	10.881	0.057	0.624	0.624	568.299	0.131
Rubber Tired Dozers	2000	176	250	6.043	1.303	3.733	10.625	0.057	0.548	0.548	568.299	0.117

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Rubber Tired Dozers	2000	251	500	7.775	1.161	6.982	10.023	0.05	0.474	0.474	568.299	0.104
Rubber Tired Dozers	2000	501	750	11.706	1.161	6.982	10.023	0.052	0.474	0.474	568.3	0.104
Rubber Tired Dozers	2000	751	1000	17.842	1.192	7.415	10.456	0.052	0.451	0.451	568.3	0.107
Rubber Tired Dozers	2005	121	175	4.21	1.286	4.026	9.666	0.057	0.567	0.567	568.299	0.116
Rubber Tired Dozers	2005	176	250	4.912	1.059	2.99	9.344	0.057	0.437	0.437	568.299	0.095
Rubber Tired Dozers	2005	251	500	6.277	0.937	5.159	8.574	0.05	0.38	0.38	568.299	0.084
Rubber Tired Dozers	2005	501	750	9.496	0.942	5.15	8.694	0.052	0.382	0.382	568.299	0.085
Rubber Tired Dozers	2005	751	1000	14.937	0.998	5.524	9.444	0.052	0.369	0.369	568.299	0.09
Rubber Tired Dozers	2010	121	175	1.12265	0.9433	4.17063	9.78349	0.0049	0.555	0.5106	526.3128	0.1532
Rubber Tired Dozers	2010	176	250	0.840919	0.7066	2.68761	8.22344	0.0049	0.3937	0.3622	527.9126	0.1537
Rubber Tired Dozers	2010	251	500	0.88356	0.7424	6.7191	8.70703	0.0049	0.4064	0.3739	533.1476	0.1552
Rubber Tired Dozers	2010	501	750	0.619996	0.521	3.1214	7.42352	0.0049	0.2693	0.2477	525.7054	0.153
Rubber Tired Dozers	2010	751	1000	12.178	0.814	4.027	8.149	0.005	0.29	0.29	568.299	0.073
Rubber Tired Dozers	2011	121	175	1.128595	0.9483	4.18594	9.7992	0.0049	0.5574	0.5128	524.9639	0.1532
Rubber Tired Dozers	2011	176	250	0.852039	0.7159	2.69892	8.24976	0.0049	0.3959	0.3643	526.5967	0.1537
Rubber Tired Dozers	2011	251	500	0.878525	0.7382	6.65601	8.60406	0.0049	0.4017	0.3695	532.0871	0.1553
Rubber Tired Dozers	2011	501	750	0.62921	0.5287	3.13084	7.4622	0.0049	0.2721	0.2504	524.3841	0.153
Rubber Tired Dozers	2011	751	1000	11.693	0.781	3.772	7.805	0.005	0.276	0.276	568.299	0.07
Rubber Tired Dozers	2012	121	175	1.133798	0.9527	4.1998	9.81194	0.0049	0.5593	0.5146	523.6318	0.1532
Rubber Tired Dozers	2012	176	250	0.862577	0.7248	2.70943	8.27234	0.0049	0.398	0.3662	525.281	0.1537
Rubber Tired Dozers	2012	251	500	0.883165	0.7421	6.62489	8.58436	0.0049	0.4015	0.3694	530.6589	0.1552
Rubber Tired Dozers	2012	501	750	0.635938	0.5344	3.13648	7.48052	0.0049	0.2737	0.2518	523.0626	0.153
Rubber Tired Dozers	2012	751	1000	11.228	0.75	3.531	7.474	0.005	0.262	0.262	568.299	0.067
Rubber Tired Dozers	2013	121	175	1.138698	0.9568	4.21297	9.82334	0.0049	0.5611	0.5162	520.9836	0.1532
Rubber Tired Dozers	2013	176	250	0.859983	0.7226	2.71092	8.10695	0.0049	0.395	0.3634	522.6456	0.1537
Rubber Tired Dozers	2013	251	500	0.864011	0.726	6.42295	8.33658	0.0049	0.3898	0.3586	527.9093	0.1552
Rubber Tired Dozers	2013	501	750	0.641687	0.5392	3.14069	7.49129	0.0049	0.2747	0.2528	520.4266	0.153
Rubber Tired Dozers	2013	751	1000	10.78	0.72	3.306	7.155	0.005	0.249	0.249	568.299	0.065
Rubber Tired Dozers	2014	121	175	1.143391	0.9608	4.22564	9.83401	0.0049	0.5627	0.5177	518.335	0.1532
Rubber Tired Dozers	2014	176	250	0.858402	0.7213	2.71199	7.97218	0.0049	0.3925	0.3611	520.0105	0.1537
Rubber Tired Dozers	2014	251	500	0.841688	0.7073	6.16471	8.05819	0.0049	0.3757	0.3457	524.6758	0.155
Rubber Tired Dozers	2014	501	750	0.610646	0.5131	2.75605	7.14705	0.0049	0.2576	0.237	517.7903	0.153
Rubber Tired Dozers	2014	751	1000	10.347	0.691	3.096	6.849	0.005	0.236	0.236	568.3	0.062
Rubber Tired Dozers	2015	121	175	1.147937	0.9646	4.23794	9.84425	0.0049	0.5643	0.5192	513.0549	0.1532
Rubber Tired Dozers	2015	176	250	0.866859	0.7284	2.7204	7.9837	0.0049	0.3939	0.3624	514.7359	0.1537
Rubber Tired Dozers	2015	251	500	0.842228	0.7077	6.10151	7.99736	0.0049	0.3731	0.3433	519.1472	0.155
Rubber Tired Dozers	2015	501	750	0.616719	0.5182	2.76062	7.15777	0.0049	0.2587	0.238	512.5253	0.153
Rubber Tired Dozers	2015	751	1000	9.895	0.661	2.901	6.556	0.005	0.222	0.222	568.299	0.059
Rubber Tired Dozers	2016	121	175	1.152013	0.968	4.24901	9.85328	0.0049	0.5657	0.5205	507.7744	0.1532
Rubber Tired Dozers	2016	176	250	0.875531	0.7357	2.72943	7.99508	0.0049	0.3953	0.3637	509.4615	0.1537
Rubber Tired Dozers	2016	251	500	0.819146	0.6883	5.82829	7.71034	0.0049	0.3588	0.3301	513.3109	0.1548
Rubber Tired Dozers	2016	501	750	0.622662	0.5232	2.7651	7.16821	0.0049	0.2597	0.2389	507.2601	0.153
Rubber Tired Dozers	2016	751	1000	9.45	0.631	2.723	6.277	0.005	0.208	0.208	568.3	0.057
Rubber Tired Dozers	2017	121	175	1.074198	0.9026	4.14895	9.12915	0.0049	0.5248	0.4828	499.4096	0.153
Rubber Tired Dozers	2017	176	250	0.840865	0.7066	2.65514	7.67081	0.0049	0.3755	0.3454	501.5475	0.1537
Rubber Tired Dozers	2017	251	500	0.787455	0.6617	5.52569	7.33345	0.0049	0.3407	0.3134	505.8493	0.155
Rubber Tired Dozers	2017	501	750	0.625767	0.5258	2.76746	7.17226	0.0049	0.2601	0.2393	499.3665	0.153
Rubber Tired Dozers	2017	751	1000	9.018	0.602	2.56	6.013	0.005	0.195	0.195	568.299	0.054
Rubber Tired Dozers	2018	121	175	0.954751	0.8023	3.98965	8.02079	0.0049	0.4605	0.4236	491.4921	0.153
Rubber Tired Dozers	2018	176	250	0.796398	0.6692	2.51156	7.20787	0.0049	0.3504	0.3224	493.6337	0.1537
Rubber Tired Dozers	2018	251	500	0.71175	0.5981	4.98205	6.50184	0.0049	0.3002	0.2762	498.1862	0.1551
Rubber Tired Dozers	2018	501	750	0.602699	0.5064	2.75902	6.72652	0.0049	0.248	0.2282	491.4726	0.153
Rubber Tired Dozers	2018	751	1000	8.6	0.574	2.413	5.764	0.005	0.183	0.183	568.299	0.051
Rubber Tired Dozers	2019	121	175	0.90312	0.7589	3.94854	7.52037	0.0049	0.4326	0.398	483.5585	0.153
Rubber Tired Dozers	2019	176	250	0.774882	0.6511	2.45855	6.92923	0.0049	0.3379	0.3108	485.172	0.1535
Rubber Tired Dozers	2019	251	500	0.680848	0.5721	4.74309	6.14335	0.0049	0.2828	0.2602	490.383	0.1552
Rubber Tired Dozers	2019	501	750	0.541107	0.4547	2.59814	6.12249	0.0049	0.2181	0.2007	483.5786	0.153
Rubber Tired Dozers	2019	751	1000	8.196	0.547	2.281	5.528	0.005	0.171	0.171	568.299	0.049
Rubber Tired Dozers	2020	121	175	0.864425	0.7264	3.89288	7.18525	0.0049	0.4107	0.3778	473.0116	0.153
Rubber Tired Dozers	2020	176	250	0.737248	0.6195	2.37104	6.50332	0.0049	0.3185	0.293	474.7928	0.1536
Rubber Tired Dozers	2020	251	500	0.636621	0.5349	4.41134	5.64089	0.0049	0.2591	0.2384	479.7569	0.1552
Rubber Tired Dozers	2020	501	750	0.543245	0.4565	2.60108	6.12255	0.0049	0.2181	0.2007	473.0562	0.153
Rubber Tired Dozers	2020	751	1000	7.811	0.522	2.164	5.306	0.005	0.16	0.16	568.299	0.047
Rubber Tired Dozers	2021	121	175	0.822557	0.6912	3.84814	6.79037	0.0049	0.3864	0.3555	472.9751	0.153
Rubber Tired Dozers	2021	176	250	0.714624	0.6005	2.31719	6.29617	0.0049	0.3056	0.2811	474.7984	0.1536
Rubber Tired Dozers	2021	251	500	0.585817	0.4922	4.04107	5.081	0.0049	0.2321	0.2135	478.9868	0.1549
Rubber Tired Dozers	2021	501	750	0.545338	0.4582	2.60396	6.12254	0.0049	0.2182	0.2007	473.0459	0.153
Rubber Tired Dozers	2021	751	1000	7.448	0.497	2.057	5.095	0.005	0.15	0.15	568.299	0.044
Rubber Tired Dozers	2022	121	175	0.714312	0.6002	3.75194	5.80781	0.0049	0.3264	0.3003	473.9122	0.1533
Rubber Tired Dozers	2022	176	250	0.571708	0.4804	2.05563	5.04648	0.0049	0.2395	0.2204	474.6166	0.1535
Rubber Tired Dozers	2022	251	500	0.565033	0.4748	3.89489	4.80775	0.0049	0.2199	0.2023	479.3107	0.155
Rubber Tired Dozers	2022	501	750	0.547387	0.46	2.60677	6.12245	0.0049	0.2182	0.2008	473.035	0.153
Rubber Tired Dozers	2022	751	1000	7.106	0.475	1.961	4.896	0.005	0.14	0.14	568.299	0.042

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Rubber Tired Dozers	2023	121	175	0.700073	0.5883	3.7664	5.65638	0.0049	0.3158	0.2906	473.9009	0.1533
Rubber Tired Dozers	2023	176	250	0.467601	0.3929	1.78266	4.09011	0.0049	0.1842	0.1694	474.5967	0.1535
Rubber Tired Dozers	2023	251	500	0.531484	0.4466	3.68617	4.40835	0.0049	0.2015	0.1854	479.4678	0.1551
Rubber Tired Dozers	2023	501	750	0.502999	0.4227	2.59131	5.33389	0.0049	0.196	0.1803	473.0234	0.153
Rubber Tired Dozers	2023	751	1000	6.786	0.453	1.874	4.709	0.005	0.131	0.131	568.299	0.04
Rubber Tired Dozers	2024	121	175	0.633623	0.5324	3.69636	5.0144	0.0049	0.2794	0.2571	473.5147	0.1531
Rubber Tired Dozers	2024	176	250	0.474702	0.3989	1.79685	4.0904	0.0049	0.1843	0.1696	474.5854	0.1535
Rubber Tired Dozers	2024	251	500	0.495724	0.4165	3.45746	4.03046	0.0049	0.1823	0.1677	479.3938	0.155
Rubber Tired Dozers	2024	501	750	0.506146	0.4253	2.59604	5.33372	0.0049	0.1961	0.1804	473.0111	0.153
Rubber Tired Dozers	2024	751	1000	6.485	0.433	1.796	4.532	0.005	0.123	0.123	568.299	0.039
Rubber Tired Dozers	2025	121	175	0.548636	0.461	3.61238	4.22886	0.0049	0.2305	0.212	474.1029	0.1533
Rubber Tired Dozers	2025	176	250	0.442605	0.3719	1.72032	3.80547	0.0049	0.1665	0.1532	474.5734	0.1535
Rubber Tired Dozers	2025	251	500	0.436562	0.3668	2.95895	3.36957	0.0049	0.1506	0.1386	479.0915	0.1549
Rubber Tired Dozers	2025	501	750	0.509225	0.4279	2.60066	5.33346	0.0049	0.1962	0.1805	472.9981	0.153
Rubber Tired Dozers	2025	751	1000	6.203	0.414	1.725	4.365	0.005	0.115	0.115	568.299	0.037
Rubber Tired Dozers	2030	121	175	1.303	0.398	3.496	2.034	0.006	0.111	0.111	568.299	0.035
Rubber Tired Dozers	2030	176	250	1.556	0.335	1.322	1.828	0.006	0.069	0.069	568.299	0.03
Rubber Tired Dozers	2030	251	500	2.16	0.322	1.401	1.658	0.005	0.064	0.064	568.299	0.029
Rubber Tired Dozers	2030	501	750	3.261	0.323	1.401	1.694	0.005	0.064	0.064	568.299	0.029
Rubber Tired Dozers	2030	751	1000	5.063	0.338	1.465	3.676	0.005	0.082	0.082	568.299	0.03
Rubber Tired Dozers	2035	121	175	1.054	0.322	3.481	1.345	0.006	0.071	0.071	568.299	0.029
Rubber Tired Dozers	2035	176	250	1.326	0.286	1.262	1.203	0.006	0.046	0.046	568.299	0.025
Rubber Tired Dozers	2035	251	500	1.868	0.279	1.279	1.107	0.005	0.043	0.043	568.3	0.025
Rubber Tired Dozers	2035	501	750	2.816	0.279	1.279	1.126	0.005	0.043	0.043	568.299	0.025
Rubber Tired Dozers	2035	751	1000	4.306	0.287	1.312	3.204	0.005	0.06	0.06	568.299	0.025
Rubber Tired Dozers	2040	121	175	0.9	0.275	3.47	0.903	0.006	0.045	0.045	568.299	0.024
Rubber Tired Dozers	2040	176	250	1.176	0.253	1.225	0.81	0.006	0.031	0.031	568.299	0.022
Rubber Tired Dozers	2040	251	500	1.672	0.249	1.198	0.758	0.005	0.029	0.029	568.299	0.022
Rubber Tired Dozers	2040	501	750	2.519	0.25	1.198	0.767	0.005	0.029	0.029	568.3	0.022
Rubber Tired Dozers	2040	751	1000	3.814	0.254	1.218	2.91	0.005	0.045	0.045	568.3	0.023
Rubber Tired Loaders	1990	16	25	5.92	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Rubber Tired Loaders	1990	26	50	23.869	4.848	9.805	7.964	0.871	1.279	1.279	568.299	0.437
Rubber Tired Loaders	1990	51	120	22.055	2.368	5.728	14.978	0.791	1.345	1.345	568.299	0.213
Rubber Tired Loaders	1990	121	175	30.1	1.791	5.094	14.294	0.758	0.995	0.995	568.299	0.161
Rubber Tired Loaders	1990	176	250	42.179	1.791	5.094	14.294	0.758	0.995	0.995	568.3	0.161
Rubber Tired Loaders	1990	251	500	59.295	1.583	11.282	13.545	0.662	0.851	0.851	568.3	0.142
Rubber Tired Loaders	1990	501	750	121.471	1.583	11.282	13.545	1.018	0.867	0.867	568.299	0.142
Rubber Tired Loaders	1990	751	1000	147.851	1.575	11.282	13.545	1.018	0.858	0.858	568.299	0.142
Rubber Tired Loaders	2000	16	25	5.105	1.908	4.438	6.326	0.065	0.555	0.555	568.299	0.172
Rubber Tired Loaders	2000	26	50	21.853	4.439	9.15	7.065	0.066	0.928	0.928	568.299	0.4
Rubber Tired Loaders	2000	51	120	17.155	1.842	4.652	10.433	0.06	0.896	0.896	568.299	0.166
Rubber Tired Loaders	2000	121	175	20.951	1.246	3.765	9.552	0.057	0.526	0.526	568.299	0.112
Rubber Tired Loaders	2000	176	250	24.776	1.052	3.019	9.216	0.057	0.433	0.433	568.299	0.094
Rubber Tired Loaders	2000	251	500	35.779	0.955	4.797	8.766	0.05	0.381	0.381	568.299	0.086
Rubber Tired Loaders	2000	501	750	73.296	0.955	4.797	8.766	0.052	0.381	0.381	568.299	0.086
Rubber Tired Loaders	2000	751	1000	95.549	1.018	5.369	9.342	0.052	0.372	0.372	568.299	0.091
Rubber Tired Loaders	2005	16	25	2.273	0.849	2.519	5.321	0.065	0.333	0.333	568.299	0.076
Rubber Tired Loaders	2005	26	50	19.43	3.947	8.471	6.59	0.066	0.86	0.86	568.299	0.356
Rubber Tired Loaders	2005	51	120	14.973	1.608	4.379	8.954	0.06	0.841	0.841	568.3	0.145
Rubber Tired Loaders	2005	121	175	17.677	1.052	3.496	8.183	0.057	0.464	0.464	568.299	0.094
Rubber Tired Loaders	2005	176	250	18.23	0.774	2.143	7.781	0.057	0.31	0.31	568.3	0.069
Rubber Tired Loaders	2005	251	500	25.602	0.683	2.836	7.066	0.05	0.275	0.275	568.3	0.061
Rubber Tired Loaders	2005	501	750	53.332	0.695	2.831	7.236	0.052	0.278	0.278	568.299	0.062
Rubber Tired Loaders	2005	751	1000	74.257	0.791	3.279	8.232	0.052	0.275	0.275	568.299	0.071
Rubber Tired Loaders	2010	16	25	2.807425	2.359	7.88269	6.29919	0.0054	0.7339	0.6752	581.9969	0.1694
Rubber Tired Loaders	2010	26	50	2.807425	2.359	7.88269	6.29919	0.0054	0.7339	0.6752	581.9969	0.1694
Rubber Tired Loaders	2010	51	120	1.132276	0.9514	4.28386	7.85298	0.0048	0.6803	0.6259	519.5038	0.1512
Rubber Tired Loaders	2010	121	175	0.772004	0.6487	3.56499	7.01127	0.0049	0.3871	0.3562	523.9006	0.1525
Rubber Tired Loaders	2010	176	250	0.475737	0.3998	1.50852	5.94632	0.0049	0.1986	0.1828	522.3501	0.152
Rubber Tired Loaders	2010	251	500	0.495122	0.416	2.61599	5.66307	0.0048	0.2107	0.1939	521.885	0.1519
Rubber Tired Loaders	2010	501	750	0.454547	0.3819	2.10254	5.06362	0.0047	0.197	0.1812	507.2864	0.1477
Rubber Tired Loaders	2010	751	1000	0.464861	0.3906	1.45926	6.63966	0.0049	0.1871	0.1721	523.2526	0.1523
Rubber Tired Loaders	2011	16	25	2.679774	2.2518	7.77095	6.24779	0.0054	0.7107	0.6538	581.4262	0.1697
Rubber Tired Loaders	2011	26	50	2.679774	2.2518	7.77095	6.24779	0.0054	0.7107	0.6538	581.4262	0.1697
Rubber Tired Loaders	2011	51	120	1.113092	0.9353	4.28739	7.68957	0.0048	0.6714	0.6177	517.9363	0.1511
Rubber Tired Loaders	2011	121	175	0.757164	0.6362	3.57219	6.81375	0.0049	0.3781	0.3479	522.5315	0.1525
Rubber Tired Loaders	2011	176	250	0.481296	0.4044	1.50155	5.87694	0.0049	0.1972	0.1814	520.9732	0.152
Rubber Tired Loaders	2011	251	500	0.501144	0.4211	2.56846	5.5868	0.0048	0.2089	0.1922	520.154	0.1518
Rubber Tired Loaders	2011	501	750	0.472712	0.3972	2.12943	5.09397	0.0047	0.2004	0.1843	505.881	0.1476
Rubber Tired Loaders	2011	751	1000	0.476526	0.4004	1.47057	6.69396	0.0049	0.191	0.1757	521.9232	0.1523
Rubber Tired Loaders	2012	16	25	2.730745	2.2946	7.96233	6.30427	0.0054	0.7236	0.6657	579.9785	0.1697
Rubber Tired Loaders	2012	26	50	2.730745	2.2946	7.96233	6.30427	0.0054	0.7236	0.6657	579.9785	0.1697
Rubber Tired Loaders	2012	51	120	1.113822	0.9359	4.31845	7.65616	0.0048	0.6708	0.6171	516.6239	0.1511

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Rubber Tired Loaders	2012	121	175	0.765409	0.6432	3.60616	6.79567	0.0049	0.3796	0.3492	521.0995	0.1524
Rubber Tired Loaders	2012	176	250	0.492248	0.4136	1.51119	5.85805	0.0049	0.198	0.1822	519.646	0.152
Rubber Tired Loaders	2012	251	500	0.515336	0.433	2.59983	5.58714	0.0048	0.2109	0.194	518.7236	0.1517
Rubber Tired Loaders	2012	501	750	0.485752	0.4082	2.14848	5.07921	0.0047	0.2013	0.1852	504.6824	0.1476
Rubber Tired Loaders	2012	751	1000	0.48616	0.4085	1.47877	6.73245	0.0049	0.1939	0.1784	520.592	0.1523
Rubber Tired Loaders	2013	16	25	2.60616	2.1899	7.83573	6.18494	0.0054	0.6952	0.6396	577.0156	0.1697
Rubber Tired Loaders	2013	26	50	2.60616	2.1899	7.83573	6.18494	0.0054	0.6952	0.6396	577.0156	0.1697
Rubber Tired Loaders	2013	51	120	1.087575	0.9139	4.31523	7.47698	0.0048	0.6539	0.6016	513.9368	0.1511
Rubber Tired Loaders	2013	121	175	0.750707	0.6308	3.60722	6.6063	0.0049	0.3686	0.3391	518.3787	0.1524
Rubber Tired Loaders	2013	176	250	0.496511	0.4172	1.5142	5.75293	0.0048	0.1963	0.1806	516.9736	0.152
Rubber Tired Loaders	2013	251	500	0.517428	0.4348	2.55447	5.4738	0.0048	0.2077	0.1911	515.9429	0.1517
Rubber Tired Loaders	2013	501	750	0.49047	0.4121	2.0823	4.99146	0.0047	0.1986	0.1827	502.8589	0.1478
Rubber Tired Loaders	2013	751	1000	0.484243	0.4069	1.45163	6.66719	0.0049	0.193	0.1775	517.9506	0.1523
Rubber Tired Loaders	2014	16	25	2.51646	2.1145	7.7699	6.10324	0.0054	0.6758	0.6217	573.5218	0.1695
Rubber Tired Loaders	2014	26	50	2.51646	2.1145	7.7699	6.10324	0.0054	0.6758	0.6217	573.5218	0.1695
Rubber Tired Loaders	2014	51	120	1.032758	0.8678	4.26762	7.12932	0.0048	0.6189	0.5694	510.0099	0.1507
Rubber Tired Loaders	2014	121	175	0.720145	0.6051	3.58536	6.27196	0.0049	0.3503	0.3223	515.7685	0.1524
Rubber Tired Loaders	2014	176	250	0.483874	0.4066	1.48551	5.49539	0.0048	0.1868	0.1719	514.2167	0.152
Rubber Tired Loaders	2014	251	500	0.501158	0.4211	2.40656	5.19438	0.0048	0.1957	0.1801	512.5095	0.1515
Rubber Tired Loaders	2014	501	750	0.483251	0.4061	1.94616	4.81047	0.0047	0.1901	0.1749	499.6952	0.1477
Rubber Tired Loaders	2014	751	1000	0.492279	0.4137	1.45724	6.69249	0.0049	0.195	0.1794	515.307	0.1523
Rubber Tired Loaders	2015	16	25	2.508512	2.1078	7.83443	6.11232	0.0054	0.6746	0.6206	567.672	0.1695
Rubber Tired Loaders	2015	26	50	2.508512	2.1078	7.83443	6.11232	0.0054	0.6746	0.6206	567.672	0.1695
Rubber Tired Loaders	2015	51	120	1.018295	0.8557	4.27362	7.01153	0.0048	0.6061	0.5576	505.0231	0.1508
Rubber Tired Loaders	2015	121	175	0.708161	0.5951	3.58815	6.09735	0.0049	0.3407	0.3134	510.4677	0.1524
Rubber Tired Loaders	2015	176	250	0.482642	0.4056	1.47986	5.36927	0.0048	0.1833	0.1686	508.9127	0.1519
Rubber Tired Loaders	2015	251	500	0.494223	0.4153	2.33208	5.0195	0.0048	0.1895	0.1744	506.3723	0.1512
Rubber Tired Loaders	2015	501	750	0.469822	0.3948	1.78908	4.55578	0.0047	0.1791	0.1648	495.31	0.1479
Rubber Tired Loaders	2015	751	1000	0.499538	0.4198	1.46167	6.71262	0.0049	0.1967	0.181	510.0449	0.1523
Rubber Tired Loaders	2016	16	25	2.445921	2.0553	7.79111	6.05258	0.0054	0.6597	0.6069	561.9032	0.1695
Rubber Tired Loaders	2016	26	50	2.445921	2.0553	7.79111	6.05258	0.0054	0.6597	0.6069	561.9032	0.1695
Rubber Tired Loaders	2016	51	120	0.955142	0.8026	4.21236	6.58334	0.0048	0.5651	0.5199	499.5935	0.1507
Rubber Tired Loaders	2016	121	175	0.67267	0.5652	3.56236	5.72558	0.0049	0.3193	0.2938	505.1308	0.1524
Rubber Tired Loaders	2016	176	250	0.468005	0.3933	1.45212	5.1151	0.0048	0.1745	0.1605	503.6542	0.1519
Rubber Tired Loaders	2016	251	500	0.465473	0.3911	2.15506	4.62743	0.0048	0.1738	0.1599	500.4314	0.1509
Rubber Tired Loaders	2016	501	750	0.443728	0.3729	1.70263	4.17165	0.0047	0.164	0.1509	491.9183	0.1484
Rubber Tired Loaders	2016	751	1000	0.505153	0.4245	1.46404	6.72411	0.0049	0.1978	0.182	504.7801	0.1523
Rubber Tired Loaders	2017	16	25	2.32856	1.9566	7.65953	5.95377	0.0054	0.6328	0.5822	553.5831	0.1696
Rubber Tired Loaders	2017	26	50	2.32856	1.9566	7.65953	5.95377	0.0054	0.6328	0.5822	553.5831	0.1696
Rubber Tired Loaders	2017	51	120	0.900842	0.757	4.17083	6.23569	0.0048	0.5296	0.4872	491.8531	0.1507
Rubber Tired Loaders	2017	121	175	0.620654	0.5215	3.5175	5.19525	0.0049	0.2895	0.2663	497.3533	0.1524
Rubber Tired Loaders	2017	176	250	0.443532	0.3727	1.4172	4.75473	0.0048	0.162	0.149	495.9499	0.152
Rubber Tired Loaders	2017	251	500	0.439436	0.3692	2.06046	4.25314	0.0048	0.1603	0.1475	492.2764	0.1508
Rubber Tired Loaders	2017	501	750	0.436922	0.3671	1.70044	4.05049	0.0047	0.1599	0.1471	484.3661	0.1484
Rubber Tired Loaders	2017	751	1000	0.493245	0.4145	1.45641	6.55319	0.0049	0.1918	0.1765	496.8966	0.1522
Rubber Tired Loaders	2018	16	25	2.100538	1.765	7.29915	5.67925	0.0054	0.5758	0.5297	545.0529	0.1697
Rubber Tired Loaders	2018	26	50	2.100538	1.765	7.29915	5.67925	0.0054	0.5758	0.5297	545.0529	0.1697
Rubber Tired Loaders	2018	51	120	0.779856	0.6553	4.04742	5.47032	0.0048	0.4518	0.4156	484.0931	0.1507
Rubber Tired Loaders	2018	121	175	0.533198	0.448	3.42332	4.36814	0.0049	0.2423	0.2229	489.5114	0.1524
Rubber Tired Loaders	2018	176	250	0.396861	0.3335	1.34644	4.13133	0.0048	0.1401	0.1289	487.9023	0.1519
Rubber Tired Loaders	2018	251	500	0.397312	0.3339	1.86807	3.72607	0.0048	0.1395	0.1283	484.5709	0.1509
Rubber Tired Loaders	2018	501	750	0.393495	0.3306	1.55549	3.5437	0.0047	0.14	0.1288	476.5663	0.1484
Rubber Tired Loaders	2018	751	1000	0.399711	0.3359	1.21289	5.67315	0.0049	0.1541	0.1418	488.4037	0.152
Rubber Tired Loaders	2019	16	25	1.906195	1.6017	6.97769	5.43193	0.0054	0.5176	0.4762	536.2254	0.1697
Rubber Tired Loaders	2019	26	50	1.906195	1.6017	6.97769	5.43193	0.0054	0.5176	0.4762	536.2254	0.1697
Rubber Tired Loaders	2019	51	120	0.707701	0.5947	3.97887	5.00611	0.0048	0.402	0.3698	475.8636	0.1506
Rubber Tired Loaders	2019	121	175	0.482139	0.4051	3.38084	3.85918	0.0049	0.2133	0.1962	481.7364	0.1524
Rubber Tired Loaders	2019	176	250	0.368194	0.3094	1.30248	3.74452	0.0048	0.1255	0.1155	480.0997	0.1519
Rubber Tired Loaders	2019	251	500	0.363843	0.3057	1.7248	3.28755	0.0048	0.1227	0.1129	477.0415	0.1509
Rubber Tired Loaders	2019	501	750	0.348958	0.2932	1.45157	3.01875	0.0048	0.1184	0.109	471.1874	0.1491
Rubber Tired Loaders	2019	751	1000	0.384887	0.3234	1.20834	5.45926	0.0049	0.1462	0.1345	480.523	0.152
Rubber Tired Loaders	2020	16	25	1.761913	1.4805	6.76793	5.25369	0.0054	0.4741	0.4362	524.6967	0.1697
Rubber Tired Loaders	2020	26	50	1.761913	1.4805	6.76793	5.25369	0.0054	0.4741	0.4362	524.6967	0.1697
Rubber Tired Loaders	2020	51	120	0.661113	0.5555	3.94839	4.68644	0.0048	0.367	0.3376	465.6735	0.1506
Rubber Tired Loaders	2020	121	175	0.450696	0.3787	3.36809	3.51735	0.0049	0.1936	0.1781	471.2135	0.1524
Rubber Tired Loaders	2020	176	250	0.345399	0.2902	1.26885	3.42116	0.0048	0.1136	0.1045	469.5127	0.1518
Rubber Tired Loaders	2020	251	500	0.343959	0.289	1.6304	3.01666	0.0048	0.1122	0.1032	466.7831	0.151
Rubber Tired Loaders	2020	501	750	0.329462	0.2768	1.39991	2.76722	0.0048	0.1075	0.0989	462.193	0.1495
Rubber Tired Loaders	2020	751	1000	0.370676	0.3115	1.20366	5.25309	0.0049	0.1385	0.1274	469.9352	0.152
Rubber Tired Loaders	2021	16	25	1.577419	1.3255	6.44855	4.97419	0.0054	0.4092	0.3765	524.5505	0.1697
Rubber Tired Loaders	2021	26	50	1.577419	1.3255	6.44855	4.97419	0.0054	0.4092	0.3765	524.5505	0.1697
Rubber Tired Loaders	2021	51	120	0.592559	0.4979	3.8917	4.21491	0.0048	0.3163	0.291	466.4213	0.1509
Rubber Tired Loaders	2021	121	175	0.411896	0.3461	3.35381	3.11886	0.0049	0.1706	0.1569	471.0804	0.1524

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Rubber Tired Loaders	2021	176	250	0.316703	0.2661	1.24034	2.9977	0.0048	0.1	0.092	469.5642	0.1519
Rubber Tired Loaders	2021	251	500	0.314488	0.2643	1.52922	2.61037	0.0048	0.0974	0.0896	467.9277	0.1513
Rubber Tired Loaders	2021	501	750	0.322962	0.2714	1.39703	2.64092	0.0048	0.1023	0.0942	462.0548	0.1494
Rubber Tired Loaders	2021	751	1000	0.350105	0.2942	1.2055	4.97489	0.0049	0.1279	0.1176	471.2577	0.1524
Rubber Tired Loaders	2022	16	25	1.402643	1.1786	6.20445	4.74817	0.0054	0.3543	0.326	524.7914	0.1697
Rubber Tired Loaders	2022	26	50	1.402643	1.1786	6.20445	4.74817	0.0054	0.3543	0.326	524.7914	0.1697
Rubber Tired Loaders	2022	51	120	0.523774	0.4401	3.83931	3.7684	0.0048	0.2665	0.2452	466.4936	0.1509
Rubber Tired Loaders	2022	121	175	0.350975	0.2949	3.30208	2.5181	0.0049	0.1358	0.1249	470.9274	0.1523
Rubber Tired Loaders	2022	176	250	0.269035	0.2261	1.188	2.34693	0.0049	0.0787	0.0724	469.9041	0.152
Rubber Tired Loaders	2022	251	500	0.281674	0.2367	1.441	2.17525	0.0048	0.0812	0.0747	468.1288	0.1514
Rubber Tired Loaders	2022	501	750	0.27713	0.2329	1.31524	2.0971	0.0048	0.08	0.0736	463.8194	0.15
Rubber Tired Loaders	2022	751	1000	0.229104	0.1925	1.16216	3.61655	0.0049	0.0745	0.0685	472.8577	0.1529
Rubber Tired Loaders	2023	16	25	1.248748	1.0493	5.97233	4.52113	0.0054	0.3036	0.2793	524.304	0.1696
Rubber Tired Loaders	2023	26	50	1.248748	1.0493	5.97233	4.52113	0.0054	0.3036	0.2793	524.304	0.1696
Rubber Tired Loaders	2023	51	120	0.490267	0.412	3.82678	3.51183	0.0048	0.2385	0.2194	466.5584	0.1509
Rubber Tired Loaders	2023	121	175	0.320411	0.2692	3.29198	2.19586	0.0049	0.1176	0.1082	470.6601	0.1522
Rubber Tired Loaders	2023	176	250	0.249759	0.2099	1.17136	2.05963	0.0049	0.069	0.0635	469.824	0.152
Rubber Tired Loaders	2023	251	500	0.258421	0.2171	1.38396	1.86629	0.0048	0.0694	0.0639	468.466	0.1515
Rubber Tired Loaders	2023	501	750	0.269537	0.2265	1.32307	1.92719	0.0048	0.0745	0.0685	464.5553	0.1502
Rubber Tired Loaders	2023	751	1000	0.229405	0.1928	1.17379	3.52792	0.0049	0.071	0.0653	472.3032	0.1528
Rubber Tired Loaders	2024	16	25	1.200513	1.0088	5.98698	4.46751	0.0054	0.2862	0.2633	524.2299	0.1695
Rubber Tired Loaders	2024	26	50	1.200513	1.0088	5.98698	4.46751	0.0054	0.2862	0.2633	524.2299	0.1695
Rubber Tired Loaders	2024	51	120	0.472864	0.3973	3.83209	3.33895	0.0048	0.2205	0.2028	466.8084	0.151
Rubber Tired Loaders	2024	121	175	0.292737	0.246	3.28823	1.88365	0.0049	0.1005	0.0924	470.3567	0.1521
Rubber Tired Loaders	2024	176	250	0.234511	0.1971	1.1607	1.80598	0.0049	0.0604	0.0556	469.7875	0.1519
Rubber Tired Loaders	2024	251	500	0.249195	0.2094	1.3518	1.70166	0.0048	0.0631	0.0581	468.5133	0.1515
Rubber Tired Loaders	2024	501	750	0.268468	0.2256	1.33327	1.88137	0.0048	0.0721	0.0663	464.8656	0.1503
Rubber Tired Loaders	2024	751	1000	0.238754	0.2006	1.19144	3.54358	0.0049	0.0714	0.0657	472.3454	0.1528
Rubber Tired Loaders	2025	16	25	1.142731	0.9602	5.9413	4.34846	0.0054	0.2586	0.2379	523.9076	0.1694
Rubber Tired Loaders	2025	26	50	1.142731	0.9602	5.9413	4.34846	0.0054	0.2586	0.2379	523.9076	0.1694
Rubber Tired Loaders	2025	51	120	0.418779	0.3519	3.79086	2.97026	0.0048	0.1789	0.1646	466.8982	0.151
Rubber Tired Loaders	2025	121	175	0.266202	0.2237	3.28059	1.59023	0.0049	0.084	0.0772	470.4594	0.1522
Rubber Tired Loaders	2025	176	250	0.211073	0.1774	1.1417	1.44207	0.0049	0.0484	0.0446	469.8711	0.152
Rubber Tired Loaders	2025	251	500	0.22979	0.1931	1.2763	1.43264	0.0048	0.0525	0.0483	469.1434	0.1517
Rubber Tired Loaders	2025	501	750	0.252566	0.2122	1.33262	1.65408	0.0048	0.064	0.0589	465.0523	0.1504
Rubber Tired Loaders	2025	751	1000	0.196905	0.1655	1.12172	3.08852	0.0049	0.052	0.0479	472.4559	0.1528
Rubber Tired Loaders	2030	16	25	1.834	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Rubber Tired Loaders	2030	26	50	3.121	0.634	5.181	3.5	0.007	0.062	0.062	568.3	0.057
Rubber Tired Loaders	2030	51	120	2.953	0.317	3.759	1.875	0.006	0.056	0.056	568.299	0.028
Rubber Tired Loaders	2030	121	175	3.898	0.232	3.312	0.787	0.006	0.036	0.036	568.299	0.02
Rubber Tired Loaders	2030	176	250	4.951	0.21	1.138	0.655	0.006	0.022	0.022	568.299	0.018
Rubber Tired Loaders	2030	251	500	7.812	0.208	1.085	0.619	0.005	0.021	0.021	568.299	0.018
Rubber Tired Loaders	2030	501	750	16.018	0.208	1.085	0.627	0.005	0.022	0.022	568.299	0.018
Rubber Tired Loaders	2030	751	1000	20.168	0.214	1.099	2.722	0.005	0.039	0.039	568.299	0.019
Rubber Tired Loaders	2035	16	25	1.834	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Rubber Tired Loaders	2035	26	50	2.833	0.575	5.126	3.337	0.007	0.035	0.035	568.299	0.051
Rubber Tired Loaders	2035	51	120	2.663	0.286	3.751	1.639	0.006	0.033	0.033	568.299	0.025
Rubber Tired Loaders	2035	121	175	3.376	0.2	3.312	0.481	0.006	0.022	0.022	568.299	0.018
Rubber Tired Loaders	2035	176	250	4.514	0.191	1.129	0.434	0.006	0.015	0.015	568.299	0.017
Rubber Tired Loaders	2035	251	500	7.156	0.191	1.076	0.416	0.005	0.015	0.015	568.299	0.017
Rubber Tired Loaders	2035	501	750	14.669	0.191	1.076	0.421	0.005	0.015	0.015	568.299	0.017
Rubber Tired Loaders	2035	751	1000	18.204	0.193	1.082	2.584	0.005	0.03	0.03	568.299	0.017
Rubber Tired Loaders	2040	16	25	1.834	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Rubber Tired Loaders	2040	26	50	2.684	0.545	5.102	3.283	0.007	0.024	0.024	568.3	0.049
Rubber Tired Loaders	2040	51	120	2.53	0.271	3.748	1.543	0.006	0.022	0.022	568.3	0.024
Rubber Tired Loaders	2040	121	175	3.172	0.188	3.314	0.365	0.006	0.016	0.016	568.299	0.017
Rubber Tired Loaders	2040	176	250	4.375	0.185	1.128	0.346	0.006	0.013	0.013	568.299	0.016
Rubber Tired Loaders	2040	251	500	6.953	0.185	1.076	0.338	0.005	0.013	0.013	568.3	0.016
Rubber Tired Loaders	2040	501	750	14.247	0.185	1.076	0.34	0.005	0.013	0.013	568.299	0.016
Rubber Tired Loaders	2040	751	1000	17.496	0.186	1.076	2.522	0.005	0.026	0.026	568.299	0.016
Scrapers	1990	51	120	7.335	2.413	5.806	15.182	0.791	1.373	1.373	568.299	0.217
Scrapers	1990	121	175	8.743	1.823	5.174	14.491	0.758	1.017	1.017	568.299	0.164
Scrapers	1990	176	250	12.369	1.823	5.174	14.491	0.758	1.017	1.017	568.299	0.164
Scrapers	1990	251	500	16.73	1.607	11.673	13.709	0.662	0.867	0.867	568.299	0.145
Scrapers	1990	501	750	28.902	1.607	11.673	13.709	1.018	0.883	0.883	568.299	0.145
Scrapers	2000	51	120	6.006	1.975	4.906	11.177	0.06	0.949	0.949	568.299	0.178
Scrapers	2000	121	175	6.456	1.346	4.046	10.226	0.057	0.572	0.572	568.299	0.121
Scrapers	2000	176	250	8.023	1.183	3.423	9.944	0.057	0.493	0.493	568.299	0.106
Scrapers	2000	251	500	11.061	1.062	6.04	9.42	0.05	0.43	0.43	568.299	0.095
Scrapers	2000	501	750	19.108	1.062	6.04	9.42	0.052	0.43	0.43	568.299	0.095
Scrapers	2005	51	120	5.36	1.763	4.636	9.807	0.06	0.901	0.901	568.299	0.159
Scrapers	2005	121	175	5.592	1.166	3.76	8.934	0.057	0.514	0.514	568.299	0.105
Scrapers	2005	176	250	6.251	0.921	2.602	8.58	0.057	0.377	0.377	568.299	0.083

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Scrapers	2005	251	500	8.477	0.814	4.07	7.854	0.05	0.331	0.331	568.3	0.073
Scrapers	2005	501	750	14.794	0.822	4.063	7.99	0.052	0.333	0.333	568.299	0.074
Scrapers	2010	51	120	0.828186	0.6959	3.97834	7.09453	0.005	0.5066	0.4661	537.9051	0.1566
Scrapers	2010	121	175	0.907518	0.7626	3.83189	8.55764	0.0049	0.4438	0.4083	532.551	0.155
Scrapers	2010	176	250	0.939807	0.7897	3.25278	9.42837	0.0048	0.4341	0.3994	520.9381	0.1516
Scrapers	2010	251	500	0.595043	0.5	4.1939	6.75544	0.0049	0.2719	0.2501	525.1553	0.1529
Scrapers	2010	501	750	0.454495	0.3819	3.13671	5.53444	0.0049	0.2092	0.1924	525.522	0.153
Scrapers	2011	51	120	0.831534	0.6987	4.00655	7.06921	0.005	0.5093	0.4686	536.4691	0.1565
Scrapers	2011	121	175	0.907072	0.7622	3.84357	8.51777	0.0049	0.4441	0.4086	531.1835	0.155
Scrapers	2011	176	250	0.933155	0.7841	3.22574	9.34756	0.0048	0.4302	0.3958	519.6705	0.1516
Scrapers	2011	251	500	0.590447	0.4961	4.14563	6.64672	0.0049	0.2679	0.2464	523.9083	0.1529
Scrapers	2011	501	750	0.45862	0.3854	3.14165	5.48614	0.0049	0.2076	0.191	524.1241	0.1529
Scrapers	2012	51	120	0.847004	0.7117	4.04661	7.11199	0.005	0.519	0.4775	535.1238	0.1565
Scrapers	2012	121	175	0.915185	0.769	3.8659	8.53485	0.0049	0.4484	0.4125	529.8158	0.155
Scrapers	2012	176	250	0.935111	0.7858	3.22909	9.33173	0.0048	0.4301	0.3957	518.3695	0.1516
Scrapers	2012	251	500	0.596548	0.5013	4.16192	6.64299	0.0049	0.2686	0.2471	522.6784	0.1529
Scrapers	2012	501	750	0.468161	0.3934	3.16628	5.49999	0.0049	0.2094	0.1927	522.7621	0.1529
Scrapers	2013	51	120	0.850862	0.715	4.06971	7.08801	0.005	0.5234	0.4816	532.4144	0.1565
Scrapers	2013	121	175	0.895558	0.7525	3.85136	8.33026	0.0049	0.4382	0.4032	527.0754	0.155
Scrapers	2013	176	250	0.923168	0.7757	3.18463	9.20338	0.0048	0.4231	0.3892	515.7585	0.1516
Scrapers	2013	251	500	0.590637	0.4963	4.08663	6.51716	0.0049	0.2635	0.2425	520.0884	0.1529
Scrapers	2013	501	750	0.462466	0.3886	3.09865	5.3398	0.0049	0.2036	0.1873	520.1031	0.1529
Scrapers	2014	51	120	0.855598	0.7189	4.09983	7.0654	0.005	0.5262	0.4841	529.9445	0.1566
Scrapers	2014	121	175	0.85473	0.7182	3.80661	7.90715	0.0049	0.4188	0.3853	524.1709	0.1549
Scrapers	2014	176	250	0.882887	0.7419	3.06131	8.81494	0.0048	0.403	0.3707	512.8529	0.1516
Scrapers	2014	251	500	0.569739	0.4787	3.89824	6.23299	0.0049	0.2514	0.2313	517.3608	0.1529
Scrapers	2014	501	750	0.438954	0.3688	2.84564	5.01248	0.0049	0.1895	0.1744	517.3937	0.1529
Scrapers	2015	51	120	0.869823	0.7309	4.13678	7.10509	0.005	0.5348	0.4921	524.5601	0.1566
Scrapers	2015	121	175	0.849601	0.7139	3.80865	7.76471	0.0049	0.415	0.3818	518.8294	0.1549
Scrapers	2015	176	250	0.868271	0.7296	3.00753	8.66317	0.0048	0.3952	0.3636	507.5699	0.1515
Scrapers	2015	251	500	0.561967	0.4722	3.788	6.08577	0.0049	0.2458	0.2261	511.9471	0.1528
Scrapers	2015	501	750	0.427981	0.3596	2.68469	4.83862	0.0049	0.1818	0.1673	512.0837	0.1529
Scrapers	2016	51	120	0.883537	0.7424	4.17273	7.14312	0.005	0.5431	0.4996	519.1668	0.1566
Scrapers	2016	121	175	0.818244	0.6876	3.78062	7.3844	0.0049	0.3967	0.365	513.4363	0.1549
Scrapers	2016	176	250	0.814194	0.6841	2.8398	8.10864	0.0048	0.3669	0.3376	502.255	0.1515
Scrapers	2016	251	500	0.538344	0.4524	3.60633	5.75749	0.0049	0.2321	0.2135	506.3503	0.1527
Scrapers	2016	501	750	0.404454	0.3399	2.48181	4.48425	0.0049	0.1675	0.1541	506.6381	0.1528
Scrapers	2017	51	120	0.896722	0.7535	4.20744	7.17946	0.005	0.551	0.5069	511.1123	0.1566
Scrapers	2017	121	175	0.748819	0.6292	3.70478	6.67066	0.0049	0.3594	0.3306	505.3309	0.1548
Scrapers	2017	176	250	0.74607	0.6269	2.64676	7.39867	0.0048	0.3327	0.306	494.5231	0.1515
Scrapers	2017	251	500	0.505877	0.4251	3.33699	5.33951	0.0049	0.2143	0.1971	498.4571	0.1527
Scrapers	2017	501	750	0.386598	0.3248	2.29479	4.21648	0.0049	0.1558	0.1433	498.6929	0.1528
Scrapers	2018	51	120	0.881019	0.7403	4.20429	7.03577	0.005	0.5425	0.4991	502.8288	0.1565
Scrapers	2018	121	175	0.640866	0.5385	3.56847	5.64105	0.0049	0.3029	0.2787	497.3396	0.1548
Scrapers	2018	176	250	0.662403	0.5566	2.40704	6.56304	0.0048	0.2901	0.2669	486.9908	0.1516
Scrapers	2018	251	500	0.439318	0.3691	2.82811	4.56771	0.0049	0.18	0.1656	490.7734	0.1528
Scrapers	2018	501	750	0.349618	0.2938	1.96493	3.74582	0.0049	0.135	0.1242	490.5775	0.1527
Scrapers	2019	51	120	0.854498	0.718	4.19661	6.84136	0.005	0.5255	0.4834	494.1	0.1563
Scrapers	2019	121	175	0.606989	0.51	3.53297	5.26356	0.0049	0.2833	0.2606	489.2546	0.1548
Scrapers	2019	176	250	0.596624	0.5013	2.23321	5.83102	0.0048	0.2567	0.2361	479.0317	0.1516
Scrapers	2019	251	500	0.40804	0.3429	2.59466	4.15646	0.0049	0.1629	0.1498	482.7319	0.1527
Scrapers	2019	501	750	0.329384	0.2768	1.82903	3.43103	0.0049	0.1232	0.1133	482.5963	0.1527
Scrapers	2020	51	120	0.834143	0.7009	4.19756	6.6767	0.005	0.5101	0.4693	483.745	0.1565
Scrapers	2020	121	175	0.568453	0.4777	3.50114	4.86851	0.0049	0.262	0.241	478.6077	0.1548
Scrapers	2020	176	250	0.531032	0.4462	2.06469	5.089	0.0048	0.2232	0.2054	468.9883	0.1517
Scrapers	2020	251	500	0.380326	0.3196	2.40063	3.78254	0.0049	0.1475	0.1357	472.1751	0.1527
Scrapers	2020	501	750	0.311991	0.2622	1.72502	3.12592	0.0049	0.1132	0.1042	471.7776	0.1526
Scrapers	2021	51	120	0.837922	0.7041	4.21819	6.65882	0.005	0.5124	0.4714	483.7128	0.1564
Scrapers	2021	121	175	0.514014	0.4319	3.45599	4.34133	0.0049	0.2318	0.2133	478.654	0.1548
Scrapers	2021	176	250	0.464853	0.3906	1.88374	4.36706	0.0048	0.1891	0.174	469.1258	0.1517
Scrapers	2021	251	500	0.356021	0.2992	2.25454	3.44481	0.0049	0.134	0.1233	472.4636	0.1528
Scrapers	2021	501	750	0.298025	0.2504	1.65772	2.88702	0.0049	0.1053	0.0968	471.7859	0.1526
Scrapers	2022	51	120	0.809995	0.6806	4.20484	6.45548	0.005	0.4938	0.4543	483.4481	0.1564
Scrapers	2022	121	175	0.463814	0.3897	3.41662	3.83296	0.0049	0.2036	0.1873	478.7411	0.1548
Scrapers	2022	176	250	0.406319	0.3414	1.74265	3.66905	0.0048	0.16	0.1472	469.2686	0.1518
Scrapers	2022	251	500	0.313802	0.2637	2.05212	2.87856	0.0049	0.1124	0.1034	473.2304	0.1531
Scrapers	2022	501	750	0.266627	0.224	1.50816	2.47537	0.0049	0.0899	0.0827	471.2788	0.1524
Scrapers	2023	51	120	0.7496	0.6299	4.14443	6.02603	0.005	0.4579	0.4212	483.0296	0.1562
Scrapers	2023	121	175	0.430003	0.3613	3.39533	3.47913	0.0049	0.1839	0.1692	478.6814	0.1548
Scrapers	2023	176	250	0.37772	0.3174	1.67839	3.2838	0.0048	0.1441	0.1325	469.5597	0.1519
Scrapers	2023	251	500	0.301363	0.2532	1.97527	2.66611	0.0049	0.1045	0.0962	473.1772	0.153
Scrapers	2023	501	750	0.26361	0.2215	1.51295	2.38587	0.0049	0.0872	0.0802	471.2953	0.1524
Scrapers	2024	51	120	0.683919	0.5747	4.09486	5.63222	0.005	0.4144	0.3813	482.7009	0.1561

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Scrapers	2024	121	175	0.399992	0.3361	3.37249	3.15631	0.0049	0.1665	0.1532	478.8089	0.1549
Scrapers	2024	176	250	0.358714	0.3014	1.62739	3.01379	0.0048	0.1332	0.1225	469.3521	0.1518
Scrapers	2024	251	500	0.291137	0.2446	1.92055	2.47694	0.0049	0.0979	0.0901	472.8455	0.1529
Scrapers	2024	501	750	0.253257	0.2128	1.46065	2.18653	0.0049	0.0807	0.0743	471.4291	0.1525
Scrapers	2025	51	120	0.673967	0.5663	4.09423	5.50259	0.005	0.4048	0.3724	482.3629	0.156
Scrapers	2025	121	175	0.34526	0.2901	3.3209	2.63098	0.0049	0.1367	0.1258	478.9476	0.1549
Scrapers	2025	176	250	0.346529	0.2912	1.60249	2.80326	0.0048	0.1254	0.1153	469.4459	0.1518
Scrapers	2025	251	500	0.257328	0.2162	1.7318	2.05051	0.0049	0.0807	0.0743	472.5394	0.1528
Scrapers	2025	501	750	0.218534	0.1836	1.33825	1.71287	0.0049	0.0641	0.059	472.115	0.1527
Scrapers	2030	51	120	1.248	0.41	3.866	2.384	0.006	0.111	0.111	568.299	0.037
Scrapers	2030	121	175	1.445	0.301	3.389	1.32	0.006	0.068	0.068	568.299	0.027
Scrapers	2030	176	250	1.794	0.264	1.206	1.149	0.006	0.042	0.042	568.299	0.023
Scrapers	2030	251	500	2.697	0.259	1.184	1.057	0.005	0.04	0.04	568.299	0.023
Scrapers	2030	501	750	4.666	0.259	1.184	1.075	0.005	0.04	0.04	568.299	0.023
Scrapers	2035	51	120	1.058	0.348	3.842	1.943	0.006	0.064	0.064	568.299	0.031
Scrapers	2035	121	175	1.199	0.25	3.382	0.824	0.006	0.04	0.04	568.299	0.022
Scrapers	2035	176	250	1.553	0.229	1.175	0.717	0.006	0.026	0.026	568.299	0.02
Scrapers	2035	251	500	2.356	0.226	1.123	0.674	0.005	0.025	0.025	568.3	0.02
Scrapers	2035	501	750	4.075	0.226	1.123	0.682	0.005	0.025	0.025	568.299	0.02
Scrapers	2040	51	120	0.962	0.316	3.833	1.715	0.006	0.04	0.04	568.299	0.028
Scrapers	2040	121	175	1.063	0.221	3.381	0.549	0.006	0.026	0.026	568.299	0.02
Scrapers	2040	176	250	1.425	0.21	1.159	0.498	0.006	0.018	0.018	568.3	0.018
Scrapers	2040	251	500	2.175	0.209	1.1	0.475	0.005	0.017	0.017	568.299	0.018
Scrapers	2040	501	750	3.76	0.209	1.1	0.48	0.005	0.017	0.017	568.299	0.018
Signal Boards	1990	6	15	2.838	1.804	4.999	9.999	1.049	0.975	0.975	568.299	0.162
Signal Boards	1990	26	50	33.688	3.65	7.626	7.518	0.871	1.035	1.035	568.299	0.329
Signal Boards	1990	51	120	41.675	2.037	5.201	13.738	0.791	1.095	1.095	568.3	0.183
Signal Boards	1990	121	175	54.982	1.395	4.603	12.364	0.758	0.728	0.728	568.3	0.125
Signal Boards	1990	176	250	90.827	1.685	5.563	14.94	0.917	0.88	0.88	686.695	0.152
Signal Boards	2000	6	15	2.085	1.325	4.257	7.675	0.079	0.61	0.61	568.299	0.119
Signal Boards	2000	26	50	31.608	3.424	7.268	6.709	0.066	0.765	0.765	568.299	0.309
Signal Boards	2000	51	120	33.68	1.646	4.338	9.835	0.06	0.756	0.756	568.299	0.148
Signal Boards	2000	121	175	43.484	1.103	3.53	8.941	0.057	0.447	0.447	568.299	0.099
Signal Boards	2000	176	250	59.587	1.105	3.359	10.385	0.069	0.438	0.438	686.695	0.099
Signal Boards	2005	6	15	1.168	0.742	3.469	4.981	0.079	0.35	0.35	568.299	0.066
Signal Boards	2005	26	50	27.711	3.002	6.663	6.227	0.066	0.704	0.704	568.299	0.27
Signal Boards	2005	51	120	28.596	1.398	4	8.234	0.06	0.695	0.695	568.299	0.126
Signal Boards	2005	121	175	35.881	0.91	3.185	7.528	0.057	0.383	0.383	568.3	0.082
Signal Boards	2005	176	250	41.93	0.778	2.245	8.577	0.069	0.303	0.303	686.695	0.07
Signal Boards	2010	6	15	1.04	0.661	3.469	4.142	0.008	0.155	0.155	568.299	0.059
Signal Boards	2010	26	50	21.63	2.343	6.009	5.792	0.007	0.571	0.571	568.299	0.211
Signal Boards	2010	51	120	21.667	1.059	3.811	6.693	0.006	0.56	0.56	568.299	0.095
Signal Boards	2010	121	175	27.641	0.701	3.102	5.958	0.006	0.311	0.311	568.299	0.063
Signal Boards	2010	176	250	29.698	0.551	1.651	6.749	0.007	0.212	0.212	686.695	0.049
Signal Boards	2011	6	15	1.04	0.661	3.469	4.142	0.008	0.156	0.156	568.299	0.059
Signal Boards	2011	26	50	20.109	2.178	5.834	5.698	0.007	0.541	0.541	568.299	0.196
Signal Boards	2011	51	120	20.187	0.986	3.774	6.327	0.006	0.535	0.535	568.299	0.089
Signal Boards	2011	121	175	25.933	0.658	3.09	5.615	0.006	0.298	0.298	568.299	0.059
Signal Boards	2011	176	250	27.264	0.506	1.548	6.272	0.007	0.19	0.19	686.695	0.045
Signal Boards	2012	6	15	1.04	0.661	3.469	4.142	0.008	0.16	0.16	568.299	0.059
Signal Boards	2012	26	50	18.413	1.995	5.632	5.596	0.007	0.508	0.508	568.299	0.18
Signal Boards	2012	51	120	18.605	0.909	3.733	5.923	0.006	0.498	0.498	568.299	0.082
Signal Boards	2012	121	175	24.082	0.611	3.077	5.246	0.006	0.275	0.275	568.3	0.055
Signal Boards	2012	176	250	25.308	0.469	1.483	5.81	0.007	0.171	0.171	686.695	0.042
Signal Boards	2013	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2013	26	50	16.687	1.808	5.427	5.362	0.007	0.465	0.465	568.299	0.163
Signal Boards	2013	51	120	17.043	0.833	3.694	5.532	0.006	0.456	0.456	568.299	0.075
Signal Boards	2013	121	175	22.253	0.564	3.067	4.903	0.006	0.252	0.252	568.3	0.05
Signal Boards	2013	176	250	23.66	0.439	1.439	5.369	0.007	0.156	0.156	686.695	0.039
Signal Boards	2014	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2014	26	50	15.005	1.625	5.231	5.139	0.007	0.422	0.422	568.299	0.146
Signal Boards	2014	51	120	15.539	0.759	3.658	5.186	0.006	0.414	0.414	568.299	0.068
Signal Boards	2014	121	175	20.512	0.52	3.058	4.582	0.006	0.228	0.228	568.299	0.046
Signal Boards	2014	176	250	22.034	0.408	1.402	4.857	0.007	0.141	0.141	686.695	0.036
Signal Boards	2015	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2015	26	50	13.489	1.461	5.068	4.943	0.007	0.382	0.382	568.299	0.131
Signal Boards	2015	51	120	14.067	0.687	3.624	4.791	0.006	0.371	0.371	568.299	0.062
Signal Boards	2015	121	175	18.694	0.474	3.052	4.136	0.006	0.205	0.205	568.299	0.042
Signal Boards	2015	176	250	20.523	0.38	1.371	4.365	0.007	0.127	0.127	686.695	0.034
Signal Boards	2016	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2016	26	50	12.061	1.306	4.921	4.761	0.007	0.343	0.343	568.299	0.117
Signal Boards	2016	51	120	12.653	0.618	3.594	4.414	0.006	0.33	0.33	568.299	0.055
Signal Boards	2016	121	175	16.949	0.43	3.047	3.708	0.006	0.183	0.183	568.299	0.038

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Signal Boards	2016	176	250	19.106	0.354	1.344	3.894	0.007	0.114	0.114	686.695	0.031
Signal Boards	2017	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2017	26	50	10.695	1.158	4.785	4.59	0.007	0.306	0.306	568.299	0.104
Signal Boards	2017	51	120	11.32	0.553	3.566	4.059	0.006	0.29	0.29	568.299	0.049
Signal Boards	2017	121	175	15.322	0.388	3.044	3.305	0.006	0.161	0.161	568.299	0.035
Signal Boards	2017	176	250	17.83	0.33	1.323	3.452	0.007	0.101	0.101	686.695	0.029
Signal Boards	2018	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2018	26	50	9.4	1.018	4.657	4.427	0.007	0.27	0.27	568.299	0.091
Signal Boards	2018	51	120	10.078	0.492	3.541	3.723	0.006	0.252	0.252	568.299	0.044
Signal Boards	2018	121	175	13.836	0.351	3.043	2.93	0.006	0.141	0.141	568.299	0.031
Signal Boards	2018	176	250	16.678	0.309	1.306	3.04	0.007	0.09	0.09	686.695	0.027
Signal Boards	2019	6	15	1.04	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2019	26	50	8.189	0.887	4.538	4.272	0.007	0.236	0.236	568.3	0.08
Signal Boards	2019	51	120	8.938	0.437	3.519	3.41	0.006	0.216	0.216	568.299	0.039
Signal Boards	2019	121	175	12.677	0.321	3.043	2.601	0.006	0.125	0.125	568.299	0.029
Signal Boards	2019	176	250	15.682	0.291	1.292	2.676	0.007	0.08	0.08	686.695	0.026
Signal Boards	2020	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2020	26	50	7.28	0.788	4.448	4.132	0.007	0.206	0.206	568.299	0.071
Signal Boards	2020	51	120	8.081	0.395	3.504	3.134	0.006	0.187	0.187	568.299	0.035
Signal Boards	2020	121	175	11.756	0.298	3.043	2.309	0.006	0.11	0.11	568.299	0.026
Signal Boards	2020	176	250	14.813	0.274	1.281	2.35	0.007	0.071	0.071	686.695	0.024
Signal Boards	2021	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2021	26	50	6.598	0.714	4.38	4.002	0.007	0.179	0.179	568.299	0.064
Signal Boards	2021	51	120	7.434	0.363	3.493	2.889	0.006	0.162	0.162	568.299	0.032
Signal Boards	2021	121	175	10.965	0.278	3.043	2.043	0.006	0.098	0.098	568.299	0.025
Signal Boards	2021	176	250	14.033	0.26	1.273	2.053	0.007	0.063	0.063	686.695	0.023
Signal Boards	2022	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.3	0.059
Signal Boards	2022	26	50	6.047	0.655	4.325	3.88	0.007	0.154	0.154	568.299	0.059
Signal Boards	2022	51	120	6.908	0.337	3.484	2.668	0.006	0.141	0.141	568.299	0.03
Signal Boards	2022	121	175	10.249	0.26	3.044	1.801	0.006	0.086	0.086	568.299	0.023
Signal Boards	2022	176	250	13.317	0.247	1.266	1.782	0.007	0.055	0.055	686.695	0.022
Signal Boards	2023	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2023	26	50	5.57	0.603	4.282	3.767	0.007	0.132	0.132	568.299	0.054
Signal Boards	2023	51	120	6.449	0.315	3.478	2.472	0.006	0.122	0.122	568.299	0.028
Signal Boards	2023	121	175	9.619	0.244	3.045	1.602	0.006	0.075	0.075	568.299	0.022
Signal Boards	2023	176	250	12.678	0.235	1.263	1.562	0.007	0.048	0.048	686.695	0.021
Signal Boards	2024	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2024	26	50	5.168	0.559	4.247	3.662	0.007	0.114	0.114	568.299	0.05
Signal Boards	2024	51	120	6.055	0.296	3.474	2.315	0.006	0.105	0.105	568.299	0.026
Signal Boards	2024	121	175	9.047	0.229	3.047	1.427	0.006	0.065	0.065	568.299	0.02
Signal Boards	2024	176	250	12.079	0.224	1.259	1.37	0.007	0.041	0.041	686.695	0.02
Signal Boards	2025	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2025	26	50	4.819	0.522	4.217	3.561	0.007	0.098	0.098	568.299	0.047
Signal Boards	2025	51	120	5.705	0.278	3.47	2.179	0.006	0.089	0.089	568.299	0.025
Signal Boards	2025	121	175	8.5	0.215	3.049	1.262	0.006	0.055	0.055	568.299	0.019
Signal Boards	2025	176	250	11.509	0.213	1.257	1.192	0.007	0.035	0.035	686.695	0.019
Signal Boards	2030	6	15	1.04	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2030	26	50	3.631	0.393	4.099	3.193	0.007	0.04	0.04	568.299	0.035
Signal Boards	2030	51	120	4.366	0.213	3.451	1.657	0.006	0.035	0.035	568.3	0.019
Signal Boards	2030	121	175	6.201	0.157	3.048	0.586	0.006	0.024	0.024	568.299	0.014
Signal Boards	2030	176	250	9.484	0.176	1.255	0.594	0.007	0.019	0.019	686.695	0.015
Signal Boards	2035	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2035	26	50	3.294	0.356	4.067	3.082	0.007	0.02	0.02	568.299	0.032
Signal Boards	2035	51	120	3.929	0.192	3.445	1.482	0.006	0.018	0.018	568.299	0.017
Signal Boards	2035	121	175	5.439	0.138	3.048	0.372	0.006	0.014	0.014	568.299	0.012
Signal Boards	2035	176	250	8.75	0.162	1.254	0.401	0.007	0.014	0.014	686.695	0.014
Signal Boards	2040	6	15	1.04	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Signal Boards	2040	26	50	3.289	0.356	4.074	3.037	0.007	0.014	0.014	568.299	0.032
Signal Boards	2040	51	120	3.848	0.188	3.447	1.428	0.006	0.013	0.013	568.299	0.016
Signal Boards	2040	121	175	5.177	0.131	3.05	0.296	0.006	0.011	0.011	568.299	0.011
Signal Boards	2040	176	250	8.473	0.157	1.255	0.341	0.007	0.012	0.012	686.695	0.014
Skid Steer Loaders	1990	16	25	4.928	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Skid Steer Loaders	1990	26	50	18.4	4.466	9.113	7.821	0.871	1.202	1.202	568.299	0.403
Skid Steer Loaders	1990	51	120	15.551	2.252	5.536	14.506	0.791	1.262	1.262	568.299	0.203
Skid Steer Loaders	2000	16	25	4.659	2.092	4.777	6.403	0.065	0.568	0.568	568.299	0.188
Skid Steer Loaders	2000	26	50	15.338	3.723	7.849	6.733	0.066	0.816	0.816	568.299	0.335
Skid Steer Loaders	2000	51	120	10.902	1.579	4.162	9.028	0.06	0.779	0.779	568.299	0.142
Skid Steer Loaders	2005	16	25	3.352	1.505	3.709	5.913	0.065	0.461	0.461	568.299	0.135
Skid Steer Loaders	2005	26	50	12.458	3.024	6.864	6.068	0.066	0.716	0.716	568.3	0.272
Skid Steer Loaders	2005	51	120	9.248	1.339	3.988	7.653	0.06	0.712	0.712	568.299	0.12
Skid Steer Loaders	2010	16	25	1.189544	0.9995	4.48486	5.29745	0.0054	0.4354	0.4006	586.3356	0.1707
Skid Steer Loaders	2010	26	50	1.189544	0.9995	4.48486	5.29745	0.0054	0.4354	0.4006	586.3356	0.1707
Skid Steer Loaders	2010	51	120	0.504832	0.4242	3.40768	5.19396	0.0049	0.3441	0.3166	525.6915	0.153

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Skid Steer Loaders	2011	16	25	1.055747	0.8871	4.32754	5.2163	0.0054	0.402	0.3698	584.7285	0.1706
Skid Steer Loaders	2011	26	50	1.055747	0.8871	4.32754	5.2163	0.0054	0.402	0.3698	584.7285	0.1706
Skid Steer Loaders	2011	51	120	0.460213	0.3867	3.38539	4.88341	0.0049	0.3163	0.291	524.0915	0.1529
Skid Steer Loaders	2012	16	25	1.031332	0.8666	4.33156	5.12974	0.0054	0.3877	0.3567	583.1258	0.1706
Skid Steer Loaders	2012	26	50	1.031332	0.8666	4.33156	5.12974	0.0054	0.3877	0.3567	583.1258	0.1706
Skid Steer Loaders	2012	51	120	0.443294	0.3725	3.38462	4.73478	0.0049	0.3031	0.2788	522.5357	0.1529
Skid Steer Loaders	2013	16	25	0.908612	0.7635	4.17576	4.84472	0.0054	0.3375	0.3105	580.0144	0.1705
Skid Steer Loaders	2013	26	50	0.908612	0.7635	4.17576	4.84472	0.0054	0.3375	0.3105	580.0144	0.1705
Skid Steer Loaders	2013	51	120	0.404938	0.3403	3.36337	4.44237	0.0049	0.271	0.2494	519.6388	0.1528
Skid Steer Loaders	2014	16	25	0.790746	0.6644	4.01585	4.54075	0.0054	0.2856	0.2628	577.0757	0.1705
Skid Steer Loaders	2014	26	50	0.790746	0.6644	4.01585	4.54075	0.0054	0.2856	0.2628	577.0757	0.1705
Skid Steer Loaders	2014	51	120	0.361873	0.3041	3.33829	4.0133	0.0049	0.2345	0.2158	517.0621	0.1528
Skid Steer Loaders	2015	16	25	0.760751	0.6392	4.00436	4.43612	0.0054	0.2674	0.246	571.4195	0.1706
Skid Steer Loaders	2015	26	50	0.760751	0.6392	4.00436	4.43612	0.0054	0.2674	0.246	571.4195	0.1706
Skid Steer Loaders	2015	51	120	0.349713	0.2939	3.33751	3.8106	0.0049	0.2202	0.2026	511.595	0.1527
Skid Steer Loaders	2016	16	25	0.713135	0.5992	3.95661	4.26784	0.0054	0.2406	0.2213	565.2281	0.1705
Skid Steer Loaders	2016	26	50	0.713135	0.5992	3.95661	4.26784	0.0054	0.2406	0.2213	565.2281	0.1705
Skid Steer Loaders	2016	51	120	0.325064	0.2731	3.32767	3.53439	0.0049	0.1974	0.1816	506.2971	0.1527
Skid Steer Loaders	2017	16	25	0.676461	0.5684	3.91907	4.11272	0.0054	0.2175	0.2001	556.7144	0.1706
Skid Steer Loaders	2017	26	50	0.676461	0.5684	3.91907	4.11272	0.0054	0.2175	0.2001	556.7144	0.1706
Skid Steer Loaders	2017	51	120	0.303772	0.2553	3.31863	3.28618	0.0049	0.1766	0.1625	498.3256	0.1527
Skid Steer Loaders	2018	16	25	0.579635	0.4871	3.78725	3.88962	0.0054	0.1783	0.164	547.5575	0.1705
Skid Steer Loaders	2018	26	50	0.579635	0.4871	3.78725	3.88962	0.0054	0.1783	0.164	547.5575	0.1705
Skid Steer Loaders	2018	51	120	0.256853	0.2158	3.28204	2.86	0.0049	0.1398	0.1286	490.0935	0.1526
Skid Steer Loaders	2019	16	25	0.531282	0.4464	3.73957	3.75009	0.0054	0.1536	0.1413	539.2667	0.1706
Skid Steer Loaders	2019	26	50	0.531282	0.4464	3.73957	3.75009	0.0054	0.1536	0.1413	539.2667	0.1706
Skid Steer Loaders	2019	51	120	0.2373	0.1994	3.27736	2.65586	0.0049	0.1217	0.1119	482.3844	0.1526
Skid Steer Loaders	2020	16	25	0.522771	0.4393	3.76397	3.69113	0.0054	0.1447	0.1331	527.7577	0.1707
Skid Steer Loaders	2020	26	50	0.522771	0.4393	3.76397	3.69113	0.0054	0.1447	0.1331	527.7577	0.1707
Skid Steer Loaders	2020	51	120	0.224183	0.1884	3.2771	2.5046	0.0049	0.1084	0.0997	471.9075	0.1526
Skid Steer Loaders	2021	16	25	0.486515	0.4088	3.73158	3.57304	0.0054	0.1263	0.1162	527.4501	0.1706
Skid Steer Loaders	2021	26	50	0.486515	0.4088	3.73158	3.57304	0.0054	0.1263	0.1162	527.4501	0.1706
Skid Steer Loaders	2021	51	120	0.211817	0.178	3.27687	2.36588	0.0049	0.0963	0.0886	471.9774	0.1526
Skid Steer Loaders	2022	16	25	0.434318	0.3649	3.65597	3.43256	0.0054	0.103	0.0947	527.2726	0.1705
Skid Steer Loaders	2022	26	50	0.434318	0.3649	3.65597	3.43256	0.0054	0.103	0.0947	527.2726	0.1705
Skid Steer Loaders	2022	51	120	0.195311	0.1641	3.27037	2.18922	0.0049	0.0814	0.0748	472.4321	0.1528
Skid Steer Loaders	2023	16	25	0.420524	0.3534	3.65358	3.37057	0.0054	0.0933	0.0858	527.4231	0.1706
Skid Steer Loaders	2023	26	50	0.420524	0.3534	3.65358	3.37057	0.0054	0.0933	0.0858	527.4231	0.1706
Skid Steer Loaders	2023	51	120	0.182613	0.1534	3.26613	2.03854	0.0049	0.069	0.0634	472.656	0.1529
Skid Steer Loaders	2024	16	25	0.415881	0.3495	3.67076	3.34552	0.0054	0.0887	0.0816	527.8005	0.1707
Skid Steer Loaders	2024	26	50	0.415881	0.3495	3.67076	3.34552	0.0054	0.0887	0.0816	527.8005	0.1707
Skid Steer Loaders	2024	51	120	0.174841	0.1469	3.26403	1.94841	0.0049	0.0626	0.0576	472.847	0.1529
Skid Steer Loaders	2025	16	25	0.406183	0.3413	3.6601	3.30934	0.0055	0.0839	0.0772	527.8608	0.1707
Skid Steer Loaders	2025	26	50	0.406183	0.3413	3.6601	3.30934	0.0055	0.0839	0.0772	527.8608	0.1707
Skid Steer Loaders	2025	51	120	0.166357	0.1398	3.25156	1.86736	0.0049	0.0567	0.0521	472.6295	0.1529
Skid Steer Loaders	2030	16	25	1.526	0.685	2.34	4.332	0.007	0.162	0.162	568.299	0.061
Skid Steer Loaders	2030	26	50	1.694	0.411	4.386	3.128	0.007	0.018	0.018	568.299	0.037
Skid Steer Loaders	2030	51	120	1.478	0.214	3.538	1.477	0.006	0.017	0.017	568.299	0.019
Skid Steer Loaders	2035	16	25	1.526	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Skid Steer Loaders	2035	26	50	1.694	0.411	4.39	3.097	0.007	0.015	0.015	568.299	0.037
Skid Steer Loaders	2035	51	120	1.459	0.211	3.54	1.442	0.006	0.014	0.014	568.299	0.019
Skid Steer Loaders	2040	16	25	1.526	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Skid Steer Loaders	2040	26	50	1.696	0.411	4.392	3.093	0.007	0.014	0.014	568.299	0.037
Skid Steer Loaders	2040	51	120	1.456	0.211	3.54	1.435	0.006	0.013	0.013	568.3	0.019
Surfacing Equipment	1990	26	50	8.011	4.203	8.629	7.726	0.871	1.147	1.147	568.299	0.379
Surfacing Equipment	1990	51	120	18.985	2.203	5.473	14.403	0.791	1.214	1.214	568.299	0.198
Surfacing Equipment	1990	121	175	19.781	1.707	4.883	13.91	0.758	0.927	0.927	568.3	0.154
Surfacing Equipment	1990	176	250	31.103	1.707	4.883	13.91	0.758	0.927	0.927	568.299	0.154
Surfacing Equipment	1990	251	500	45.625	1.526	9.66	13.316	0.662	0.805	0.805	568.299	0.137
Surfacing Equipment	1990	501	750	71.58	1.526	9.66	13.316	1.018	0.82	0.82	568.299	0.137
Surfacing Equipment	2000	26	50	6.689	3.509	7.426	6.755	0.066	0.779	0.779	568.299	0.316
Surfacing Equipment	2000	51	120	14.399	1.671	4.385	9.991	0.06	0.768	0.768	568.299	0.15
Surfacing Equipment	2000	121	175	13.132	1.133	3.583	9.132	0.057	0.458	0.458	568.299	0.102
Surfacing Equipment	2000	176	250	17.689	0.97	2.937	8.84	0.057	0.385	0.385	568.299	0.087
Surfacing Equipment	2000	251	500	26.875	0.899	4.584	8.551	0.05	0.347	0.347	568.299	0.081
Surfacing Equipment	2000	501	750	42.164	0.899	4.584	8.551	0.052	0.347	0.347	568.299	0.081
Surfacing Equipment	2005	26	50	6.001	3.148	6.936	6.318	0.066	0.727	0.727	568.3	0.284
Surfacing Equipment	2005	51	120	12.568	1.458	4.122	8.636	0.06	0.718	0.718	568.299	0.131
Surfacing Equipment	2005	121	175	11.032	0.952	3.316	7.874	0.057	0.402	0.402	568.3	0.085
Surfacing Equipment	2005	176	250	13.31	0.73	2.16	7.529	0.057	0.29	0.29	568.299	0.065
Surfacing Equipment	2005	251	500	19.448	0.65	3.023	6.988	0.05	0.26	0.26	568.299	0.058
Surfacing Equipment	2005	501	750	31.164	0.664	3.019	7.132	0.052	0.262	0.262	568.299	0.059
Surfacing Equipment	2010	26	50	1.528976	1.2848	4.99949	5.66618	0.0055	0.4788	0.4405	593.0498	0.1726

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Surfacing Equipment	2010	51	120	0.730908	0.6142	3.59404	6.16537	0.0049	0.4366	0.4017	524.0289	0.1525
Surfacing Equipment	2010	121	175	0.662829	0.557	3.09066	6.60554	0.0048	0.3178	0.2924	522.4909	0.1521
Surfacing Equipment	2010	176	250	0.488779	0.4107	1.7501	6.37687	0.0049	0.2119	0.195	530.3611	0.1544
Surfacing Equipment	2010	251	500	0.29849	0.2508	1.5491	4.43284	0.0049	0.1443	0.1327	522.9659	0.1522
Surfacing Equipment	2010	501	750	0.208991	0.1756	1.09654	3.5514	0.0049	0.1116	0.1027	524.8847	0.1528
Surfacing Equipment	2011	26	50	1.476255	1.2405	4.95391	5.62022	0.0055	0.4673	0.4299	590.2612	0.1722
Surfacing Equipment	2011	51	120	0.710662	0.5972	3.58797	5.98734	0.0049	0.4274	0.3932	522.8446	0.1526
Surfacing Equipment	2011	121	175	0.6472	0.5438	3.07389	6.46356	0.0048	0.3119	0.287	521.1883	0.1521
Surfacing Equipment	2011	176	250	0.481299	0.4044	1.72048	6.2863	0.0049	0.2075	0.1909	529.0217	0.1544
Surfacing Equipment	2011	251	500	0.289572	0.2433	1.48634	4.26701	0.0048	0.1358	0.125	520.4212	0.1519
Surfacing Equipment	2011	501	750	0.214952	0.1806	1.10325	3.56055	0.0049	0.1128	0.1038	523.5482	0.1528
Surfacing Equipment	2012	26	50	1.500607	1.2609	5.03037	5.63914	0.0055	0.4725	0.4347	588.7118	0.1722
Surfacing Equipment	2012	51	120	0.709653	0.5963	3.59999	5.94999	0.0049	0.4261	0.392	521.4233	0.1525
Surfacing Equipment	2012	121	175	0.653605	0.5492	3.0893	6.48747	0.0048	0.3154	0.2902	519.886	0.1521
Surfacing Equipment	2012	176	250	0.481696	0.4048	1.72816	6.22653	0.0049	0.2072	0.1907	527.6815	0.1544
Surfacing Equipment	2012	251	500	0.290035	0.2437	1.49574	4.20283	0.0048	0.1343	0.1236	519.0487	0.1518
Surfacing Equipment	2012	501	750	0.210249	0.1767	1.04051	3.45723	0.0049	0.1086	0.0999	521.0672	0.1524
Surfacing Equipment	2013	26	50	1.455428	1.223	4.99596	5.53803	0.0055	0.4571	0.4205	585.7193	0.1722
Surfacing Equipment	2013	51	120	0.69949	0.5878	3.60266	5.8163	0.0049	0.415	0.3818	518.7481	0.1525
Surfacing Equipment	2013	121	175	0.588968	0.4949	3.00889	5.94134	0.0049	0.2862	0.2633	518.4738	0.1524
Surfacing Equipment	2013	176	250	0.441295	0.3708	1.62196	5.8812	0.0049	0.187	0.172	524.5301	0.1542
Surfacing Equipment	2013	251	500	0.288988	0.2428	1.50462	4.09243	0.0048	0.1314	0.1209	516.1488	0.1518
Surfacing Equipment	2013	501	750	0.215353	0.181	1.04387	3.46124	0.0049	0.1095	0.1008	518.3853	0.1524
Surfacing Equipment	2014	26	50	1.358041	1.1411	4.87668	5.42525	0.0055	0.4342	0.3995	582.7249	0.1722
Surfacing Equipment	2014	51	120	0.665267	0.559	3.58043	5.52029	0.0049	0.3908	0.3595	516.3377	0.1526
Surfacing Equipment	2014	121	175	0.561853	0.4721	3.01212	5.71146	0.0049	0.2727	0.2508	515.8203	0.1524
Surfacing Equipment	2014	176	250	0.364211	0.306	1.43363	5.10182	0.0049	0.1493	0.1374	521.4518	0.1541
Surfacing Equipment	2014	251	500	0.2821	0.237	1.50147	3.8952	0.0048	0.1255	0.1155	513.6157	0.1518
Surfacing Equipment	2014	501	750	0.206755	0.1737	1.02007	3.28435	0.0049	0.1032	0.0949	516.3212	0.1526
Surfacing Equipment	2015	26	50	1.223408	1.028	4.69178	5.25471	0.0055	0.4019	0.3698	576.7706	0.1722
Surfacing Equipment	2015	51	120	0.651534	0.5475	3.57496	5.37414	0.0049	0.378	0.3478	510.1417	0.1523
Surfacing Equipment	2015	121	175	0.568	0.4773	3.02727	5.73307	0.0049	0.2756	0.2536	510.5481	0.1524
Surfacing Equipment	2015	176	250	0.36864	0.3098	1.44156	5.11205	0.0049	0.1506	0.1385	516.058	0.1541
Surfacing Equipment	2015	251	500	0.286581	0.2408	1.51303	3.90037	0.0048	0.1265	0.1164	508.3985	0.1518
Surfacing Equipment	2015	501	750	0.211433	0.1777	1.02353	3.28678	0.0049	0.104	0.0957	511.1157	0.1526
Surfacing Equipment	2016	26	50	1.243319	1.0447	4.7626	5.27275	0.0055	0.4061	0.3736	570.8145	0.1722
Surfacing Equipment	2016	51	120	0.621267	0.522	3.54977	5.05142	0.0049	0.3486	0.3207	505.0873	0.1524
Surfacing Equipment	2016	121	175	0.544572	0.4576	3.00649	5.45794	0.0049	0.2651	0.2439	504.5576	0.1522
Surfacing Equipment	2016	176	250	0.365495	0.3071	1.42946	5.04791	0.0049	0.1483	0.1365	510.7058	0.154
Surfacing Equipment	2016	251	500	0.258417	0.2171	1.42484	3.46816	0.0048	0.1111	0.1022	502.4709	0.1516
Surfacing Equipment	2016	501	750	0.192579	0.1618	0.99966	2.87955	0.0049	0.0926	0.0852	506.967	0.1529
Surfacing Equipment	2017	26	50	1.10469	0.9282	4.60324	5.0643	0.0055	0.3651	0.3359	564.4772	0.173
Surfacing Equipment	2017	51	120	0.604716	0.5081	3.55587	4.94212	0.0049	0.3373	0.3103	498.36	0.1527
Surfacing Equipment	2017	121	175	0.541755	0.4552	3.00273	5.39296	0.0049	0.2638	0.2427	496.2741	0.1521
Surfacing Equipment	2017	176	250	0.325463	0.2735	1.3431	4.46793	0.0049	0.1291	0.1187	501.8465	0.1538
Surfacing Equipment	2017	251	500	0.242435	0.2037	1.3962	3.10636	0.0049	0.1026	0.0944	496.885	0.1522
Surfacing Equipment	2017	501	750	0.190932	0.1604	1.00272	2.76955	0.0049	0.0904	0.0832	499.7117	0.1531
Surfacing Equipment	2018	26	50	0.927049	0.779	4.35302	4.81982	0.0055	0.3198	0.2942	555.7363	0.173
Surfacing Equipment	2018	51	120	0.49279	0.4141	3.48871	4.28388	0.0049	0.2685	0.247	491.3172	0.153
Surfacing Equipment	2018	121	175	0.44632	0.375	2.97609	4.47527	0.0049	0.2151	0.1979	488.4406	0.1521
Surfacing Equipment	2018	176	250	0.286758	0.241	1.234	3.98866	0.0049	0.1127	0.1037	494.1388	0.1538
Surfacing Equipment	2018	251	500	0.187325	0.1574	1.22557	2.20389	0.0049	0.0761	0.07	487.8722	0.1519
Surfacing Equipment	2018	501	750	0.169556	0.1425	0.99347	2.26863	0.0049	0.0783	0.072	488.86	0.1522
Surfacing Equipment	2019	26	50	0.765383	0.6431	4.0998	4.41999	0.0055	0.2503	0.2303	547.0462	0.1731
Surfacing Equipment	2019	51	120	0.42278	0.3553	3.44856	3.82306	0.0049	0.2256	0.2076	484.0757	0.1532
Surfacing Equipment	2019	121	175	0.425034	0.3571	2.97177	4.23866	0.0048	0.2036	0.1873	479.6717	0.1518
Surfacing Equipment	2019	176	250	0.257694	0.2165	1.21576	3.39993	0.0049	0.1007	0.0927	486.8417	0.154
Surfacing Equipment	2019	251	500	0.173135	0.1455	1.2143	1.89944	0.0049	0.0681	0.0626	481.8965	0.1525
Surfacing Equipment	2019	501	750	0.168821	0.1419	0.99372	2.17879	0.0049	0.0763	0.0702	480.166	0.1519
Surfacing Equipment	2020	26	50	0.637406	0.5356	3.93357	4.23906	0.0055	0.2164	0.1991	535.5275	0.1732
Surfacing Equipment	2020	51	120	0.392345	0.3297	3.43932	3.61216	0.0049	0.2063	0.1898	473.8188	0.1532
Surfacing Equipment	2020	121	175	0.365927	0.3075	2.93068	3.67232	0.0048	0.1745	0.1606	469.2079	0.1518
Surfacing Equipment	2020	176	250	0.252128	0.2119	1.21774	3.22243	0.0049	0.0972	0.0894	476.4261	0.1541
Surfacing Equipment	2020	251	500	0.173203	0.1455	1.21902	1.83755	0.0049	0.0669	0.0615	471.6331	0.1525
Surfacing Equipment	2020	501	750	0.168871	0.1419	0.99569	2.09374	0.0049	0.0744	0.0684	469.6252	0.1519
Surfacing Equipment	2021	26	50	0.60314	0.5068	3.93231	4.18875	0.0055	0.204	0.1876	535.784	0.1733
Surfacing Equipment	2021	51	120	0.370907	0.3117	3.43619	3.46112	0.0049	0.1905	0.1753	474.0906	0.1533
Surfacing Equipment	2021	121	175	0.307112	0.2581	2.91895	3.09858	0.0048	0.1454	0.1337	469.1687	0.1517
Surfacing Equipment	2021	176	250	0.245986	0.2067	1.21854	2.99364	0.0049	0.0923	0.0849	476.8023	0.1542
Surfacing Equipment	2021	251	500	0.167588	0.1408	1.20226	1.75282	0.0049	0.0635	0.0584	471.7484	0.1526
Surfacing Equipment	2021	501	750	0.148862	0.1251	0.99181	1.59712	0.0049	0.0615	0.0566	470.4087	0.1521
Surfacing Equipment	2022	26	50	0.509163	0.4278	3.77243	3.9114	0.0055	0.1544	0.1421	535.8364	0.1733
Surfacing Equipment	2022	51	120	0.34882	0.2931	3.40936	3.24974	0.0049	0.1747	0.1607	473.6362	0.1532

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Surfacing Equipment	2022	121	175	0.283918	0.2386	2.90957	2.70137	0.0048	0.1302	0.1198	469.1259	0.1517
Surfacing Equipment	2022	176	250	0.233135	0.1959	1.21737	2.66709	0.0049	0.0852	0.0784	476.9511	0.1543
Surfacing Equipment	2022	251	500	0.157417	0.1323	1.16047	1.5573	0.0049	0.0574	0.0528	470.5248	0.1522
Surfacing Equipment	2022	501	750	0.136805	0.115	0.98819	1.35503	0.0049	0.0523	0.0481	470.4004	0.1521
Surfacing Equipment	2023	26	50	0.51987	0.4368	3.83184	3.92432	0.0055	0.1555	0.143	535.9295	0.1733
Surfacing Equipment	2023	51	120	0.321277	0.27	3.39556	3.05811	0.0049	0.1566	0.1441	474.4698	0.1535
Surfacing Equipment	2023	121	175	0.267066	0.2244	2.91383	2.45516	0.0049	0.1191	0.1095	470.0141	0.152
Surfacing Equipment	2023	176	250	0.22795	0.1915	1.21946	2.50162	0.0049	0.0817	0.0752	476.9606	0.1543
Surfacing Equipment	2023	251	500	0.156473	0.1315	1.16329	1.47556	0.0049	0.0556	0.0512	470.3746	0.1521
Surfacing Equipment	2023	501	750	0.119512	0.1004	0.98543	1.08063	0.0049	0.0403	0.0371	472.4466	0.1528
Surfacing Equipment	2024	26	50	0.396453	0.3331	3.66193	3.72069	0.0055	0.1161	0.1068	536.0304	0.1734
Surfacing Equipment	2024	51	120	0.29879	0.2511	3.3893	2.8828	0.0049	0.1424	0.131	475.3806	0.1537
Surfacing Equipment	2024	121	175	0.271298	0.228	2.92962	2.46372	0.0049	0.1201	0.1105	470.0767	0.152
Surfacing Equipment	2024	176	250	0.209166	0.1758	1.18272	2.23638	0.0049	0.071	0.0653	477.096	0.1543
Surfacing Equipment	2024	251	500	0.159183	0.1338	1.16767	1.47769	0.0049	0.0559	0.0514	470.2521	0.1521
Surfacing Equipment	2024	501	750	0.112194	0.0943	0.98493	0.94669	0.0049	0.0345	0.0317	472.9833	0.153
Surfacing Equipment	2025	26	50	0.279239	0.2346	3.53733	3.57642	0.0055	0.0816	0.075	536.14	0.1734
Surfacing Equipment	2025	51	120	0.276433	0.2323	3.38535	2.6591	0.0049	0.1243	0.1143	476.7656	0.1542
Surfacing Equipment	2025	121	175	0.222452	0.1869	2.92602	1.9987	0.0049	0.0942	0.0867	471.0403	0.1523
Surfacing Equipment	2025	176	250	0.176026	0.1479	1.14337	1.74736	0.0049	0.0549	0.0505	477.11	0.1543
Surfacing Equipment	2025	251	500	0.152175	0.1279	1.16861	1.3268	0.0049	0.051	0.0469	470.2827	0.1521
Surfacing Equipment	2025	501	750	0.101486	0.0853	0.9776	0.76806	0.0049	0.0267	0.0245	470.5508	0.1522
Surfacing Equipment	2030	26	50	0.988	0.518	4.295	3.4	0.007	0.075	0.075	568.299	0.046
Surfacing Equipment	2030	51	120	2.281	0.264	3.492	1.959	0.006	0.068	0.068	568.299	0.023
Surfacing Equipment	2030	121	175	2.286	0.197	3.071	0.939	0.006	0.043	0.043	568.299	0.017
Surfacing Equipment	2030	176	250	3.134	0.172	1.064	0.789	0.006	0.026	0.026	568.299	0.015
Surfacing Equipment	2030	251	500	5.062	0.169	1.032	0.738	0.005	0.025	0.025	568.299	0.015
Surfacing Equipment	2030	501	750	7.953	0.169	1.032	0.749	0.005	0.025	0.025	568.299	0.015
Surfacing Equipment	2035	26	50	0.836	0.439	4.221	3.193	0.007	0.041	0.041	568.299	0.039
Surfacing Equipment	2035	51	120	1.954	0.226	3.482	1.659	0.006	0.038	0.038	568.299	0.02
Surfacing Equipment	2035	121	175	1.887	0.162	3.072	0.567	0.006	0.025	0.025	568.299	0.014
Surfacing Equipment	2035	176	250	2.725	0.149	1.05	0.497	0.006	0.016	0.016	568.299	0.013
Surfacing Equipment	2035	251	500	4.436	0.148	1.018	0.471	0.005	0.016	0.016	568.299	0.013
Surfacing Equipment	2035	501	750	6.967	0.148	1.018	0.477	0.005	0.016	0.016	568.3	0.013
Surfacing Equipment	2040	26	50	0.753	0.395	4.183	3.114	0.007	0.025	0.025	568.299	0.035
Surfacing Equipment	2040	51	120	1.782	0.206	3.477	1.521	0.006	0.024	0.024	568.299	0.018
Surfacing Equipment	2040	121	175	1.691	0.146	3.073	0.397	0.006	0.017	0.017	568.299	0.013
Surfacing Equipment	2040	176	250	2.566	0.14	1.047	0.37	0.006	0.013	0.013	568.299	0.012
Surfacing Equipment	2040	251	500	4.197	0.14	1.015	0.358	0.005	0.012	0.012	568.299	0.012
Surfacing Equipment	2040	501	750	6.59	0.14	1.015	0.361	0.005	0.013	0.013	568.299	0.012
Sweepers/Scrubbers	1990	6	15	4.971	1.804	5	9.999	0.833	0.968	0.968	568.299	0.162
Sweepers/Scrubbers	1990	16	25	10.019	2.213	5	6.92	0.679	0.735	0.735	568.299	0.199
Sweepers/Scrubbers	1990	26	50	32.867	4.512	9.199	7.836	0.692	1.202	1.202	568.299	0.407
Sweepers/Scrubbers	1990	51	120	39.044	2.254	5.53	14.467	0.628	1.259	1.259	568.299	0.203
Sweepers/Scrubbers	1990	121	175	48.318	1.505	4.861	12.813	0.602	0.818	0.818	568.299	0.135
Sweepers/Scrubbers	1990	176	250	56.322	1.505	4.861	12.813	0.602	0.818	0.818	568.299	0.135
Sweepers/Scrubbers	2000	6	15	2.886	1.047	4.258	7.362	0.079	0.428	0.428	568.299	0.094
Sweepers/Scrubbers	2000	16	25	4.933	1.089	4.438	6.325	0.064	0.442	0.442	568.299	0.098
Sweepers/Scrubbers	2000	26	50	30.182	4.144	8.622	6.934	0.065	0.882	0.882	568.299	0.373
Sweepers/Scrubbers	2000	51	120	29.565	1.706	4.394	9.702	0.059	0.84	0.84	568.299	0.154
Sweepers/Scrubbers	2000	121	175	37.084	1.155	3.49	8.929	0.057	0.481	0.481	568.299	0.104
Sweepers/Scrubbers	2000	176	250	34.578	0.924	2.598	8.516	0.057	0.371	0.371	568.3	0.083
Sweepers/Scrubbers	2005	6	15	1.951	0.708	3.469	4.985	0.079	0.35	0.35	568.299	0.063
Sweepers/Scrubbers	2005	16	25	3.505	0.774	2.526	5.326	0.064	0.323	0.323	568.299	0.069
Sweepers/Scrubbers	2005	26	50	28.008	3.845	8.25	6.52	0.065	0.844	0.844	568.299	0.346
Sweepers/Scrubbers	2005	51	120	27.009	1.559	4.253	8.538	0.059	0.826	0.826	568.299	0.14
Sweepers/Scrubbers	2005	121	175	32.779	1.021	3.349	7.851	0.057	0.45	0.45	568.3	0.092
Sweepers/Scrubbers	2005	176	250	25.002	0.668	1.76	7.318	0.057	0.258	0.258	568.299	0.06
Sweepers/Scrubbers	2010	6	15	2.154395	1.8103	6.34286	5.8263	0.0054	0.6149	0.5657	583.6982	0.1699
Sweepers/Scrubbers	2010	16	25	2.154395	1.8103	6.34286	5.8263	0.0054	0.6149	0.5657	583.6982	0.1699
Sweepers/Scrubbers	2010	26	50	2.154395	1.8103	6.34286	5.8263	0.0054	0.6149	0.5657	583.6982	0.1699
Sweepers/Scrubbers	2010	51	120	1.093749	0.9191	4.10149	7.68967	0.0049	0.657	0.6044	526.7953	0.1533
Sweepers/Scrubbers	2010	121	175	1.189152	0.9992	4.21032	10.3895	0.0049	0.5781	0.5318	525.6912	0.153
Sweepers/Scrubbers	2010	176	250	0.69332	0.5826	2.35018	7.47446	0.0048	0.3194	0.2939	522.3625	0.152
Sweepers/Scrubbers	2011	6	15	2.104606	1.7685	6.34227	5.80317	0.0054	0.6056	0.5572	582.239	0.1699
Sweepers/Scrubbers	2011	16	25	2.104606	1.7685	6.34227	5.80317	0.0054	0.6056	0.5572	582.239	0.1699
Sweepers/Scrubbers	2011	26	50	2.104606	1.7685	6.34227	5.80317	0.0054	0.6056	0.5572	582.239	0.1699
Sweepers/Scrubbers	2011	51	120	1.070043	0.8991	4.08877	7.49949	0.0049	0.6513	0.5992	525.4783	0.1533
Sweepers/Scrubbers	2011	121	175	1.134336	0.9532	4.14616	9.92737	0.0049	0.5535	0.5092	524.377	0.153
Sweepers/Scrubbers	2011	176	250	0.623199	0.5237	2.16425	7.01091	0.0048	0.2836	0.2609	521.0566	0.152
Sweepers/Scrubbers	2012	6	15	2.177617	1.8298	6.54958	5.85015	0.0054	0.621	0.5713	580.7797	0.1699
Sweepers/Scrubbers	2012	16	25	2.177617	1.8298	6.54958	5.85015	0.0054	0.621	0.5713	580.7797	0.1699
Sweepers/Scrubbers	2012	26	50	2.177617	1.8298	6.54958	5.85015	0.0054	0.621	0.5713	580.7797	0.1699

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Sweepers/Scrubbers	2012	51	120	1.078889	0.9066	4.12474	7.50259	0.0049	0.6585	0.6058	524.1613	0.1533
Sweepers/Scrubbers	2012	121	175	1.141423	0.9591	4.16243	9.95689	0.0049	0.5577	0.5131	523.0627	0.153
Sweepers/Scrubbers	2012	176	250	0.63315	0.532	2.17716	7.05573	0.0048	0.2865	0.2636	519.7507	0.152
Sweepers/Scrubbers	2013	6	15	2.124198	1.7849	6.54294	5.78778	0.0054	0.608	0.5593	577.8612	0.1699
Sweepers/Scrubbers	2013	16	25	2.124198	1.7849	6.54294	5.78778	0.0054	0.608	0.5593	577.8612	0.1699
Sweepers/Scrubbers	2013	26	50	2.124198	1.7849	6.54294	5.78778	0.0054	0.608	0.5593	577.8612	0.1699
Sweepers/Scrubbers	2013	51	120	1.019559	0.8567	4.07918	7.14773	0.0049	0.6258	0.5757	521.5273	0.1533
Sweepers/Scrubbers	2013	121	175	1.122038	0.9428	4.12302	9.76352	0.0049	0.5467	0.503	520.4343	0.153
Sweepers/Scrubbers	2013	176	250	0.590836	0.4965	2.05413	6.66337	0.0048	0.263	0.2419	517.1389	0.152
Sweepers/Scrubbers	2014	6	15	2.103399	1.7674	6.59249	5.75157	0.0054	0.6028	0.5546	574.9427	0.1699
Sweepers/Scrubbers	2014	16	25	2.103399	1.7674	6.59249	5.75157	0.0054	0.6028	0.5546	574.9427	0.1699
Sweepers/Scrubbers	2014	26	50	2.103399	1.7674	6.59249	5.75157	0.0054	0.6028	0.5546	574.9427	0.1699
Sweepers/Scrubbers	2014	51	120	0.990916	0.8326	4.07085	6.93387	0.0049	0.6104	0.5615	518.8933	0.1533
Sweepers/Scrubbers	2014	121	175	1.041854	0.8754	4.04161	9.10792	0.0049	0.5033	0.463	517.8058	0.153
Sweepers/Scrubbers	2014	176	250	0.600544	0.5046	2.06593	6.70399	0.0048	0.2653	0.2441	514.5271	0.152
Sweepers/Scrubbers	2015	6	15	2.151059	1.8075	6.75408	5.77191	0.0054	0.6111	0.5622	569.1058	0.1699
Sweepers/Scrubbers	2015	16	25	2.151059	1.8075	6.75408	5.77191	0.0054	0.6111	0.5622	569.1058	0.1699
Sweepers/Scrubbers	2015	26	50	2.151059	1.8075	6.75408	5.77191	0.0054	0.6111	0.5622	569.1058	0.1699
Sweepers/Scrubbers	2015	51	120	0.991855	0.8334	4.09682	6.8863	0.0049	0.6103	0.5614	513.6254	0.1533
Sweepers/Scrubbers	2015	121	175	0.998266	0.8388	3.98239	8.69682	0.0049	0.4792	0.4409	512.5489	0.153
Sweepers/Scrubbers	2015	176	250	0.610252	0.5128	2.07774	6.7446	0.0048	0.2676	0.2462	509.3035	0.152
Sweepers/Scrubbers	2016	6	15	2.119969	1.7814	6.78514	5.72609	0.0054	0.6029	0.5547	563.2688	0.1699
Sweepers/Scrubbers	2016	16	25	2.119969	1.7814	6.78514	5.72609	0.0054	0.6029	0.5547	563.2688	0.1699
Sweepers/Scrubbers	2016	26	50	2.119969	1.7814	6.78514	5.72609	0.0054	0.6029	0.5547	563.2688	0.1699
Sweepers/Scrubbers	2016	51	120	0.931404	0.7826	4.05916	6.45405	0.0049	0.5707	0.525	508.3574	0.1533
Sweepers/Scrubbers	2016	121	175	0.887319	0.7456	3.83865	7.78746	0.0049	0.4188	0.3853	507.292	0.153
Sweepers/Scrubbers	2016	176	250	0.61965	0.5207	2.08905	6.78244	0.0048	0.2698	0.2483	504.0799	0.152
Sweepers/Scrubbers	2017	6	15	2.037349	1.7119	6.7185	5.62558	0.0054	0.5817	0.5352	554.5133	0.1699
Sweepers/Scrubbers	2017	16	25	2.037349	1.7119	6.7185	5.62558	0.0054	0.5817	0.5352	554.5133	0.1699
Sweepers/Scrubbers	2017	26	50	2.037349	1.7119	6.7185	5.62558	0.0054	0.5817	0.5352	554.5133	0.1699
Sweepers/Scrubbers	2017	51	120	0.857444	0.7205	4.01005	6.0202	0.0049	0.5202	0.4786	500.4555	0.1533
Sweepers/Scrubbers	2017	121	175	0.845582	0.7105	3.78429	7.42433	0.0049	0.3946	0.363	499.4066	0.153
Sweepers/Scrubbers	2017	176	250	0.610026	0.5126	2.08973	6.50894	0.0048	0.2642	0.2431	496.2444	0.152
Sweepers/Scrubbers	2018	6	15	1.838607	1.5449	6.4442	5.39866	0.0054	0.5307	0.4882	545.7578	0.1699
Sweepers/Scrubbers	2018	16	25	1.838607	1.5449	6.4442	5.39866	0.0054	0.5307	0.4882	545.7578	0.1699
Sweepers/Scrubbers	2018	26	50	1.838607	1.5449	6.4442	5.39866	0.0054	0.5307	0.4882	545.7578	0.1699
Sweepers/Scrubbers	2018	51	120	0.713411	0.5995	3.88173	5.13595	0.0049	0.4283	0.3941	492.5536	0.1533
Sweepers/Scrubbers	2018	121	175	0.700892	0.5889	3.58832	6.07101	0.0049	0.3197	0.2942	491.5213	0.153
Sweepers/Scrubbers	2018	176	250	0.415916	0.3495	1.60478	4.30158	0.0049	0.1691	0.1556	488.409	0.152
Sweepers/Scrubbers	2019	6	15	1.703052	1.431	6.26782	5.22487	0.0054	0.4912	0.4519	537.0023	0.1699
Sweepers/Scrubbers	2019	16	25	1.703052	1.431	6.26782	5.22487	0.0054	0.4912	0.4519	537.0023	0.1699
Sweepers/Scrubbers	2019	26	50	1.703052	1.431	6.26782	5.22487	0.0054	0.4912	0.4519	537.0023	0.1699
Sweepers/Scrubbers	2019	51	120	0.654062	0.5496	3.84602	4.77259	0.0049	0.3872	0.3563	484.6516	0.1533
Sweepers/Scrubbers	2019	121	175	0.62277	0.5233	3.4491	5.30082	0.0049	0.2772	0.255	483.6359	0.153
Sweepers/Scrubbers	2019	176	250	0.279258	0.2347	1.23013	2.86598	0.0049	0.0989	0.091	480.5735	0.152
Sweepers/Scrubbers	2020	6	15	1.599203	1.3438	6.1554	5.09515	0.0054	0.4629	0.4259	525.3284	0.1699
Sweepers/Scrubbers	2020	16	25	1.599203	1.3438	6.1554	5.09515	0.0054	0.4629	0.4259	525.3284	0.1699
Sweepers/Scrubbers	2020	26	50	1.599203	1.3438	6.1554	5.09515	0.0054	0.4629	0.4259	525.3284	0.1699
Sweepers/Scrubbers	2020	51	120	0.618762	0.5199	3.82752	4.4821	0.0049	0.3601	0.3313	474.1157	0.1533
Sweepers/Scrubbers	2020	121	175	0.549287	0.4616	3.35909	4.60809	0.0049	0.2371	0.2181	473.1221	0.153
Sweepers/Scrubbers	2020	176	250	0.246498	0.2071	1.13655	2.4856	0.0049	0.079	0.0727	470.1263	0.152
Sweepers/Scrubbers	2021	6	15	1.450842	1.2191	5.89996	4.84946	0.0054	0.4117	0.3788	525.3284	0.1699
Sweepers/Scrubbers	2021	16	25	1.450842	1.2191	5.89996	4.84946	0.0054	0.4117	0.3788	525.3284	0.1699
Sweepers/Scrubbers	2021	26	50	1.450842	1.2191	5.89996	4.84946	0.0054	0.4117	0.3788	525.3284	0.1699
Sweepers/Scrubbers	2021	51	120	0.523878	0.4402	3.75746	3.96194	0.0049	0.2914	0.2681	474.1157	0.1533
Sweepers/Scrubbers	2021	121	175	0.457963	0.3848	3.24726	3.70723	0.0049	0.1872	0.1722	473.1221	0.153
Sweepers/Scrubbers	2021	176	250	0.195441	0.1642	1.1084	1.75821	0.0049	0.055	0.0506	470.1263	0.152
Sweepers/Scrubbers	2022	6	15	1.199805	1.0082	5.45118	4.49049	0.0054	0.3346	0.3078	525.3284	0.1699
Sweepers/Scrubbers	2022	16	25	1.199805	1.0082	5.45118	4.49049	0.0054	0.3346	0.3078	525.3284	0.1699
Sweepers/Scrubbers	2022	26	50	1.199805	1.0082	5.45118	4.49049	0.0054	0.3346	0.3078	525.3284	0.1699
Sweepers/Scrubbers	2022	51	120	0.443216	0.3724	3.69196	3.47218	0.0049	0.2321	0.2135	474.1157	0.1533
Sweepers/Scrubbers	2022	121	175	0.382446	0.3214	3.22176	3.00243	0.0049	0.1446	0.133	473.1221	0.153
Sweepers/Scrubbers	2022	176	250	0.181362	0.1524	1.10147	1.60484	0.0049	0.0499	0.0459	470.1263	0.152
Sweepers/Scrubbers	2023	6	15	0.903476	0.7592	4.97095	4.12735	0.0054	0.2485	0.2286	525.3284	0.1699
Sweepers/Scrubbers	2023	16	25	0.903476	0.7592	4.97095	4.12735	0.0054	0.2485	0.2286	525.3284	0.1699
Sweepers/Scrubbers	2023	26	50	0.903476	0.7592	4.97095	4.12735	0.0054	0.2485	0.2286	525.3284	0.1699
Sweepers/Scrubbers	2023	51	120	0.417244	0.3506	3.69499	3.28536	0.0049	0.2095	0.1928	474.1157	0.1533
Sweepers/Scrubbers	2023	121	175	0.347747	0.2922	3.22298	2.60853	0.0049	0.1259	0.1158	473.1221	0.153
Sweepers/Scrubbers	2023	176	250	0.188622	0.1585	1.11413	1.61028	0.0049	0.0503	0.0463	470.1263	0.152
Sweepers/Scrubbers	2024	6	15	0.887865	0.7461	5.00321	4.0788	0.0054	0.2385	0.2194	525.3284	0.1699
Sweepers/Scrubbers	2024	16	25	0.887865	0.7461	5.00321	4.0788	0.0054	0.2385	0.2194	525.3284	0.1699
Sweepers/Scrubbers	2024	26	50	0.887865	0.7461	5.00321	4.0788	0.0054	0.2385	0.2194	525.3284	0.1699
Sweepers/Scrubbers	2024	51	120	0.395131	0.332	3.69288	3.09846	0.0049	0.1885	0.1734	474.1157	0.1533

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Sweepers/Scrubbers	2024	121	175	0.316819	0.2662	3.23374	2.2533	0.0049	0.1072	0.0986	473.1221	0.153
Sweepers/Scrubbers	2024	176	250	0.195631	0.1644	1.12729	1.61357	0.0049	0.0505	0.0465	470.1263	0.152
Sweepers/Scrubbers	2025	6	15	0.740656	0.6224	4.76791	3.85568	0.0054	0.1914	0.1761	525.3284	0.1699
Sweepers/Scrubbers	2025	16	25	0.740656	0.6224	4.76791	3.85568	0.0054	0.1914	0.1761	525.3284	0.1699
Sweepers/Scrubbers	2025	26	50	0.740656	0.6224	4.76791	3.85568	0.0054	0.1914	0.1761	525.3284	0.1699
Sweepers/Scrubbers	2025	51	120	0.360743	0.3031	3.66402	2.81733	0.0049	0.1597	0.1469	474.1157	0.1533
Sweepers/Scrubbers	2025	121	175	0.25385	0.2133	3.201	1.63811	0.0049	0.0722	0.0664	473.1221	0.153
Sweepers/Scrubbers	2025	176	250	0.202235	0.1699	1.14005	1.61588	0.0049	0.0507	0.0466	470.1263	0.152
Sweepers/Scrubbers	2030	6	15	1.624	0.589	3.47	4.142	0.008	0.161	0.161	568.299	0.053
Sweepers/Scrubbers	2030	16	25	3.103	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
Sweepers/Scrubbers	2030	26	50	3.714	0.509	4.947	3.294	0.007	0.026	0.026	568.299	0.046
Sweepers/Scrubbers	2030	51	120	4.528	0.261	3.703	1.569	0.006	0.023	0.023	568.299	0.023
Sweepers/Scrubbers	2030	121	175	6.02	0.187	3.275	0.431	0.006	0.017	0.017	568.299	0.016
Sweepers/Scrubbers	2030	176	250	6.813	0.182	1.116	0.37	0.006	0.013	0.013	568.299	0.016
Sweepers/Scrubbers	2035	6	15	1.624	0.589	3.47	4.142	0.008	0.161	0.161	568.299	0.053
Sweepers/Scrubbers	2035	16	25	3.103	0.685	2.34	4.332	0.007	0.161	0.161	568.3	0.061
Sweepers/Scrubbers	2035	26	50	3.681	0.505	4.929	3.214	0.007	0.017	0.017	568.299	0.045
Sweepers/Scrubbers	2035	51	120	4.386	0.253	3.698	1.486	0.006	0.016	0.016	568.299	0.022
Sweepers/Scrubbers	2035	121	175	5.628	0.175	3.271	0.313	0.006	0.012	0.012	568.299	0.015
Sweepers/Scrubbers	2035	176	250	6.501	0.173	1.114	0.294	0.006	0.011	0.011	568.299	0.015
Sweepers/Scrubbers	2040	6	15	1.624	0.589	3.47	4.142	0.008	0.161	0.161	568.3	0.053
Sweepers/Scrubbers	2040	16	25	3.103	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
Sweepers/Scrubbers	2040	26	50	3.675	0.504	4.925	3.203	0.007	0.016	0.016	568.3	0.045
Sweepers/Scrubbers	2040	51	120	4.354	0.251	3.697	1.469	0.006	0.015	0.015	568.299	0.022
Sweepers/Scrubbers	2040	121	175	5.537	0.172	3.27	0.284	0.006	0.011	0.011	568.299	0.015
Sweepers/Scrubbers	2040	176	250	6.454	0.172	1.114	0.284	0.006	0.011	0.011	568.299	0.015
Tractors/Loaders/Backhoes	1990	16	25	5.699	2.213	4.999	6.919	0.855	0.741	0.741	568.299	0.199
Tractors/Loaders/Backhoes	1990	26	50	23.587	4.787	9.698	7.939	0.871	1.267	1.267	568.299	0.431
Tractors/Loaders/Backhoes	1990	51	120	19.595	2.333	5.659	14.779	0.791	1.327	1.327	568.299	0.21
Tractors/Loaders/Backhoes	1990	121	175	28.833	1.751	5.008	14.021	0.758	0.974	0.974	568.299	0.158
Tractors/Loaders/Backhoes	1990	176	250	48.841	1.751	5.008	14.021	0.758	0.974	0.974	568.299	0.158
Tractors/Loaders/Backhoes	1990	251	500	86.854	1.551	10.967	13.298	0.758	0.834	0.834	568.3	0.139
Tractors/Loaders/Backhoes	1990	501	750	130.281	1.551	10.967	13.298	1.139	0.85	0.85	568.299	0.139
Tractors/Loaders/Backhoes	2000	16	25	5.225	2.029	4.66	6.391	0.065	0.57	0.57	568.299	0.183
Tractors/Loaders/Backhoes	2000	26	50	21.043	4.271	8.855	6.964	0.066	0.903	0.903	568.299	0.385
Tractors/Loaders/Backhoes	2000	51	120	14.597	1.738	4.448	9.784	0.06	0.862	0.862	568.299	0.156
Tractors/Loaders/Backhoes	2000	121	175	19.393	1.178	3.534	9.027	0.057	0.494	0.494	568.299	0.106
Tractors/Loaders/Backhoes	2000	176	250	26.283	0.942	2.634	8.625	0.057	0.38	0.38	568.299	0.085
Tractors/Loaders/Backhoes	2000	251	500	48.341	0.863	3.629	8.225	0.057	0.339	0.339	568.299	0.077
Tractors/Loaders/Backhoes	2000	501	750	72.512	0.863	3.629	8.225	0.059	0.339	0.339	568.299	0.077
Tractors/Loaders/Backhoes	2005	16	25	3.067	1.191	3.137	5.648	0.065	0.404	0.404	568.299	0.107
Tractors/Loaders/Backhoes	2005	26	50	18.069	3.667	8.018	6.405	0.066	0.819	0.819	568.299	0.33
Tractors/Loaders/Backhoes	2005	51	120	12.595	1.499	4.22	8.325	0.06	0.802	0.802	568.299	0.135
Tractors/Loaders/Backhoes	2005	121	175	16.035	0.974	3.341	7.629	0.057	0.432	0.432	568.3	0.087
Tractors/Loaders/Backhoes	2005	176	250	18.392	0.659	1.774	7.181	0.057	0.256	0.256	568.3	0.059
Tractors/Loaders/Backhoes	2005	251	500	32.511	0.58	1.993	6.451	0.057	0.23	0.23	568.299	0.052
Tractors/Loaders/Backhoes	2005	501	750	49.91	0.594	1.99	6.656	0.059	0.234	0.234	568.299	0.053
Tractors/Loaders/Backhoes	2010	16	25	1.894649	1.592	5.95576	5.63221	0.0053	0.5614	0.5165	569.9866	0.1659
Tractors/Loaders/Backhoes	2010	26	50	1.894649	1.592	5.95576	5.63221	0.0053	0.5614	0.5165	569.9866	0.1659
Tractors/Loaders/Backhoes	2010	51	120	0.792369	0.6658	3.83197	6.31224	0.0049	0.5039	0.4636	533.5879	0.1553
Tractors/Loaders/Backhoes	2010	121	175	0.559066	0.4698	3.20391	5.68573	0.0048	0.2855	0.2626	521.9624	0.1519
Tractors/Loaders/Backhoes	2010	176	250	0.408454	0.3432	1.44044	5.58586	0.0049	0.1775	0.1633	522.8516	0.1522
Tractors/Loaders/Backhoes	2010	251	500	0.391383	0.3289	2.07689	5.18517	0.0049	0.1722	0.1585	526.5923	0.1533
Tractors/Loaders/Backhoes	2010	501	750	0.330642	0.2778	1.80487	4.39795	0.0048	0.1531	0.1408	517.4169	0.1506
Tractors/Loaders/Backhoes	2011	16	25	1.788969	1.5032	5.86306	5.58613	0.0053	0.54	0.4968	569.4176	0.1662
Tractors/Loaders/Backhoes	2011	26	50	1.788969	1.5032	5.86306	5.58613	0.0053	0.54	0.4968	569.4176	0.1662
Tractors/Loaders/Backhoes	2011	51	120	0.766159	0.6438	3.83083	6.12981	0.0049	0.4906	0.4513	531.2907	0.155
Tractors/Loaders/Backhoes	2011	121	175	0.544391	0.4574	3.21464	5.49667	0.0048	0.2774	0.2552	520.8772	0.152
Tractors/Loaders/Backhoes	2011	176	250	0.400263	0.3363	1.41416	5.38873	0.0049	0.1717	0.158	521.7143	0.1522
Tractors/Loaders/Backhoes	2011	251	500	0.383321	0.3221	2.01155	4.98779	0.0049	0.1669	0.1536	525.0356	0.1532
Tractors/Loaders/Backhoes	2011	501	750	0.337174	0.2833	1.80098	4.35896	0.0048	0.1527	0.1405	516.0241	0.1506
Tractors/Loaders/Backhoes	2012	16	25	1.778006	1.494	5.92961	5.57167	0.0053	0.537	0.494	568.1171	0.1662
Tractors/Loaders/Backhoes	2012	26	50	1.778006	1.494	5.92961	5.57167	0.0053	0.537	0.494	568.1171	0.1662
Tractors/Loaders/Backhoes	2012	51	120	0.765477	0.6432	3.85825	6.07938	0.0049	0.4896	0.4504	529.8013	0.155
Tractors/Loaders/Backhoes	2012	121	175	0.55208	0.4639	3.24733	5.48812	0.0048	0.2794	0.257	519.5807	0.152
Tractors/Loaders/Backhoes	2012	176	250	0.408595	0.3433	1.42415	5.3794	0.0049	0.1729	0.1591	520.5233	0.1523
Tractors/Loaders/Backhoes	2012	251	500	0.391545	0.329	2.03631	4.9585	0.0049	0.1675	0.1541	523.6066	0.1532
Tractors/Loaders/Backhoes	2012	501	750	0.34578	0.2906	1.81138	4.30593	0.0048	0.1528	0.1406	514.6158	0.1505
Tractors/Loaders/Backhoes	2013	16	25	1.710175	1.437	5.8983	5.50692	0.0053	0.5196	0.4781	566.4101	0.1665
Tractors/Loaders/Backhoes	2013	26	50	1.710175	1.437	5.8983	5.50692	0.0053	0.5196	0.4781	566.4101	0.1665
Tractors/Loaders/Backhoes	2013	51	120	0.736849	0.6192	3.85259	5.88177	0.0049	0.4685	0.431	526.7149	0.1549
Tractors/Loaders/Backhoes	2013	121	175	0.53894	0.4529	3.25593	5.32658	0.0048	0.2695	0.2479	516.748	0.1519
Tractors/Loaders/Backhoes	2013	176	250	0.404183	0.3396	1.40715	5.22143	0.0049	0.168	0.1546	517.9916	0.1523

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	2013	251	500	0.386263	0.3246	1.98237	4.77348	0.0049	0.1621	0.1492	520.6472	0.1531
Tractors/Loaders/Backhoes	2013	501	750	0.357231	0.3002	1.8218	4.31599	0.0048	0.155	0.1426	511.8955	0.1505
Tractors/Loaders/Backhoes	2014	16	25	1.58953	1.3356	5.77182	5.36869	0.0053	0.4882	0.4491	564.0421	0.1667
Tractors/Loaders/Backhoes	2014	26	50	1.58953	1.3356	5.77182	5.36869	0.0053	0.4882	0.4491	564.0421	0.1667
Tractors/Loaders/Backhoes	2014	51	120	0.692813	0.5822	3.82724	5.58081	0.0049	0.4384	0.4033	523.0168	0.1546
Tractors/Loaders/Backhoes	2014	121	175	0.503298	0.4229	3.23863	4.93788	0.0048	0.2483	0.2285	513.8903	0.1519
Tractors/Loaders/Backhoes	2014	176	250	0.389056	0.3269	1.37555	4.92175	0.0049	0.1587	0.146	515.1747	0.1522
Tractors/Loaders/Backhoes	2014	251	500	0.371559	0.3122	1.87787	4.48819	0.0049	0.1518	0.1397	517.1237	0.1528
Tractors/Loaders/Backhoes	2014	501	750	0.362599	0.3047	1.8331	4.24344	0.0048	0.1536	0.1413	511.3367	0.1511
Tractors/Loaders/Backhoes	2015	16	25	1.555682	1.3072	5.79091	5.32019	0.0053	0.477	0.4389	558.7085	0.1668
Tractors/Loaders/Backhoes	2015	26	50	1.555682	1.3072	5.79091	5.32019	0.0053	0.477	0.4389	558.7085	0.1668
Tractors/Loaders/Backhoes	2015	51	120	0.677539	0.5693	3.83198	5.4221	0.0049	0.4244	0.3904	517.3652	0.1545
Tractors/Loaders/Backhoes	2015	121	175	0.501434	0.4213	3.2559	4.83599	0.0048	0.2443	0.2248	508.6819	0.1519
Tractors/Loaders/Backhoes	2015	176	250	0.387795	0.3259	1.37366	4.7831	0.0049	0.1554	0.1429	509.6269	0.1521
Tractors/Loaders/Backhoes	2015	251	500	0.371246	0.3119	1.88403	4.34833	0.0049	0.1491	0.1372	511.8685	0.1528
Tractors/Loaders/Backhoes	2015	501	750	0.36596	0.3075	1.823	4.1848	0.0048	0.152	0.1399	506.1469	0.1511
Tractors/Loaders/Backhoes	2016	16	25	1.488115	1.2504	5.74113	5.21373	0.0053	0.4547	0.4183	553.3996	0.1669
Tractors/Loaders/Backhoes	2016	26	50	1.488115	1.2504	5.74113	5.21373	0.0053	0.4547	0.4183	553.3996	0.1669
Tractors/Loaders/Backhoes	2016	51	120	0.640315	0.538	3.81146	5.14235	0.0049	0.3959	0.3643	511.3456	0.1542
Tractors/Loaders/Backhoes	2016	121	175	0.46319	0.3892	3.23229	4.37945	0.0048	0.222	0.2042	502.6294	0.1516
Tractors/Loaders/Backhoes	2016	176	250	0.369743	0.3107	1.34719	4.42611	0.0049	0.1449	0.1333	504.4014	0.1521
Tractors/Loaders/Backhoes	2016	251	500	0.337794	0.2838	1.78642	3.7866	0.0049	0.131	0.1206	505.2698	0.1524
Tractors/Loaders/Backhoes	2016	501	750	0.357237	0.3002	1.67424	4.0216	0.0048	0.1444	0.1328	500.955	0.1511
Tractors/Loaders/Backhoes	2017	16	25	1.421071	1.1941	5.68921	5.10958	0.0053	0.4331	0.3985	544.9286	0.167
Tractors/Loaders/Backhoes	2017	26	50	1.421071	1.1941	5.68921	5.10958	0.0053	0.4331	0.3985	544.9286	0.167
Tractors/Loaders/Backhoes	2017	51	120	0.595595	0.5005	3.7818	4.8087	0.0049	0.3616	0.3327	502.7952	0.1541
Tractors/Loaders/Backhoes	2017	121	175	0.420865	0.3536	3.19961	3.87876	0.0048	0.1973	0.1815	493.912	0.1513
Tractors/Loaders/Backhoes	2017	176	250	0.346619	0.2913	1.30369	4.04062	0.0049	0.1318	0.1213	496.8449	0.1522
Tractors/Loaders/Backhoes	2017	251	500	0.323689	0.272	1.73851	3.48988	0.0049	0.122	0.1123	497.1129	0.1523
Tractors/Loaders/Backhoes	2017	501	750	0.35268	0.2963	1.64567	3.86196	0.0048	0.1394	0.1283	492.9529	0.151
Tractors/Loaders/Backhoes	2018	16	25	1.180685	0.9921	5.31043	4.76441	0.0053	0.3625	0.3335	536.1115	0.1669
Tractors/Loaders/Backhoes	2018	26	50	1.180685	0.9921	5.31043	4.76441	0.0053	0.3625	0.3335	536.1115	0.1669
Tractors/Loaders/Backhoes	2018	51	120	0.5003	0.4204	3.69155	4.15444	0.0049	0.2943	0.2708	494.1237	0.1538
Tractors/Loaders/Backhoes	2018	121	175	0.353485	0.297	3.13727	3.16806	0.0048	0.1595	0.1467	485.7754	0.1512
Tractors/Loaders/Backhoes	2018	176	250	0.308076	0.2589	1.24197	3.45965	0.0049	0.1116	0.1027	489.4562	0.1524
Tractors/Loaders/Backhoes	2018	251	500	0.264454	0.2222	1.44545	2.66877	0.0048	0.0922	0.0848	486.2939	0.1514
Tractors/Loaders/Backhoes	2018	501	750	0.322751	0.2712	1.60068	3.40235	0.0048	0.1243	0.1143	485.0099	0.151
Tractors/Loaders/Backhoes	2019	16	25	1.095082	0.9202	5.20327	4.60928	0.0053	0.33	0.3036	527.6843	0.167
Tractors/Loaders/Backhoes	2019	26	50	1.095082	0.9202	5.20327	4.60928	0.0053	0.33	0.3036	527.6843	0.167
Tractors/Loaders/Backhoes	2019	51	120	0.437701	0.3678	3.63777	3.69257	0.0049	0.2465	0.2268	485.8548	0.1537
Tractors/Loaders/Backhoes	2019	121	175	0.321856	0.2704	3.12158	2.78412	0.0048	0.1401	0.1289	477.9151	0.1512
Tractors/Loaders/Backhoes	2019	176	250	0.291458	0.2449	1.22027	3.14683	0.0049	0.102	0.0938	481.4206	0.1523
Tractors/Loaders/Backhoes	2019	251	500	0.245176	0.206	1.38918	2.34458	0.0048	0.0816	0.0751	479.0826	0.1516
Tractors/Loaders/Backhoes	2019	501	750	0.311873	0.2621	1.6025	3.12046	0.0048	0.1168	0.1074	478.9216	0.1515
Tractors/Loaders/Backhoes	2020	16	25	0.987255	0.8296	5.03491	4.39784	0.0053	0.2878	0.2648	515.874	0.1668
Tractors/Loaders/Backhoes	2020	26	50	0.987255	0.8296	5.03491	4.39784	0.0053	0.2878	0.2648	515.874	0.1668
Tractors/Loaders/Backhoes	2020	51	120	0.393883	0.331	3.60147	3.32571	0.0049	0.2103	0.1935	475.1543	0.1537
Tractors/Loaders/Backhoes	2020	121	175	0.29217	0.2455	3.10518	2.41467	0.0048	0.1217	0.1119	467.5132	0.1512
Tractors/Loaders/Backhoes	2020	176	250	0.268036	0.2252	1.19592	2.73794	0.0049	0.0898	0.0826	470.4998	0.1522
Tractors/Loaders/Backhoes	2020	251	500	0.230511	0.1937	1.35815	2.07976	0.0048	0.073	0.0672	468.2447	0.1514
Tractors/Loaders/Backhoes	2020	501	750	0.318709	0.2678	1.60984	3.11926	0.0048	0.1174	0.108	468.6602	0.1516
Tractors/Loaders/Backhoes	2021	16	25	0.899672	0.756	4.90172	4.22643	0.0053	0.2545	0.2341	515.1213	0.1666
Tractors/Loaders/Backhoes	2021	26	50	0.899672	0.756	4.90172	4.22643	0.0053	0.2545	0.2341	515.1213	0.1666
Tractors/Loaders/Backhoes	2021	51	120	0.35209	0.2959	3.57072	2.995	0.0049	0.1766	0.1625	475.3621	0.1537
Tractors/Loaders/Backhoes	2021	121	175	0.263016	0.221	3.0907	2.06221	0.0048	0.1041	0.0958	467.5285	0.1512
Tractors/Loaders/Backhoes	2021	176	250	0.249239	0.2094	1.18606	2.36922	0.0049	0.08	0.0736	470.5716	0.1522
Tractors/Loaders/Backhoes	2021	251	500	0.213479	0.1794	1.34147	1.776	0.0048	0.064	0.0589	469.3025	0.1518
Tractors/Loaders/Backhoes	2021	501	750	0.294477	0.2474	1.43254	2.75417	0.0048	0.1041	0.0958	466.4564	0.1509
Tractors/Loaders/Backhoes	2022	16	25	0.818675	0.6879	4.75954	4.03024	0.0053	0.2177	0.2003	514.4613	0.1664
Tractors/Loaders/Backhoes	2022	26	50	0.818675	0.6879	4.75954	4.03024	0.0053	0.2177	0.2003	514.4613	0.1664
Tractors/Loaders/Backhoes	2022	51	120	0.309669	0.2602	3.53551	2.64718	0.0049	0.1424	0.131	475.8975	0.1539
Tractors/Loaders/Backhoes	2022	121	175	0.237945	0.1999	3.07944	1.75274	0.0048	0.0892	0.082	467.8004	0.1513
Tractors/Loaders/Backhoes	2022	176	250	0.222521	0.187	1.16248	1.94251	0.0049	0.067	0.0617	470.1236	0.152
Tractors/Loaders/Backhoes	2022	251	500	0.190771	0.1603	1.28026	1.43694	0.0048	0.0529	0.0487	469.2562	0.1518
Tractors/Loaders/Backhoes	2022	501	750	0.276438	0.2323	1.35272	2.4532	0.0048	0.0943	0.0868	466.6327	0.1509
Tractors/Loaders/Backhoes	2023	16	25	0.738634	0.6207	4.62935	3.85698	0.0053	0.1845	0.1698	513.7962	0.1662
Tractors/Loaders/Backhoes	2023	26	50	0.738634	0.6207	4.62935	3.85698	0.0053	0.1845	0.1698	513.7962	0.1662
Tractors/Loaders/Backhoes	2023	51	120	0.284572	0.2391	3.52504	2.42607	0.0049	0.1198	0.1102	476.4307	0.1541
Tractors/Loaders/Backhoes	2023	121	175	0.219196	0.1842	3.0777	1.52095	0.0048	0.0765	0.0704	468.821	0.1516
Tractors/Loaders/Backhoes	2023	176	250	0.201205	0.1691	1.14809	1.58768	0.0049	0.0576	0.053	469.7518	0.1519
Tractors/Loaders/Backhoes	2023	251	500	0.180818	0.1519	1.27923	1.24708	0.0049	0.0472	0.0434	469.4652	0.1518
Tractors/Loaders/Backhoes	2023	501	750	0.278685	0.2342	1.36081	2.41861	0.0048	0.0945	0.0869	466.6756	0.1509
Tractors/Loaders/Backhoes	2024	16	25	0.701609	0.5895	4.60899	3.76811	0.0053	0.1659	0.1526	513.8517	0.1662

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	2024	26	50	0.701609	0.5895	4.60899	3.76811	0.0053	0.1659	0.1526	513.8517	0.1662
Tractors/Loaders/Backhoes	2024	51	120	0.270597	0.2274	3.5318	2.28795	0.0049	0.105	0.0966	476.7313	0.1542
Tractors/Loaders/Backhoes	2024	121	175	0.209421	0.176	3.08913	1.37643	0.0049	0.0685	0.063	469.4029	0.1518
Tractors/Loaders/Backhoes	2024	176	250	0.199431	0.1676	1.15125	1.49113	0.0049	0.0545	0.0501	469.9143	0.152
Tractors/Loaders/Backhoes	2024	251	500	0.178929	0.1504	1.277	1.16321	0.0049	0.0444	0.0408	470.0841	0.152
Tractors/Loaders/Backhoes	2024	501	750	0.262816	0.2208	1.31051	2.21548	0.0048	0.0854	0.0786	466.6381	0.1509
Tractors/Loaders/Backhoes	2025	16	25	0.654585	0.55	4.55974	3.66186	0.0053	0.145	0.1334	513.8025	0.1662
Tractors/Loaders/Backhoes	2025	26	50	0.654585	0.55	4.55974	3.66186	0.0053	0.145	0.1334	513.8025	0.1662
Tractors/Loaders/Backhoes	2025	51	120	0.248412	0.2087	3.52242	2.10918	0.0049	0.0855	0.0786	477.188	0.1543
Tractors/Loaders/Backhoes	2025	121	175	0.192617	0.1619	3.08323	1.18039	0.0048	0.0585	0.0538	469.3289	0.1518
Tractors/Loaders/Backhoes	2025	176	250	0.183368	0.1541	1.14554	1.23458	0.0049	0.0473	0.0435	470.5976	0.1522
Tractors/Loaders/Backhoes	2025	251	500	0.171862	0.1444	1.23405	1.04575	0.0049	0.0393	0.0362	470.9102	0.1523
Tractors/Loaders/Backhoes	2025	501	750	0.222943	0.1873	1.26139	1.64868	0.0048	0.0674	0.062	466.4517	0.1509
Tractors/Loaders/Backhoes	2030	16	25	1.765	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Tractors/Loaders/Backhoes	2030	26	50	2.657	0.539	4.966	3.299	0.007	0.033	0.033	568.299	0.048
Tractors/Loaders/Backhoes	2030	51	120	2.285	0.272	3.705	1.624	0.006	0.03	0.03	568.299	0.024
Tractors/Loaders/Backhoes	2030	121	175	3.178	0.193	3.273	0.485	0.006	0.02	0.02	568.299	0.017
Tractors/Loaders/Backhoes	2030	176	250	5.112	0.183	1.115	0.418	0.006	0.014	0.014	568.299	0.016
Tractors/Loaders/Backhoes	2030	251	500	10.236	0.182	1.066	0.403	0.006	0.014	0.014	568.299	0.016
Tractors/Loaders/Backhoes	2030	501	750	15.363	0.182	1.066	0.407	0.006	0.014	0.014	568.299	0.016
Tractors/Loaders/Backhoes	2035	16	25	1.765	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Tractors/Loaders/Backhoes	2035	26	50	2.538	0.515	4.949	3.244	0.007	0.022	0.022	568.299	0.046
Tractors/Loaders/Backhoes	2035	51	120	2.17	0.258	3.703	1.521	0.006	0.02	0.02	568.299	0.023
Tractors/Loaders/Backhoes	2035	121	175	2.956	0.179	3.275	0.348	0.006	0.015	0.015	568.299	0.016
Tractors/Loaders/Backhoes	2035	176	250	4.945	0.177	1.115	0.331	0.006	0.012	0.012	568.299	0.016
Tractors/Loaders/Backhoes	2035	251	500	9.922	0.177	1.066	0.326	0.006	0.012	0.012	568.299	0.015
Tractors/Loaders/Backhoes	2035	501	750	14.886	0.177	1.066	0.327	0.006	0.012	0.012	568.299	0.015
Tractors/Loaders/Backhoes	2040	16	25	1.765	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Tractors/Loaders/Backhoes	2040	26	50	2.506	0.508	4.946	3.22	0.007	0.018	0.018	568.299	0.045
Tractors/Loaders/Backhoes	2040	51	120	2.135	0.254	3.703	1.485	0.006	0.016	0.016	568.299	0.022
Tractors/Loaders/Backhoes	2040	121	175	2.891	0.175	3.276	0.305	0.006	0.012	0.012	568.299	0.015
Tractors/Loaders/Backhoes	2040	176	250	4.877	0.174	1.116	0.297	0.006	0.011	0.011	568.3	0.015
Tractors/Loaders/Backhoes	2040	251	500	9.794	0.174	1.066	0.297	0.006	0.011	0.011	568.299	0.015
Tractors/Loaders/Backhoes	2040	501	750	14.69	0.174	1.066	0.297	0.006	0.011	0.011	568.299	0.015
Trenchers	1990	6	15	3.844	1.804	4.999	9.999	1.049	0.975	0.975	568.299	0.162
Trenchers	1990	16	25	18.341	2.213	4.999	6.919	0.855	0.741	0.741	568.3	0.199
Trenchers	1990	26	50	37.589	4.535	9.232	7.849	0.871	1.215	1.215	568.3	0.409
Trenchers	1990	51	120	37.519	2.296	5.621	14.752	0.791	1.284	1.284	568.299	0.207
Trenchers	1990	121	175	63.364	1.748	5.014	14.125	0.758	0.96	0.96	568.299	0.157
Trenchers	1990	176	250	98.152	1.748	5.014	14.125	0.758	0.96	0.96	568.299	0.157
Trenchers	1990	251	500	121.775	1.553	10.572	13.45	0.662	0.827	0.827	568.299	0.14
Trenchers	1990	501	750	229.57	1.553	10.572	13.45	1.018	0.843	0.843	568.299	0.14
Trenchers	2000	6	15	2.824	1.325	4.257	7.675	0.079	0.61	0.61	568.299	0.119
Trenchers	2000	16	25	15.815	1.908	4.438	6.326	0.065	0.555	0.555	568.299	0.172
Trenchers	2000	26	50	34.945	4.216	8.713	7.029	0.066	0.89	0.89	568.299	0.38
Trenchers	2000	51	120	30.939	1.893	4.777	10.98	0.06	0.882	0.882	568.299	0.17
Trenchers	2000	121	175	46.959	1.296	3.969	10.057	0.057	0.541	0.541	568.299	0.116
Trenchers	2000	176	250	64.645	1.151	3.402	9.8	0.057	0.474	0.474	568.299	0.103
Trenchers	2000	251	500	81.678	1.042	6.221	9.354	0.05	0.416	0.416	568.299	0.094
Trenchers	2000	501	750	153.98	1.042	6.221	9.354	0.052	0.416	0.416	568.299	0.094
Trenchers	2005	6	15	1.582	0.742	3.469	4.981	0.079	0.35	0.35	568.299	0.066
Trenchers	2005	16	25	7.043	0.849	2.519	5.321	0.065	0.333	0.333	568.3	0.076
Trenchers	2005	26	50	32.497	3.921	8.33	6.674	0.066	0.849	0.849	568.299	0.353
Trenchers	2005	51	120	27.751	1.698	4.526	9.727	0.06	0.839	0.839	568.299	0.153
Trenchers	2005	121	175	40.799	1.126	3.695	8.861	0.057	0.487	0.487	568.299	0.101
Trenchers	2005	176	250	51.63	0.92	2.668	8.545	0.057	0.379	0.379	568.299	0.083
Trenchers	2005	251	500	63.694	0.812	4.395	7.903	0.05	0.332	0.332	568.299	0.073
Trenchers	2005	501	750	121.568	0.822	4.387	8.023	0.052	0.333	0.333	568.299	0.074
Trenchers	2010	6	15	1.531711	1.2871	5.11336	5.52761	0.0054	0.509	0.4683	586.297	0.1707
Trenchers	2010	16	25	1.531711	1.2871	5.11336	5.52761	0.0054	0.509	0.4683	586.297	0.1707
Trenchers	2010	26	50	1.531711	1.2871	5.11336	5.52761	0.0054	0.509	0.4683	586.297	0.1707
Trenchers	2010	51	120	1.099287	0.9237	4.07421	7.99924	0.0049	0.6203	0.5707	529.306	0.1541
Trenchers	2010	121	175	0.922781	0.7754	3.7406	8.65095	0.0048	0.441	0.4058	519.6876	0.1513
Trenchers	2010	176	250	0.705197	0.5926	2.36576	7.86432	0.0049	0.3135	0.2885	527.3537	0.1535
Trenchers	2010	251	500	0.380701	0.3199	2.10547	4.85363	0.0049	0.1763	0.1622	523.7828	0.1525
Trenchers	2010	501	750	0.194919	0.1638	1.33412	3.20501	0.0049	0.1132	0.1041	525.788	0.153
Trenchers	2011	6	15	1.520162	1.2774	5.14932	5.52336	0.0054	0.5072	0.4666	585.033	0.1707
Trenchers	2011	16	25	1.520162	1.2774	5.14932	5.52336	0.0054	0.5072	0.4666	585.033	0.1707
Trenchers	2011	26	50	1.520162	1.2774	5.14932	5.52336	0.0054	0.5072	0.4666	585.033	0.1707
Trenchers	2011	51	120	1.045215	0.8783	4.02646	7.67483	0.0049	0.5977	0.5499	527.7187	0.154
Trenchers	2011	121	175	0.916044	0.7697	3.73004	8.56359	0.0048	0.4382	0.4031	518.4008	0.1513
Trenchers	2011	176	250	0.655301	0.5506	2.19702	7.41222	0.0049	0.2902	0.267	525.9543	0.1535
Trenchers	2011	251	500	0.372561	0.3131	2.04569	4.66474	0.0049	0.1712	0.1575	522.8418	0.1526

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Trenchers	2011	501	750	0.180473	0.1516	1.33856	2.67369	0.0049	0.0969	0.0892	525.691	0.1534
Trenchers	2012	6	15	1.545009	1.2982	5.24421	5.53504	0.0054	0.5122	0.4712	583.5639	0.1707
Trenchers	2012	16	25	1.545009	1.2982	5.24421	5.53504	0.0054	0.5122	0.4712	583.5639	0.1707
Trenchers	2012	26	50	1.545009	1.2982	5.24421	5.53504	0.0054	0.5122	0.4712	583.5639	0.1707
Trenchers	2012	51	120	1.052636	0.8845	4.05076	7.69459	0.0049	0.6038	0.5555	526.3562	0.154
Trenchers	2012	121	175	0.907539	0.7626	3.7162	8.45762	0.0048	0.436	0.4011	517.1147	0.1513
Trenchers	2012	176	250	0.662356	0.5566	2.20863	7.44867	0.0049	0.2932	0.2698	524.572	0.1535
Trenchers	2012	251	500	0.369046	0.3101	2.03349	4.58546	0.0049	0.1681	0.1547	521.6264	0.1526
Trenchers	2012	501	750	0.135931	0.1142	0.95532	2.04792	0.0049	0.0694	0.0638	524.8533	0.1535
Trenchers	2013	6	15	1.53809	1.2924	5.2883	5.51013	0.0054	0.5092	0.4685	580.7693	0.1708
Trenchers	2013	16	25	1.53809	1.2924	5.2883	5.51013	0.0054	0.5092	0.4685	580.7693	0.1708
Trenchers	2013	26	50	1.53809	1.2924	5.2883	5.51013	0.0054	0.5092	0.4685	580.7693	0.1708
Trenchers	2013	51	120	1.010936	0.8495	4.02389	7.45031	0.0049	0.5824	0.5358	523.4236	0.1539
Trenchers	2013	121	175	0.916392	0.77	3.73732	8.49431	0.0048	0.4409	0.4056	514.53	0.1513
Trenchers	2013	176	250	0.626949	0.5268	2.13383	7.03951	0.0049	0.2761	0.254	520.4335	0.153
Trenchers	2013	251	500	0.376293	0.3162	2.04997	4.60225	0.0049	0.1699	0.1563	519.043	0.1526
Trenchers	2013	501	750	0.144323	0.1213	0.96183	2.05561	0.0049	0.0704	0.0648	522.2778	0.1536
Trenchers	2014	6	15	1.508934	1.2679	5.29329	5.45539	0.0054	0.5005	0.4605	577.7275	0.1707
Trenchers	2014	16	25	1.508934	1.2679	5.29329	5.45539	0.0054	0.5005	0.4605	577.7275	0.1707
Trenchers	2014	26	50	1.508934	1.2679	5.29329	5.45539	0.0054	0.5005	0.4605	577.7275	0.1707
Trenchers	2014	51	120	0.973633	0.8181	3.99876	7.2172	0.0049	0.5629	0.5179	520.7658	0.1539
Trenchers	2014	121	175	0.824366	0.6927	3.66799	7.69921	0.0048	0.3951	0.3635	512.1475	0.1513
Trenchers	2014	176	250	0.591196	0.4968	2.07009	6.48427	0.0049	0.2579	0.2372	517.7188	0.153
Trenchers	2014	251	500	0.364023	0.3059	2.03515	4.37019	0.0048	0.1611	0.1482	513.7439	0.1518
Trenchers	2014	501	750	0.140019	0.1177	0.96403	1.825	0.0049	0.0613	0.0564	519.6576	0.1536
Trenchers	2015	6	15	1.498018	1.2588	5.32346	5.40567	0.0054	0.4934	0.4539	571.6674	0.1707
Trenchers	2015	16	25	1.498018	1.2588	5.32346	5.40567	0.0054	0.4934	0.4539	571.6674	0.1707
Trenchers	2015	26	50	1.498018	1.2588	5.32346	5.40567	0.0054	0.4934	0.4539	571.6674	0.1707
Trenchers	2015	51	120	0.972367	0.8171	4.01434	7.17857	0.0049	0.5616	0.5167	515.3955	0.1539
Trenchers	2015	121	175	0.829448	0.697	3.68389	7.67382	0.0048	0.3958	0.3642	506.9434	0.1513
Trenchers	2015	176	250	0.597101	0.5017	2.0797	6.50988	0.0049	0.26	0.2392	512.4325	0.153
Trenchers	2015	251	500	0.370644	0.3114	2.05093	4.38344	0.0048	0.1626	0.1496	508.3296	0.1518
Trenchers	2015	501	750	0.135272	0.1137	0.96532	1.62336	0.0049	0.0531	0.0489	514.4002	0.1536
Trenchers	2016	6	15	1.450442	1.2188	5.28497	5.29818	0.0054	0.4747	0.4368	565.9942	0.1707
Trenchers	2016	16	25	1.450442	1.2188	5.28497	5.29818	0.0054	0.4747	0.4368	565.9942	0.1707
Trenchers	2016	26	50	1.450442	1.2188	5.28497	5.29818	0.0054	0.4747	0.4368	565.9942	0.1707
Trenchers	2016	51	120	0.937737	0.788	3.98822	6.90219	0.0049	0.5413	0.498	509.9027	0.1538
Trenchers	2016	121	175	0.693219	0.5825	3.50717	6.50303	0.0048	0.3277	0.3015	501.7809	0.1514
Trenchers	2016	176	250	0.58008	0.4874	2.03007	6.31168	0.0049	0.2514	0.2313	507.1448	0.153
Trenchers	2016	251	500	0.351818	0.2956	1.96649	4.09912	0.0049	0.1497	0.1377	504.4103	0.1521
Trenchers	2016	501	750	0.142468	0.1197	0.97148	1.63008	0.0049	0.0539	0.0495	509.1433	0.1536
Trenchers	2017	6	15	1.367315	1.1489	5.19682	5.16614	0.0054	0.4488	0.4129	557.4601	0.1708
Trenchers	2017	16	25	1.367315	1.1489	5.19682	5.16614	0.0054	0.4488	0.4129	557.4601	0.1708
Trenchers	2017	26	50	1.367315	1.1489	5.19682	5.16614	0.0054	0.4488	0.4129	557.4601	0.1708
Trenchers	2017	51	120	0.906302	0.7615	3.96827	6.67876	0.0049	0.5232	0.4813	501.9916	0.1538
Trenchers	2017	121	175	0.638299	0.5363	3.43391	5.92725	0.0048	0.3003	0.2763	493.7642	0.1513
Trenchers	2017	176	250	0.577948	0.4856	2.03655	6.19428	0.0049	0.2501	0.2301	499.2281	0.153
Trenchers	2017	251	500	0.315778	0.2653	1.96603	3.44157	0.0049	0.1289	0.1186	497.0197	0.1523
Trenchers	2017	501	750	0.135465	0.1138	0.97168	1.42958	0.0049	0.0457	0.0421	501.1831	0.1536
Trenchers	2018	6	15	1.236195	1.0387	5.01831	4.95997	0.0054	0.4093	0.3766	548.3607	0.1707
Trenchers	2018	16	25	1.236195	1.0387	5.01831	4.95997	0.0054	0.4093	0.3766	548.3607	0.1707
Trenchers	2018	26	50	1.236195	1.0387	5.01831	4.95997	0.0054	0.4093	0.3766	548.3607	0.1707
Trenchers	2018	51	120	0.78315	0.6581	3.85487	5.91527	0.0049	0.45	0.414	493.715	0.1537
Trenchers	2018	121	175	0.559787	0.4704	3.33134	5.12742	0.0048	0.2613	0.2404	485.9254	0.1513
Trenchers	2018	176	250	0.498602	0.419	1.84856	5.29554	0.0049	0.2119	0.1949	491.5649	0.153
Trenchers	2018	251	500	0.30464	0.256	1.97444	3.21114	0.0049	0.1212	0.1115	489.6281	0.1524
Trenchers	2018	501	750	0.111849	0.094	0.96632	1.02523	0.0049	0.0286	0.0263	494.6426	0.154
Trenchers	2019	6	15	1.136688	0.9551	4.89183	4.78464	0.0054	0.3767	0.3466	539.1037	0.1706
Trenchers	2019	16	25	1.136688	0.9551	4.89183	4.78464	0.0054	0.3767	0.3466	539.1037	0.1706
Trenchers	2019	26	50	1.136688	0.9551	4.89183	4.78464	0.0054	0.3767	0.3466	539.1037	0.1706
Trenchers	2019	51	120	0.751452	0.6314	3.83677	5.69508	0.0049	0.4306	0.3961	485.3635	0.1536
Trenchers	2019	121	175	0.547248	0.4598	3.34151	4.95976	0.0048	0.2547	0.2343	478.1294	0.1513
Trenchers	2019	176	250	0.481784	0.4048	1.81019	5.04653	0.0049	0.2032	0.187	484.1167	0.1532
Trenchers	2019	251	500	0.302803	0.2544	1.98689	3.12824	0.0049	0.1181	0.1086	482.1648	0.1526
Trenchers	2019	501	750	0.09296	0.0781	0.95644	0.70662	0.0049	0.0152	0.014	484.5422	0.1533
Trenchers	2020	6	15	1.076913	0.9049	4.8331	4.67651	0.0054	0.3561	0.3276	527.0962	0.1705
Trenchers	2020	16	25	1.076913	0.9049	4.8331	4.67651	0.0054	0.3561	0.3276	527.0962	0.1705
Trenchers	2020	26	50	1.076913	0.9049	4.8331	4.67651	0.0054	0.3561	0.3276	527.0962	0.1705
Trenchers	2020	51	120	0.726229	0.6102	3.83272	5.51952	0.0049	0.4132	0.3802	475.1265	0.1537
Trenchers	2020	121	175	0.500709	0.4207	3.32968	4.46042	0.0048	0.2281	0.2098	467.7348	0.1513
Trenchers	2020	176	250	0.466499	0.392	1.77405	4.8091	0.0049	0.1949	0.1793	473.5951	0.1532
Trenchers	2020	251	500	0.276702	0.2325	1.85932	2.775	0.0049	0.1052	0.0968	470.6367	0.1522
Trenchers	2020	501	750	0.083454	0.0701	0.95004	0.56006	0.0049	0.009	0.0083	472.6556	0.1529

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Trenchers	2021	6	15	0.962829	0.809	4.66576	4.45891	0.0054	0.3133	0.2882	527.0165	0.1704
Trenchers	2021	16	25	0.962829	0.809	4.66576	4.45891	0.0054	0.3133	0.2882	527.0165	0.1704
Trenchers	2021	26	50	0.962829	0.809	4.66576	4.45891	0.0054	0.3133	0.2882	527.0165	0.1704
Trenchers	2021	51	120	0.661739	0.556	3.78912	5.10594	0.0049	0.3707	0.3411	475.287	0.1537
Trenchers	2021	121	175	0.483838	0.4066	3.30363	4.27237	0.0048	0.2188	0.2013	467.7343	0.1513
Trenchers	2021	176	250	0.42408	0.3563	1.66826	4.36036	0.0049	0.1718	0.1581	473.8538	0.1533
Trenchers	2021	251	500	0.263326	0.2213	1.86493	2.49105	0.0049	0.1002	0.0922	470.701	0.1522
Trenchers	2021	501	750	0.078358	0.0658	0.94677	0.47513	0.0049	0.009	0.0083	472.5289	0.1528
Trenchers	2022	6	15	0.859634	0.7223	4.51833	4.26873	0.0054	0.2754	0.2534	527.0258	0.1705
Trenchers	2022	16	25	0.859634	0.7223	4.51833	4.26873	0.0054	0.2754	0.2534	527.0258	0.1705
Trenchers	2022	26	50	0.859634	0.7223	4.51833	4.26873	0.0054	0.2754	0.2534	527.0258	0.1705
Trenchers	2022	51	120	0.629528	0.529	3.77843	4.91345	0.0049	0.3481	0.3203	475.3262	0.1537
Trenchers	2022	121	175	0.470645	0.3955	3.31289	4.10333	0.0048	0.2115	0.1945	467.7337	0.1513
Trenchers	2022	176	250	0.398562	0.3349	1.66329	3.85292	0.0049	0.1605	0.1476	473.8512	0.1533
Trenchers	2022	251	500	0.252168	0.2119	1.87233	2.21226	0.0049	0.0937	0.0862	470.5845	0.1522
Trenchers	2022	501	750	0.067683	0.0569	0.94489	0.30138	0.0049	0.0089	0.0082	474.2887	0.1534
Trenchers	2023	6	15	0.763609	0.6416	4.30164	3.95873	0.0054	0.22	0.2024	527.0954	0.1705
Trenchers	2023	16	25	0.763609	0.6416	4.30164	3.95873	0.0054	0.22	0.2024	527.0954	0.1705
Trenchers	2023	26	50	0.763609	0.6416	4.30164	3.95873	0.0054	0.22	0.2024	527.0954	0.1705
Trenchers	2023	51	120	0.599816	0.504	3.76842	4.70045	0.0049	0.3261	0.3	475.6903	0.1538
Trenchers	2023	121	175	0.427489	0.3592	3.29061	3.65725	0.0048	0.1855	0.1706	467.7332	0.1513
Trenchers	2023	176	250	0.390278	0.3279	1.6386	3.7365	0.0049	0.1551	0.1427	473.8485	0.1533
Trenchers	2023	251	500	0.236268	0.1985	1.72273	2.00504	0.0049	0.0845	0.0778	471.6125	0.1525
Trenchers	2023	501	750	0.071688	0.0602	0.95111	0.30278	0.0049	0.009	0.0083	474.4705	0.1535
Trenchers	2024	6	15	0.714783	0.6006	4.23326	3.83415	0.0054	0.1965	0.1808	527.0216	0.1704
Trenchers	2024	16	25	0.714783	0.6006	4.23326	3.83415	0.0054	0.1965	0.1808	527.0216	0.1704
Trenchers	2024	26	50	0.714783	0.6006	4.23326	3.83415	0.0054	0.1965	0.1808	527.0216	0.1704
Trenchers	2024	51	120	0.588274	0.4943	3.76854	4.59319	0.0049	0.3178	0.2924	475.6324	0.1538
Trenchers	2024	121	175	0.432612	0.3635	3.31073	3.66715	0.0048	0.1867	0.1718	467.7326	0.1513
Trenchers	2024	176	250	0.370794	0.3116	1.59847	3.48285	0.0049	0.1455	0.1338	473.8455	0.1533
Trenchers	2024	251	500	0.228039	0.1916	1.66789	1.85871	0.0049	0.0799	0.0735	469.9942	0.152
Trenchers	2024	501	750	0.076605	0.0644	0.95838	0.30435	0.0049	0.0092	0.0084	474.4782	0.1535
Trenchers	2025	6	15	0.645012	0.542	4.11956	3.65681	0.0054	0.163	0.1499	527.1603	0.1705
Trenchers	2025	16	25	0.645012	0.542	4.11956	3.65681	0.0054	0.163	0.1499	527.1603	0.1705
Trenchers	2025	26	50	0.645012	0.542	4.11956	3.65681	0.0054	0.163	0.1499	527.1603	0.1705
Trenchers	2025	51	120	0.5433	0.4565	3.73437	4.279	0.0049	0.285	0.2622	475.9014	0.1539
Trenchers	2025	121	175	0.426125	0.3581	3.30907	3.54907	0.0048	0.1792	0.1648	467.732	0.1513
Trenchers	2025	176	250	0.365033	0.3067	1.60076	3.31521	0.0049	0.144	0.1325	473.9168	0.1533
Trenchers	2025	251	500	0.227307	0.191	1.67595	1.82613	0.0049	0.0787	0.0724	470.4394	0.1521
Trenchers	2025	501	750	0.079299	0.0666	0.96233	0.30526	0.0049	0.0092	0.0085	474.4863	0.1535
Trenchers	2030	6	15	1.409	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Trenchers	2030	16	25	5.681	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Trenchers	2030	26	50	7.055	0.851	5.208	3.835	0.007	0.144	0.144	568.299	0.076
Trenchers	2030	51	120	6.697	0.409	3.743	2.559	0.006	0.132	0.132	568.299	0.036
Trenchers	2030	121	175	10.904	0.3	3.273	1.529	0.006	0.08	0.08	568.3	0.027
Trenchers	2030	176	250	14.406	0.256	1.188	1.348	0.006	0.049	0.049	568.3	0.023
Trenchers	2030	251	500	19.534	0.249	1.209	1.231	0.005	0.046	0.046	568.299	0.022
Trenchers	2030	501	750	36.902	0.249	1.209	1.254	0.005	0.047	0.047	568.299	0.022
Trenchers	2035	6	15	1.409	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Trenchers	2035	16	25	5.681	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Trenchers	2035	26	50	5.645	0.681	5.055	3.548	0.007	0.084	0.084	568.299	0.061
Trenchers	2035	51	120	5.437	0.332	3.713	2.049	0.006	0.076	0.076	568.3	0.03
Trenchers	2035	121	175	8.756	0.241	3.264	0.966	0.006	0.048	0.048	568.299	0.021
Trenchers	2035	176	250	12.171	0.216	1.149	0.847	0.006	0.031	0.031	568.299	0.019
Trenchers	2035	251	500	16.707	0.213	1.126	0.79	0.005	0.029	0.029	568.299	0.019
Trenchers	2035	501	750	31.529	0.213	1.126	0.801	0.005	0.029	0.029	568.3	0.019
Trenchers	2040	6	15	1.409	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Trenchers	2040	16	25	5.681	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Trenchers	2040	26	50	4.961	0.598	4.98	3.374	0.007	0.052	0.052	568.299	0.054
Trenchers	2040	51	120	4.791	0.293	3.699	1.767	0.006	0.047	0.047	568.299	0.026
Trenchers	2040	121	175	7.533	0.207	3.26	0.639	0.006	0.03	0.03	568.3	0.018
Trenchers	2040	176	250	10.853	0.193	1.126	0.573	0.006	0.02	0.02	568.3	0.017
Trenchers	2040	251	500	15.011	0.191	1.081	0.542	0.005	0.02	0.02	568.3	0.017
Trenchers	2040	501	750	28.323	0.191	1.081	0.549	0.005	0.02	0.02	568.299	0.017
Welders	1990	6	15	4.525	1.804	4.999	9.999	1.018	0.974	0.974	568.299	0.162
Welders	1990	16	25	10.092	2.213	4.999	6.919	0.83	0.74	0.74	568.299	0.199
Welders	1990	26	50	40.899	3.899	8.078	7.611	0.846	1.085	1.085	568.3	0.351
Welders	1990	51	120	33.632	2.107	5.312	13.999	0.768	1.146	1.146	568.3	0.19
Welders	1990	121	175	57.219	1.442	4.703	12.598	0.736	0.761	0.761	568.299	0.13
Welders	1990	176	250	69.387	1.442	4.703	12.598	0.736	0.761	0.761	568.299	0.13
Welders	1990	251	500	88.323	1.304	8.704	12.141	0.642	0.672	0.672	568.3	0.117
Welders	2000	6	15	4.323	1.723	4.875	9.08	0.079	0.747	0.747	568.299	0.155
Welders	2000	16	25	9.556	2.095	4.783	6.405	0.065	0.569	0.569	568.299	0.189

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Welders	2000	26	50	38.432	3.664	7.708	6.797	0.066	0.803	0.803	568.299	0.33
Welders	2000	51	120	27.201	1.704	4.433	10.046	0.06	0.791	0.791	568.3	0.153
Welders	2000	121	175	45.269	1.14	3.61	9.126	0.057	0.468	0.468	568.299	0.102
Welders	2000	176	250	45.901	0.954	2.869	8.783	0.057	0.384	0.384	568.299	0.086
Welders	2000	251	500	59.514	0.878	4.719	8.466	0.05	0.344	0.344	568.299	0.079
Welders	2005	6	15	3.497	1.394	4.38	7.817	0.079	0.621	0.621	568.299	0.125
Welders	2005	16	25	7.401	1.622	3.922	6.014	0.065	0.483	0.483	568.299	0.146
Welders	2005	26	50	34.243	3.264	7.144	6.342	0.066	0.746	0.746	568.299	0.294
Welders	2005	51	120	23.288	1.459	4.096	8.459	0.06	0.733	0.733	568.299	0.131
Welders	2005	121	175	37.837	0.953	3.26	7.736	0.057	0.405	0.405	568.299	0.086
Welders	2005	176	250	32.839	0.682	1.941	7.302	0.057	0.268	0.268	568.299	0.061
Welders	2005	251	500	41.097	0.606	2.566	6.755	0.05	0.241	0.241	568.299	0.054
Welders	2010	6	15	2.82	1.124	4.027	6.554	0.008	0.473	0.473	568.3	0.101
Welders	2010	16	25	5.78	1.267	3.309	5.477	0.007	0.384	0.384	568.299	0.114
Welders	2010	26	50	27.885	2.658	6.571	5.944	0.007	0.623	0.623	568.299	0.239
Welders	2010	51	120	18.341	1.149	3.928	6.999	0.006	0.61	0.61	568.299	0.103
Welders	2010	121	175	30.26	0.762	3.185	6.255	0.006	0.338	0.338	568.299	0.068
Welders	2010	176	250	23.908	0.496	1.433	5.857	0.006	0.189	0.189	568.299	0.044
Welders	2010	251	500	30.15	0.445	1.621	5.26	0.005	0.174	0.174	568.299	0.04
Welders	2011	6	15	2.677	1.067	3.952	6.283	0.008	0.441	0.441	568.299	0.096
Welders	2011	16	25	5.436	1.192	3.179	5.36	0.007	0.361	0.361	568.3	0.107
Welders	2011	26	50	26.104	2.488	6.392	5.85	0.007	0.593	0.593	568.299	0.224
Welders	2011	51	120	17.199	1.077	3.891	6.632	0.006	0.584	0.584	568.3	0.097
Welders	2011	121	175	28.559	0.719	3.173	5.91	0.006	0.325	0.325	568.299	0.064
Welders	2011	176	250	22.03	0.457	1.34	5.462	0.006	0.17	0.17	568.299	0.041
Welders	2011	251	500	27.869	0.411	1.473	4.886	0.005	0.157	0.157	568.299	0.037
Welders	2012	6	15	2.527	1.007	3.874	5.999	0.008	0.407	0.407	568.299	0.09
Welders	2012	16	25	5.076	1.113	3.043	5.239	0.007	0.337	0.337	568.299	0.1
Welders	2012	26	50	24.122	2.299	6.185	5.749	0.007	0.56	0.56	568.299	0.207
Welders	2012	51	120	15.992	1.001	3.852	6.232	0.006	0.549	0.549	568.299	0.09
Welders	2012	121	175	26.736	0.673	3.161	5.543	0.006	0.303	0.303	568.299	0.06
Welders	2012	176	250	20.583	0.427	1.281	5.087	0.006	0.154	0.154	568.299	0.038
Welders	2012	251	500	26.151	0.386	1.369	4.532	0.005	0.144	0.144	568.299	0.034
Welders	2013	6	15	2.378	0.948	3.796	5.716	0.008	0.373	0.373	568.299	0.085
Welders	2013	16	25	4.718	1.034	2.907	5.117	0.007	0.314	0.314	568.299	0.093
Welders	2013	26	50	22.037	2.101	5.967	5.526	0.007	0.517	0.517	568.299	0.189
Welders	2013	51	120	14.766	0.925	3.813	5.836	0.006	0.507	0.507	568.3	0.083
Welders	2013	121	175	24.884	0.627	3.151	5.195	0.006	0.279	0.279	568.299	0.056
Welders	2013	176	250	19.36	0.402	1.241	4.723	0.006	0.141	0.141	568.299	0.036
Welders	2013	251	500	24.728	0.365	1.291	4.191	0.005	0.131	0.131	568.299	0.032
Welders	2014	6	15	2.237	0.891	3.723	5.445	0.008	0.341	0.341	568.3	0.08
Welders	2014	16	25	4.381	0.96	2.78	5	0.007	0.291	0.291	568.299	0.086
Welders	2014	26	50	19.935	1.9	5.749	5.308	0.007	0.473	0.473	568.3	0.171
Welders	2014	51	120	13.552	0.849	3.774	5.481	0.006	0.464	0.464	568.299	0.076
Welders	2014	121	175	23.067	0.581	3.141	4.862	0.006	0.255	0.255	568.299	0.052
Welders	2014	176	250	18.135	0.376	1.207	4.297	0.006	0.128	0.128	568.299	0.034
Welders	2014	251	500	23.294	0.343	1.227	3.788	0.005	0.119	0.119	568.299	0.031
Welders	2015	6	15	2.109	0.84	3.658	5.196	0.008	0.311	0.311	568.299	0.075
Welders	2015	16	25	4.078	0.894	2.666	4.89	0.007	0.27	0.27	568.299	0.08
Welders	2015	26	50	17.994	1.715	5.562	5.113	0.007	0.43	0.43	568.3	0.154
Welders	2015	51	120	12.337	0.772	3.738	5.077	0.006	0.419	0.419	568.299	0.069
Welders	2015	121	175	21.139	0.532	3.133	4.408	0.006	0.23	0.23	568.299	0.048
Welders	2015	176	250	16.976	0.352	1.178	3.88	0.006	0.116	0.116	568.299	0.031
Welders	2015	251	500	21.953	0.324	1.176	3.398	0.005	0.108	0.108	568.299	0.029
Welders	2016	6	15	2.03	0.809	3.622	5.023	0.008	0.289	0.289	568.299	0.073
Welders	2016	16	25	3.903	0.855	2.604	4.803	0.007	0.255	0.255	568.299	0.077
Welders	2016	26	50	16.155	1.54	5.395	4.936	0.007	0.389	0.389	568.299	0.138
Welders	2016	51	120	11.165	0.699	3.705	4.692	0.006	0.375	0.375	568.3	0.063
Welders	2016	121	175	19.285	0.486	3.128	3.973	0.006	0.206	0.206	568.299	0.043
Welders	2016	176	250	15.901	0.33	1.153	3.481	0.006	0.104	0.104	568.299	0.029
Welders	2016	251	500	20.731	0.306	1.134	3.032	0.005	0.097	0.097	568.299	0.027
Welders	2017	6	15	1.973	0.786	3.599	4.887	0.008	0.272	0.272	568.299	0.07
Welders	2017	16	25	3.785	0.83	2.564	4.729	0.007	0.243	0.243	568.299	0.074
Welders	2017	26	50	14.392	1.372	5.239	4.768	0.007	0.35	0.35	568.299	0.123
Welders	2017	51	120	10.06	0.63	3.675	4.328	0.006	0.332	0.332	568.299	0.056
Welders	2017	121	175	17.561	0.442	3.124	3.562	0.006	0.183	0.183	568.299	0.039
Welders	2017	176	250	14.942	0.31	1.133	3.105	0.006	0.094	0.094	568.299	0.028
Welders	2017	251	500	19.705	0.29	1.102	2.713	0.005	0.088	0.088	568.299	0.026
Welders	2018	6	15	1.923	0.766	3.58	4.762	0.008	0.256	0.256	568.3	0.069
Welders	2018	16	25	3.684	0.807	2.531	4.661	0.007	0.232	0.232	568.299	0.072
Welders	2018	26	50	12.698	1.21	5.092	4.607	0.007	0.311	0.311	568.299	0.109
Welders	2018	51	120	9.016	0.564	3.648	3.98	0.006	0.29	0.29	568.299	0.05
Welders	2018	121	175	15.966	0.402	3.123	3.176	0.006	0.162	0.162	568.299	0.036

Table 3.4 OFFROAD Equipment Emission Factors (g/bhp-hr)

Equipment Type	Year	Low HP	High HP	TOG	ROG	CO	NOX	SO2	PM10	PM2.5	CO2	CH4
Welders	2018	176	250	14.068	0.292	1.118	2.751	0.006	0.084	0.084	568.299	0.026
Welders	2018	251	500	18.804	0.277	1.08	2.43	0.005	0.08	0.08	568.299	0.025
Welders	2019	6	15	1.877	0.748	3.562	4.647	0.008	0.241	0.241	568.299	0.067
Welders	2019	16	25	3.592	0.787	2.501	4.596	0.007	0.222	0.222	568.299	0.071
Welders	2019	26	50	11.071	1.055	4.95	4.449	0.007	0.273	0.273	568.299	0.095
Welders	2019	51	120	8.032	0.503	3.623	3.648	0.006	0.25	0.25	568.299	0.045
Welders	2019	121	175	14.693	0.37	3.122	2.832	0.006	0.143	0.143	568.3	0.033
Welders	2019	176	250	13.284	0.276	1.104	2.432	0.006	0.075	0.075	568.299	0.024
Welders	2019	251	500	17.937	0.264	1.065	2.163	0.005	0.072	0.072	568.3	0.023
Welders	2020	6	15	1.835	0.731	3.546	4.542	0.008	0.227	0.227	568.299	0.066
Welders	2020	16	25	3.507	0.769	2.473	4.538	0.007	0.212	0.212	568.299	0.069
Welders	2020	26	50	9.83	0.937	4.84	4.304	0.007	0.238	0.238	568.299	0.084
Welders	2020	51	120	7.278	0.455	3.605	3.351	0.006	0.216	0.216	568.299	0.041
Welders	2020	121	175	13.663	0.344	3.122	2.523	0.006	0.127	0.127	568.299	0.031
Welders	2020	176	250	12.577	0.261	1.093	2.143	0.006	0.066	0.066	568.299	0.023
Welders	2020	251	500	17.094	0.252	1.055	1.91	0.005	0.064	0.064	568.299	0.022
Welders	2021	6	15	1.8	0.717	3.531	4.462	0.008	0.214	0.214	568.299	0.064
Welders	2021	16	25	3.431	0.752	2.446	4.497	0.007	0.201	0.201	568.299	0.067
Welders	2021	26	50	8.704	0.829	4.708	4.133	0.007	0.203	0.203	568.299	0.074
Welders	2021	51	120	6.572	0.411	3.579	3.042	0.006	0.184	0.184	568.299	0.037
Welders	2021	121	175	12.512	0.315	3.112	2.189	0.006	0.11	0.11	568.299	0.028
Welders	2021	176	250	11.711	0.243	1.081	1.836	0.006	0.057	0.057	568.299	0.021
Welders	2021	251	500	15.998	0.236	1.044	1.642	0.005	0.055	0.055	568.299	0.021
Welders	2022	6	15	1.774	0.707	3.519	4.408	0.008	0.203	0.203	568.3	0.063
Welders	2022	16	25	3.374	0.739	2.426	4.47	0.007	0.193	0.193	568.299	0.066
Welders	2022	26	50	7.959	0.758	4.645	4.007	0.007	0.175	0.175	568.299	0.068
Welders	2022	51	120	6.112	0.382	3.57	2.808	0.006	0.16	0.16	568.299	0.034
Welders	2022	121	175	11.714	0.295	3.113	1.935	0.006	0.097	0.097	568.3	0.026
Welders	2022	176	250	11.128	0.231	1.074	1.598	0.006	0.05	0.05	568.299	0.02
Welders	2022	251	500	15.267	0.225	1.038	1.454	0.005	0.049	0.049	568.3	0.02
Welders	2023	6	15	1.751	0.698	3.508	4.359	0.008	0.194	0.194	568.3	0.063
Welders	2023	16	25	3.322	0.728	2.407	4.447	0.007	0.186	0.186	568.299	0.065
Welders	2023	26	50	7.318	0.697	4.596	3.891	0.007	0.151	0.151	568.299	0.062
Welders	2023	51	120	5.713	0.357	3.564	2.599	0.006	0.139	0.139	568.299	0.032
Welders	2023	121	175	11.013	0.277	3.115	1.726	0.006	0.085	0.085	568.299	0.025
Welders	2023	176	250	10.606	0.22	1.071	1.404	0.006	0.044	0.044	568.299	0.019
Welders	2023	251	500	14.602	0.215	1.034	1.289	0.005	0.042	0.042	568.299	0.019
Welders	2024	6	15	1.731	0.69	3.499	4.316	0.008	0.188	0.188	568.299	0.062
Welders	2024	16	25	3.276	0.718	2.39	4.426	0.007	0.181	0.181	568.299	0.064
Welders	2024	26	50	6.78	0.646	4.557	3.782	0.007	0.13	0.13	568.299	0.058
Welders	2024	51	120	5.366	0.336	3.56	2.43	0.006	0.12	0.12	568.299	0.03
Welders	2024	121	175	10.369	0.261	3.118	1.541	0.006	0.074	0.074	568.299	0.023
Welders	2024	176	250	10.107	0.21	1.068	1.234	0.006	0.038	0.038	568.299	0.018
Welders	2024	251	500	13.957	0.206	1.032	1.135	0.005	0.037	0.037	568.299	0.018
Welders	2025	6	15	1.713	0.683	3.491	4.278	0.008	0.183	0.183	568.3	0.061
Welders	2025	16	25	3.237	0.709	2.376	4.407	0.007	0.177	0.177	568.299	0.064
Welders	2025	26	50	6.315	0.602	4.524	3.676	0.007	0.112	0.112	568.299	0.054
Welders	2025	51	120	5.055	0.316	3.557	2.283	0.006	0.102	0.102	568.299	0.028
Welders	2025	121	175	9.743	0.245	3.121	1.365	0.006	0.063	0.063	568.299	0.022
Welders	2025	176	250	9.621	0.199	1.065	1.075	0.006	0.032	0.032	568.299	0.018
Welders	2025	251	500	13.325	0.196	1.029	0.99	0.005	0.031	0.031	568.299	0.017
Welders	2030	6	15	1.665	0.663	3.47	4.164	0.008	0.166	0.166	568.299	0.059
Welders	2030	16	25	3.133	0.687	2.34	4.347	0.007	0.165	0.165	568.299	0.061
Welders	2030	26	50	4.719	0.449	4.387	3.273	0.007	0.045	0.045	568.299	0.04
Welders	2030	51	120	3.827	0.239	3.535	1.707	0.006	0.04	0.04	568.299	0.021
Welders	2030	121	175	7.011	0.176	3.121	0.628	0.006	0.027	0.027	568.299	0.015
Welders	2030	176	250	7.829	0.162	1.063	0.525	0.006	0.017	0.017	568.299	0.014
Welders	2030	251	500	10.967	0.161	1.027	0.495	0.005	0.017	0.017	568.299	0.014
Welders	2035	6	15	1.659	0.661	3.469	4.143	0.008	0.162	0.162	568.299	0.059
Welders	2035	16	25	3.126	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
Welders	2035	26	50	4.262	0.406	4.349	3.147	0.007	0.022	0.022	568.299	0.036
Welders	2035	51	120	3.418	0.214	3.528	1.509	0.006	0.019	0.019	568.299	0.019
Welders	2035	121	175	6.087	0.153	3.121	0.387	0.006	0.015	0.015	568.299	0.013
Welders	2035	176	250	7.189	0.149	1.063	0.343	0.006	0.012	0.012	568.299	0.013
Welders	2035	251	500	10.118	0.149	1.027	0.339	0.005	0.012	0.012	568.299	0.013
Welders	2040	6	15	1.659	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
Welders	2040	16	25	3.126	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
Welders	2040	26	50	4.218	0.402	4.336	3.093	0.007	0.015	0.015	568.3	0.036
Welders	2040	51	120	3.322	0.208	3.524	1.447	0.006	0.014	0.014	568.299	0.018
Welders	2040	121	175	5.753	0.145	3.118	0.303	0.006	0.011	0.011	568.299	0.013
Welders	2040	176	250	6.911	0.143	1.062	0.287	0.006	0.01	0.01	568.3	0.012
Welders	2040	251	500	9.728	0.143	1.026	0.287	0.005	0.01	0.01	568.299	0.012

Table 3.5 OFFROAD Emission Factor Based on Engine Tier

Tier	Low HP	High HP	CO, g/bhp-hr	NOx, g/bhp-hr	PM10, g/bhp-hr	PM2.5, g/bhp-hr	ROG, g/bhp-hr
Tier 1	25	49	4.1	5.26	0.48	0.48	1.74
	50	74	6.9	6.54	0.552	0.552	1.19
	75	119	6.9	6.54	0.552	0.552	1.19
	120	174	6.9	6.54	0.274	0.274	0.82
	175	299	6.9	5.93	0.108	0.108	0.38
	300	599	6.9	5.93	0.108	0.108	0.38
	600	750	6.9	5.93	0.108	0.108	0.38
	751	2000	6.9	5.93	0.108	0.108	0.38
Tier 2	25	49	4.1	4.63	0.28	0.28	0.29
	50	74	3.7	4.75	0.192	0.192	0.23
	75	119	3.7	4.75	0.192	0.192	0.23
	120	174	3.7	4.17	0.128	0.128	0.19
	175	299	2.6	4.15	0.088	0.088	0.12
	300	599	2.6	3.79	0.088	0.088	0.12
	600	750	2.6	3.79	0.088	0.088	0.12
	751	2000	2.6	3.79	0.088	0.088	0.12
Tier 3	25	49	4.1	4.63	0.28	0.28	0.29
	50	74	3.7	2.74	0.192	0.192	0.12
	75	119	3.7	2.74	0.192	0.192	0.12
	120	174	3.7	2.32	0.112	0.112	0.12
	175	299	2.6	2.32	0.088	0.088	0.12
	300	599	2.6	2.32	0.088	0.088	0.12
	600	750	2.6	2.32	0.088	0.088	0.12
	751	2000	2.6	2.32	0.088	0.088	0.12
Tier 4 Interim	25	49	4.1	4.55	0.128	0.128	0.12
	50	74	3.7	2.74	0.112	0.112	0.12
	75	119	3.7	2.14	0.008	0.008	0.11
	120	174	3.7	2.15	0.008	0.008	0.06
	175	299	2.6	1.29	0.008	0.008	0.08
	300	599	2.6	1.29	0.008	0.008	0.08
	600	750	2.6	1.29	0.008	0.008	0.08
	751	2000	2.6	2.24	0.048	0.048	0.12
Tier 4 Final	25	49	4.1	2.75	0.008	0.008	0.12
	50	74	3.7	2.74	0.008	0.008	0.12
	75	119	3.7	0.26	0.008	0.008	0.06
	120	174	3.7	0.26	0.008	0.008	0.06
	175	299	2.2	0.26	0.008	0.008	0.06
	300	599	2.2	0.26	0.008	0.008	0.06
	600	750	2.2	0.26	0.008	0.008	0.06
	751	2000	2.6	2.24	0.016	0.016	0.06

Source:

ARB. 2011. The Carl Moyer Program Guidelines. Available at: http://www.arb.ca.gov/msprog/moyer/guidelines/2011gl/2011cmpgl_3_27_13.pdf

Table 3.6 Percent Reduction in Diesel Emission Factors For Compressed Natural Gas Equipment
Based on Data Available in OFFROAD2011

Equipment Type	MinYear	MaxYear	Low HP	High HP	CO	CO2E	NOX	PM10	PM2.5	ROG	SO2	TOG
Aerial Lifts	1990	2009	0	15	-27.49	-0.27	0.55	0.36	0.36	0.73	1	0.73
Aerial Lifts	1990	2009	16	25	-29.12	-0.31	0.46	0.26	0.26	0.74	1	0.74
Air Conditioner	1990	2009	0	175	-4.51	-0.21	-0.3	0.84	0.84	0.87	1	0.87
Baggage Tug	1990	2009	0	120	-5.07	-0.24	0.1	0.94	0.94	0.88	1	0.88
Belt Loader	1990	2009	0	120	-4.69	-0.23	0.06	0.93	0.93	0.89	1	0.89
Bobtail	1990	2009	0	120	-4.41	-0.22	0.23	0.93	0.93	0.91	1	0.91
Cargo Loader	1990	2009	0	120	-6.25	-0.25	-0.04	0.93	0.93	0.84	1	0.84
Catering Truck	1990	2009	0	250	-11.52	-0.22	-0.44	0.7	0.7	0.78	1	0.78
Forklifts	1990	2009	0	50	-0.21	-0.23	-0.51	0.93	0.93	0.95	1	0.95
Forklifts	1990	2009	51	120	-5.94	-0.25	0.05	0.93	0.93	0.87	1	0.87
Forklifts	1990	2009	121	175	-5.81	-0.22	-0.02	0.88	0.88	0.89	1	0.89
Generator Sets	1990	2009	0	120	-3.97	-0.12	-0.02	0.92	0.92	0.91	1	0.91
Generator Sets	1990	2009	121	175	-4.15	-0.12	-0.11	0.85	0.85	0.89	1	0.89
Lav Truck	1990	2009	0	175	-4.57	-0.22	-0.11	0.88	0.88	0.89	1	0.89
Lift	1990	2009	0	120	-4.65	-0.23	-0.05	0.92	0.92	0.89	1	0.89
Aerial Lifts	2010	2014	0	15	-30.37	-0.27	0.31	-0.29	-0.29	0.59	1	0.59
Aerial Lifts	2010	2014	16	25	-37.55	-0.32	0.4	-0.03	-0.03	0.6	1	0.6
Air Conditioner	2010	2014	0	175	-4.5	-0.2	-0.36	0.73	0.73	0.85	1	0.85
Baggage Tug	2010	2014	0	120	-5.56	-0.22	0.22	0.92	0.92	0.88	1	0.88
Belt Loader	2010	2014	0	120	-5.13	-0.22	0.21	0.92	0.92	0.9	1	0.9
Bobtail	2010	2014	0	120	-4.8	-0.19	0.64	0.91	0.91	0.96	1	0.96
Cargo Loader	2010	2014	0	120	-6.78	-0.24	0.06	0.91	0.91	0.84	1	0.84
Catering Truck	2010	2014	0	250	-17.32	-0.21	-0.38	0.53	0.53	0.73	1	0.73
Forklifts	2010	2014	0	50	-0.421	-0.18053	0.3063	0.91412	0.9066507	0.9572	1	0.9118
Forklifts	2010	2014	51	120	-6.412	-0.32006	0.4354	0.90105	0.8924417	0.8764	1	0.4569
Forklifts	2010	2014	121	175	-5.588	-0.30615	0.5219	0.84295	0.8292897	0.8844	1	0.0884
Generator Sets	2010	2014	0	120	-4.3	-0.11	0.11	0.89	0.89	0.91	1	0.91
Generator Sets	2010	2014	121	175	-4.36	-0.11	0	0.81	0.81	0.89	1	0.89
Lav Truck	2010	2014	0	175	-4.77	-0.21	0.01	0.84	0.84	0.9	1	0.9
Lift	2010	2014	0	120	-5.03	-0.22	0.09	0.9	0.9	0.89	1	0.89
Aerial Lifts	2015	2019	0	15	-30.4	-0.27	0.28	-0.86	-0.86	0.57	1	0.57
Aerial Lifts	2015	2019	16	25	-44.65	-0.32	0.32	-0.48	-0.48	0.46	1	0.46
Air Conditioner	2015	2019	0	175	-4.5	-0.19	-0.41	0.47	0.47	0.85	1	0.85
Baggage Tug	2015	2019	0	120	-5.9	-0.21	0.3	0.91	0.91	0.89	1	0.89
Belt Loader	2015	2019	0	120	-5.41	-0.21	0.31	0.9	0.9	0.91	1	0.91
Bobtail	2015	2019	0	120	-5.05	-0.19	0.65	0.89	0.89	0.96	1	0.96
Cargo Loader	2015	2019	0	120	-7.2	-0.22	0.04	0.88	0.88	0.83	1	0.83
Catering Truck	2015	2019	0	250	-18.99	-0.2	-0.54	0.16	0.16	0.72	1	0.72

Table 3.6 Percent Reduction in Diesel Emission Factors For Compressed Natural Gas Equipment
Based on Data Available in OFFROAD2011

Equipment Type	MinYear	MaxYear	Low HP	High HP	CO	CO2E	NOX	PM10	PM2.5	ROG	SO2	TOG
Forklifts	2015	2019	0	50	-0.486	-0.16566	0.4918	0.90744	0.899394	0.9643	1	0.9263
Forklifts	2015	2019	51	120	-6.492	-0.30722	0.5103	0.89309	0.8837969	0.9112	1	0.6099
Forklifts	2015	2019	121	175	-5.638	-0.29426	0.6395	0.82031	0.8046898	0.9225	1	0.3883
Generator Sets	2015	2019	0	120	-4.56	-0.11	0.22	0.84	0.84	0.91	1	0.91
Generator Sets	2015	2019	121	175	-4.44	-0.1	0.12	0.71	0.71	0.9	1	0.9
Lav Truck	2015	2019	0	175	-4.83	-0.2	0.1	0.76	0.76	0.91	1	0.91
Lift	2015	2019	0	120	-5.31	-0.21	0.17	0.85	0.85	0.89	1	0.89
Aerial Lifts	2020	2024	0	15	-30.4	-0.27	0.28	-0.91	-0.91	0.57	1	0.57
Aerial Lifts	2020	2024	16	25	-47.22	-0.32	0.29	-0.91	-0.91	0.39	1	0.39
Air Conditioner	2020	2024	0	175	-4.49	-0.19	-1.04	-0.81	-0.81	0.88	1	0.88
Baggage Tug	2020	2024	0	120	-6.21	-0.2	0.31	0.87	0.87	0.9	1	0.9
Belt Loader	2020	2024	0	120	-5.69	-0.2	0.31	0.85	0.85	0.91	1	0.91
Bobtail	2020	2024	0	120	-5.26	-0.19	0.53	0.84	0.84	0.95	1	0.95
Cargo Loader	2020	2024	0	120	-7.57	-0.21	-0.09	0.78	0.78	0.81	1	0.81
Catering Truck	2020	2024	0	250	-19.46	-0.2	-1.2	-0.75	-0.75	0.73	1	0.73
Forklifts	2020	2024	0	50	-0.898	-0.16373	0.3924	0.83451	0.8201159	0.9414	1	0.8791
Forklifts	2020	2024	51	120	-7.096	-0.30625	0.2609	0.80708	0.7903095	0.858	1	0.3757
Forklifts	2020	2024	121	175	-6.198	-0.29359	0.3988	0.66593	0.63688	0.89	1	0.1317
Generator Sets	2020	2024	0	120	-4.76	-0.1	0.25	0.69	0.69	0.91	1	0.91
Generator Sets	2020	2024	121	175	-4.46	-0.1	0.05	0.48	0.48	0.9	1	0.9
Lav Truck	2020	2024	0	175	-4.85	-0.19	-0.03	0.56	0.56	0.91	1	0.91
Lift	2020	2024	0	120	-5.53	-0.2	0.13	0.72	0.72	0.89	1	0.89
Aerial Lifts	2025	2040	0	15	-30.4	-0.27	0.28	-0.91	-0.91	0.57	1	0.57
Aerial Lifts	2025	2040	16	25	-48.03	-0.32	0.27	-1.09	-1.09	0.37	1	0.37
Air Conditioner	2025	2040	0	175	-4.5	-0.19	-3.46	-3.31	-3.31	0.88	1	0.88
Baggage Tug	2025	2040	0	120	-6.4	-0.19	0.17	0.79	0.79	0.89	1	0.89
Belt Loader	2025	2040	0	120	-5.87	-0.2	0.16	0.72	0.72	0.9	1	0.9
Bobtail	2025	2040	0	120	-5.48	-0.19	0.32	0.72	0.72	0.93	1	0.93
Cargo Loader	2025	2040	0	120	-7.63	-0.2	-0.4	0.56	0.56	0.78	1	0.78
Catering Truck	2025	2040	0	250	-19.36	-0.2	-3.3	-2.94	-2.94	0.72	1	0.72
Forklifts	2025	2040	0	50	-1.152	-0.16313	0.2811	0.6679	0.6390223	0.9001	1	0.7938
Forklifts	2025	2040	51	120	-7.432	-0.30582	-0.17	0.57587	0.5389851	0.7693	1	-0.014
Forklifts	2025	2040	121	175	-6.368	-0.29311	-0.205	0.30273	0.2420976	0.8135	1	-0.476
Generator Sets	2025	2040	0	120	-4.83	-0.1	0.13	0.37	0.37	0.9	1	0.9
Generator Sets	2025	2040	121	175	-4.46	-0.1	-0.37	-0.03	-0.03	0.9	1	0.9
Lav Truck	2025	2040	0	175	-4.86	-0.19	-0.57	0.05	0.05	0.9	1	0.9
Lift	2025	2040	0	120	-5.6	-0.2	-0.08	0.37	0.37	0.87	1	0.87

Table 3.7 Grading Equipment Acres Per Day

Equipment Type	Acres per 8-hour Day
Crawler Tractors	0.5
Graders	0.5
Rubber Tired Dozers	0
Scrapers	1

Notes:

1. Based on Walker's Building Estimator's Reference Book and determinations by SCAQMD.

Table 4.1 Road Characteristics

Location Type	Name	Average Vehicle Weight	Percent of Paved Roads			
			Construction Worker	Construction Hauling	Construction Vendor	Operational Mobile
Air Basin	Great Basin Valleys	2.4	100	100	100	100
	Lake County	2.4	100	100	100	100
	Lake Tahoe	2.4	100	100	100	100
	Mojave Desert	2.4	100	100	100	100
	Mountain Counties	2.4	100	100	100	100
	North Central Coast	2.4	100	100	100	100
	North Coast	2.4	55	55	55	55
	Northeast Plateau	2.4	100	100	100	100
	Sacramento Valley	2.4	100	100	100	100
	Salton Sea	2.4	50	50	50	50
	San Diego	2.4	100	100	100	100
	San Francisco Bay Area	2.4	100	100	100	100
	San Joaquin Valley	2.4	100	100	100	100
	South Central Coast	2.4	100	100	100	100
	South Coast	2.4	100	100	100	100
Air District	Amador County APCD	2.4	100	100	100	100
	Antelope Valley APCD	2.4	100	100	100	100
	Bay Area AQMD	2.4	100	100	100	100
	Butte County AQMD	2.4	100	100	100	100
	Calaveras County AQMD	2.4	100	100	100	100
	Colusa County APCD	2.4	100	100	100	100
	El Dorado County APCD	2.4	100	100	100	100
	Feather River AQMD	2.4	100	100	100	100
	Glenn County APCD	2.4	100	100	100	100
	Great Basin UAPCD	2.4	100	100	100	100
	Imperial County APCD	2.4	50	50	50	50
	Kern County APCD	2.4	100	100	100	100
	Lake County AQMD	2.4	100	100	100	100
	Lassen County APCD	2.4	100	100	100	100
	Mariposa County APCD	2.4	100	100	100	100
	Mendocino County AQMD	2.4	55	55	55	55
	Modoc County APCD	2.4	100	100	100	100
	Mojave Desert AQMD	2.4	100	100	100	100
	Monterey Bay Unified APCD	2.4	100	100	100	100
	North Coast Unified APCD	2.4	100	100	100	100
	Northern Sierra AQMD	2.4	100	100	100	100
	Northern Sonoma County APCD	2.4	100	100	100	100
	Placer County APCD	2.4	100	100	100	100
	Sacramento Metropolitan AQMD	2.4	100	100	100	100
	San Diego County APCD	2.4	100	100	100	100
	San Joaquin Valley Unified APCD	2.4	100	100	100	100
	San Luis Obispo County APCD	2.4	100	100	100	100
	Santa Barbara County APCD	2.4	100	100	100	100
	Shasta County AQMD	2.4	100	100	100	100
	Siskiyou County APCD	2.4	100	100	100	100
	South Coast AQMD	2.4	100	100	100	100
	Tehama County APCD	2.4	100	100	100	100
	Tuolumne County APCD	2.4	100	100	100	100
	Ventura County APCD	2.4	100	100	100	100
	Yolo/Solano AQMD	2.4	94	94	94	94

Table 4.1 Road Characteristics

Location Type	Name	Average Vehicle Weight	Percent of Paved Roads			
			Construction Worker	Construction Hauling	Construction Vendor	Operational Mobile
Counties	Alameda	2.4	100	100	100	100
	Alpine	2.4	100	100	100	100
	Amador	2.4	100	100	100	100
	Butte	2.4	100	100	100	100
	Calaveras	2.4	100	100	100	100
	Colusa	2.4	100	100	100	100
	Contra Costa	2.4	100	100	100	100
	Del Norte	2.4	100	100	100	100
	El Dorado-Lake Tahoe	2.4	100	100	100	100
	El Dorado-Mountain County	2.4	100	100	100	100
	Fresno	2.4	100	100	100	100
	Glenn	2.4	100	100	100	100
	Humboldt	2.4	100	100	100	100
	Imperial	2.4	50	50	50	50
	Inyo	2.4	100	100	100	100
	Kern-Mojave Desert	2.4	100	100	100	100
	Kern-San Joaquin	2.4	100	100	100	100
	Kings	2.4	100	100	100	100
	Lake	2.4	100	100	100	100
	Lassen	2.4	100	100	100	100
	Los Angeles-Mojave Desert	2.4	100	100	100	100
	Los Angeles-South Coast	2.4	100	100	100	100
	Madera	2.4	100	100	100	100
	Marin	2.4	100	100	100	100
	Mariposa	2.4	100	100	100	100
	Mendocino-Coastal	2.4	70	70	70	70
	Mendocino-Inland	2.4	80	80	80	80
	Mendocino-Rural Inland North	2.4	30	30	30	30
	Mendocino-Rural Inland South	2.4	40	40	40	40
	Merced	2.4	100	100	100	100
	Modoc	2.4	100	100	100	100
	Mono	2.4	100	100	100	100
	Monterey	2.4	100	100	100	100
	Napa	2.4	100	100	100	100
	Nevada	2.4	100	100	100	100
	Orange	2.4	100	100	100	100
	Placer-Lake Tahoe	2.4	100	100	100	100
	Placer-Mountain Counties	2.4	100	100	100	100
	Placer-Sacramento	2.4	100	100	100	100
	Plumas	2.4	100	100	100	100
	Riverside-Mojave Desert MDAQMD	2.4	100	100	100	100
	Riverside-Mojave Desert SCAQMD	2.4	100	100	100	100
	Riverside-Salton Sea	2.4	100	100	100	100
	Riverside-South Coast	2.4	100	100	100	100
	Sacramento	2.4	100	100	100	100
	San Benito	2.4	100	100	100	100
	San Bernardino-Mojave Desert	2.4	100	100	100	100
	San Bernardino-South Coast	2.4	100	100	100	100
	San Diego	2.4	100	100	100	100
	San Francisco	2.4	100	100	100	100
	San Joaquin	2.4	100	100	100	100
	San Luis Obispo	2.4	100	100	100	100
	San Mateo	2.4	100	100	100	100
	Santa Barbara-North of Santa Ynez	2.4	100	100	100	100
	Santa Barbara-South of Santa Ynez Range	2.4	100	100	100	100
	Santa Clara	2.4	100	100	100	100

Table 4.1 Road Characteristics

Location Type	Name	Average Vehicle Weight	Percent of Paved Roads			
			Construction Worker	Construction Hauling	Construction Vendor	Operational Mobile
	Santa Cruz	2.4	100	100	100	100
	Shasta	2.4	100	100	100	100
	Sierra	2.4	100	100	100	100
	Siskiyou	2.4	100	100	100	100
	Solano-San Francisco	2.4	100	100	100	100
	Solano-San Joaquin	2.4	100	100	100	94
	Sonoma-North Coast	2.4	100	100	100	100
	Sonoma-San Francisco	2.4	100	100	100	100
	Stanislaus	2.4	100	100	100	100
	Sutter	2.4	100	100	100	100
	Tehama	2.4	100	100	100	100
	Trinity	2.4	100	100	100	100
	Tulare	2.4	100	100	100	100
	Tuolumne	2.4	100	100	100	100
	Ventura	2.4	100	100	100	100
	Yolo	2.4	94	94	94	94
	Yuba	2.4	100	100	100	100
Statewide	Statewide	2.4	100	100	100	100

Notes:

1. Average Vehicle Weight is based on average for vehicles in California on all Roads.

2. Percent paved roads was set to 100% by default unless the district supplied a different

Table 4.2 Mobile Trip Characteristics Dependent on Location

Location Type	Name	Rural Trip Length (miles)						Urban Trip Length (miles)						Residential Trip Type Percentage		
		C-C	C-NW	C-W	H-O	H-S	H-W	C-C	C-NW	C-W	H-O	H-S	H-W	H-W	H-S	H-O
Air Basin	Great Basin Valleys	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Lake County	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Lake Tahoe	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Mojave Desert	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	40.2	19.2	40.6
	Mountain Counties	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	North Central Coast	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	44	18.8	37.2
	North Coast	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Northeast Plateau	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Sacramento Valley	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	32.9	18	49.1
	Salton Sea	6.2	6.2	13.8	8.1	6.9	14.6	4.2	5.4	12.5	4.5	3.5	11	40.2	19.2	40.6
	San Diego	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	41.6	18.8	39.6
	San Francisco Bay Area	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	San Joaquin Valley	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	45.6	19	35.4
	South Central Coast	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.5	15	47.5
	South Coast	10.1	7.9	18.5	12.9	9.6	19.8	8.4	6.9	16.6	8.7	5.9	14.7	40.2	19.2	40.6
Air District	Amador County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	Antelope Valley APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	40.2	19.2	40.6
	Bay Area AQMD	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	Butte County AQMD	10.52	10.52	10.5	7.22	7.22	12.54	10.5	10.52	10.52	7.22	7.22	12.54	35	17	48
	Calaveras County AQMD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	Colusa County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	El Dorado County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	Feather River AQMD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	Glenn County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Great Basin UAPCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Imperial County APCD	9.5	11.9	16.4	8.1	11.7	10.2	5	8.9	6.7	3.7	3.9	7.3	40.2	19.2	40.6
	Kern County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	46.4	16.4	37.2
	Lake County AQMD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Lassen County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Mariposa County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	Mendocino County AQMD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Modoc County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Mojave Desert AQMD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	40.2	19.2	40.6
	Monterey Bay Unified APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	44	18.8	37.2
	North Coast Unified APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Northern Sierra AQMD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	Northern Sonoma County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.9	19.5	37.6
	Placer County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	Sacramento Metropolitan AQMD	7.5	8.5	15	8.5	7.5	15	5	6.5	10	6.5	5	10	46.5	12.5	41
	San Diego County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	41.6	18.8	39.6
	San Joaquin Valley Unified APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	45.6	19	35.4
	San Luis Obispo County APCD	13	13	13	13	13	13	5	5	13	5	5	13	35.8	21	43.2
	Santa Barbara County APCD	4.6	4.6	8.8	6.4	5.9	12.3	4.6	4.6	8.8	6.4	5.9	12.3	37.5	15	47.5
	Shasta County AQMD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42	21.2	37.8

Table 4.2 Mobile Trip Characteristics Dependent on Location

Location Type	Name	Rural Trip Length (miles)						Urban Trip Length (miles)						Residential Trip Type Percentage		
		C-C	C-NW	C-W	H-O	H-S	H-W	C-C	C-NW	C-W	H-O	H-S	H-W	H-W	H-S	H-O
	Siskiyou County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	South Coast AQMD	10.1	7.9	18.5	12.9	9.6	19.8	8.4	6.9	16.6	8.7	5.9	14.7	40.2	19.2	40.6
	Tehama County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	41	21.2	37.8
	Tuolumne County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	Ventura County APCD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	32.9	18	49.1
	Yolo/Solano AQMD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	Alameda	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	Alpine	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Amador	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	Butte	10.52	10.52	10.5	7.22	7.22	12.54	10.5	10.52	10.52	7.22	7.22	12.54	35	17	48
	Calaveras	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	Colusa	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Contra Costa	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	Del Norte	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	El Dorado-Lake Tahoe	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	El Dorado-Mountain County	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	Fresno	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	48.4	15.9	35.7
	Glenn	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Humboldt	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Imperial	9.5	11.9	16.4	8.1	11.7	10.2	5	8.9	6.7	3.7	3.9	7.3	40.2	19.2	40.6
	Inyo	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Kern-Mojave Desert	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	46.4	16.4	37.2
	Kern-San Joaquin	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	46.4	16.4	37.2
	Kings	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Lake	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Lassen	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Los Angeles-Mojave Desert	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	40.2	19.2	40.6
	Los Angeles-South Coast	10.1	7.9	18.5	12.9	9.6	19.8	8.4	6.9	16.6	8.7	5.9	14.7	40.2	19.2	40.6
	Madera	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Marin	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	Mariposa	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	Mendocino-Coastal	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Mendocino-Inland	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Mendocino-Rural Inland North	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Mendocino-Rural Inland South	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Merced	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	46.9	17.4	35.7
	Modoc	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Mono	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Monterey	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	44	18.8	37.2
	Napa	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	Nevada	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Orange	10.1	7.9	18.5	12.9	9.6	19.8	8.4	6.9	16.6	8.7	5.9	14.7	40.2	19.2	40.6
Counties	Placer-Lake Tahoe	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	Placer-Mountain Counties	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4

Table 4.2 Mobile Trip Characteristics Dependent on Location

Location Type	Name	Rural Trip Length (miles)						Urban Trip Length (miles)						Residential Trip Type Percentage		
		C-C	C-NW	C-W	H-O	H-S	H-W	C-C	C-NW	C-W	H-O	H-S	H-W	H-W	H-S	H-O
	Placer-Sacramento	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	Plumas	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Riverside-Mojave Desert MDAQMD	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	40.2	19.2	40.6
	Riverside-Mojave Desert SCAQMD	10.1	7.9	18.5	12.9	9.6	19.8	8.4	6.9	16.6	8.7	5.9	14.7	40.2	19.2	40.6
	Riverside-Salton Sea	6.2	6.2	13.8	8.1	6.9	14.6	4.2	5.4	12.5	4.5	3.5	11	40.2	19.2	40.6
	Riverside-South Coast	10.1	7.9	18.5	12.9	9.6	19.8	8.4	6.9	16.6	8.7	5.9	14.7	40.2	19.2	40.6
	Sacramento	7.5	8.5	15	8.5	7.5	15	5	6.5	10	6.5	5	10	46.5	12.5	41
	San Benito	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	44	18.8	37.2
	San Bernardino-Mojave Desert	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	40.2	19.2	40.6
	San Bernardino-South Coast	10.1	7.9	18.5	12.9	9.6	19.8	8.4	6.9	16.6	8.7	5.9	14.7	40.2	19.2	40.6
	San Diego	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	41.6	18.8	39.6
	San Francisco	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	San Joaquin	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	45.6	19	35.4
	San Luis Obispo	13	13	13	13	13	13	5	5	13	5	5	13	35.8	21	43.2
	San Mateo	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	Santa Barbara-North of Santa Ynez	4.6	4.6	8.8	6.4	5.9	12.3	4.6	4.6	8.8	6.4	5.9	12.3	37.5	15	47.5
	Santa Barbara-South of Santa Ynez Range	4.6	4.6	8.8	6.4	5.9	12.3	4.6	4.6	8.8	6.4	5.9	12.3	37.5	15	47.5
	Santa Clara	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	Santa Cruz	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	44	18.8	37.2
	Shasta	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	41	21.2	37.8
	Sierra	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Siskiyou	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Solano-San Francisco	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	Solano-Sacramento	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.9	19.5	37.6
	Sonoma-North Coast	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.9	19.5	37.6
	Sonoma-San Francisco	6.6	6.6	14.7	5.4	4.3	12.4	7.3	7.3	9.5	5.4	4.3	12.4	26.1	29.1	44.8
	Stanislaus	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	48.4	13.9	37.7
	Sutter	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	Tehama	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	41	21.2	37.8
	Trinity	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.3	19.6	38.1
	Tulare	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	38.4	22.6	39
	Tuolumne	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	37.3	20.7	42
	Ventura	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	32.9	18	49.1
	Yolo	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
	Yuba	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	42.6	21	36.4
Statewide	Statewide	6.6	6.6	14.7	7.9	7.1	16.8	7.3	7.3	9.5	7.5	7.3	10.8	41.4	19.3	39.3

Table 4.3 Mobile Trip Rates, Trip Purpose, Trip Type by Land Use

Land Use Type	Land Use Sub Type	Size Metric	Trip Rate			Primary %	Diverted %	PassBy %	Trip Type		
			Week day	Saturday	Sunday				C-C %	C-W %	C-NW %
Residential	Single Family Housing	Dwelling Unit	9.57	10.08	8.77	86	11	3	0	0	0
Residential	Apartments Low Rise	Dwelling Unit	6.59	7.16	6.07	86	11	3	0	0	0
Residential	Apartments Mid Rise	Dwelling Unit	6.59	7.16	6.07	86	11	3	0	0	0
Residential	Apartments High Rise	Dwelling Unit	6.59	7.16	6.07	86	11	3	0	0	0
Residential	Condo/Townhouse	Dwelling Unit	6.59	7.16	6.07	86	11	3	0	0	0
Residential	Condo/Townhouse High Rise	Dwelling Unit	6.59	7.16	6.07	86	11	3	0	0	0
Residential	Mobile Home Park	Dwelling Unit	4.99	5	4.36	86	11	3	0	0	0
Residential	Retirement Community	Dwelling Unit	2.81	2.81	2.81	86	11	3	0	0	0
Residential	Congregate Care (Assisted Living)	Dwelling Unit	2.74	2.2	2.44	86	11	3	0	0	0
Educational	Day-Care Center	Student	4.48	0.39	0.37	28	58	14	82.3	12.7	5
Educational	Day-Care Center	1000sqft	79.26	6.21	5.83	28	58	14	82.3	12.7	5
Educational	Day-Care Center	Employee	28.13	2.61	2.45	28	58	14	82.3	12.7	5
Educational	Elementary School	Student	1.29			63	25	12	30	65	5
Educational	Elementary School	1000sqft	15.43			63	25	12	30	65	5
Educational	Elementary School	Employee	15.71			63	25	12	30	65	5
Educational	Junior High School	Student	1.62			63	25	12	22.2	72.8	5
Educational	Junior High School	1000sqft	13.78			63	25	12	22.2	72.8	5
Educational	Junior High School	Employee	16.39			63	25	12	22.2	72.8	5
Educational	High School	Student	1.71	0.61	0.25	75	19	6	17.2	77.8	5
Educational	High School	1000sqft	12.89	4.37	1.79	75	19	6	17.2	77.8	5
Educational	High School	Employee	19.74	6.57	2.68	75	19	6	17.2	77.8	5
Educational	Junior College (2yr)	Student	1.2	0.42	0.04	92	7	1	88.6	6.4	5
Educational	Junior College (2yr)	1000sqft	27.49	11.23	1.21	92	7	1	88.6	6.4	5
Educational	Junior College (2yr)	Employee	15.55	6.16	0.66	92	7	1	88.6	6.4	5
Educational	University/College (4yr)	Student	2.38	1.3		91	9	0	88.6	6.4	5
Educational	University/College (4yr)	Employee	9.13	3.12		91	9	0	88.6	6.4	5
Educational	Library	Employee	52.52	47.68	23.54	44	44	12	43	52	5
Educational	Library	1000sqft	56.24	46.55	25.49	44	44	12	43	52	5
Educational	Place of Worship	Seat	0.61	0.9	1.85	64	25	11	95	0	5
Educational	Place of Worship	1000sqft	9.11	10.37	36.63	64	25	11	95	0	5
Recreational	City Park	Acre	1.59	1.59	1.59	66	28	6	48	33	19
Recreational	Golf Course	Acre	5.04	5.82	5.88	52	39	9	48	33	19
Recreational	Golf Course	Hole	35.74	40.63	39.53	52	39	9	48	33	19
Recreational	Recreational Swimming Pool	1000sqft	32.93	20.87	26.73	52	39	9	48	33	19
Recreational	Racquet Club	1000sqft	32.93	20.87	26.73	52	39	9	69.5	11.5	19
Recreational	Health Club	1000sqft	32.93	20.87	26.73	52	39	9	64.1	16.9	19
Recreational	Movie Theater (No Matinee)	Screen	220	376	314	66	17	17	79.2	1.8	19
Recreational	Movie Theater (No Matinee)	Seat	1.8	1.8	1.8	66	17	17	79.2	1.8	19
Recreational	Movie Theater (No Matinee)	1000sqft	80	80	80	66	17	17	79.2	1.8	19
Recreational	Arena	Acre	33.33			0.66	0.28	0.6	81	0	19
Recreational	Arena	1000sqft	10.713214	10.71321	10.71321	0.66	0.28	0.6	81	0	19
Recreational	Quality Restaurant	1000sqft	89.95	94.36	72.16	38	18	44	69	12	19
Recreational	High Turnover (Sit Down Restaurant)	1000sqft	127.15	158.37	131.84	37	20	43	72.5	8.5	19
Recreational	Fast Food Restaurant with Drive Thru	1000sqft	496.12	722.03	542.72	29	21	50	78.8	2.2	19
Recreational	Fast Food Restaurant w/o Drive Thru	1000sqft	716	696	500	51	37	12	79.5	1.5	19
Recreational	Hotel	Room	8.17	8.19	5.95	58	38	4	61.6	19.4	19
Recreational	Motel	Room	5.63	5.63	5.63	58	38	4	62	19	19
Parking	Parking Lot	Space	0	0	0	0	0	0	0	0	0
Parking	Parking Lot	Acre	0	0	0	0	0	0	0	0	0
Parking	Parking Lot	1000sqft	0	0	0	0	0	0	0	0	0
Parking	Unenclosed Parking Structure	Space	0	0	0	0	0	0	0	0	0
Parking	Unenclosed Parking Structure	Acre	0	0	0	0	0	0	0	0	0
Parking	Unenclosed Parking Structure	1000sqft	0	0	0	0	0	0	0	0	0
Parking	Enclosed Parking Structure	Space	0	0	0	0	0	0	0	0	0
Parking	Enclosed Parking Structure	Acre	0	0	0	0	0	0	0	0	0
Parking	Enclosed Parking Structure	1000sqft	0	0	0	0	0	0	0	0	0
Parking	Unenclosed Parking with Elevator	Space	0	0	0	0	0	0	0	0	0
Parking	Unenclosed Parking with Elevator	Acre	0	0	0	0	0	0	0	0	0
Parking	Unenclosed Parking with Elevator	1000sqft	0	0	0	0	0	0	0	0	0
Parking	Enclosed Parking with Elevator	Space	0	0	0	0	0	0	0	0	0
Parking	Enclosed Parking with Elevator	Acre	0	0	0	0	0	0	0	0	0
Parking	Enclosed Parking with Elevator	1000sqft	0	0	0	0	0	0	0	0	0
Parking	Other Non-Asphalt Surfaces	Acre	0	0	0	0	0	0	0	0	0
Parking	Other Asphalt Surfaces	1000sqft	0	0	0	0	0	0	0	0	0
Parking	Other Non-Asphalt Surfaces	1000sqft	0	0	0	0	0	0	0	0	0
Parking	Other Asphalt Surfaces	Acre	0	0	0	0	0	0	0	0	0
Retail	Free-Standing Discount store	1000sqft	57.24	71.07	56.36	47.5	35.5	17	68.8	12.2	19
Retail	Free-Standing Discount Superstore	1000sqft	53.13	64.07	56.12	47.5	35.5	17	67.8	13.2	19
Retail	Discount Club	1000sqft	41.8	53.75	33.67	45	40	15	64.3	16.7	19
Retail	Regional Shopping Center	1000sqft	42.94	49.97	25.24	54	35	11	64.7	16.3	19
Retail	Electronic Superstore	1000sqft	45.04	45.04	45.04	27	33	40	65.5	15.5	19
Retail	Home Improvement Superstore	1000sqft	29.8	56.72	55.8	32	20	48	57.6	23.4	19
Retail	Strip Mall	1000sqft	44.32	42.04	20.43	45	40	15	64.4	16.6	19
Retail	Hardware/Paint Store	1000sqft	51.29	82.52	68.65	45	29	26	67.4	13.6	19
Retail	Supermarket	1000sqft	102.24	177.59	166.44	34	30	36	74.5	6.5	19
Retail	Convenience Market (24 hour)	1000sqft	737.99	863.1	758.45	24	15	61	80.1	0.9	19
Retail	Convenience Market with Gas Pumps	1000sqft	845.6	1448.33	1182.08	14	21	65	80.2	0.8	19
Retail	Convenience Market with Gas Pumps	Pump	542.6	204.47	166.88	14	21	65	80.2	0.8	19
Retail	Automobile Care Center	1000sqft	62	62	62	21	51	28	48	33	19
Retail	Gasoline/Service Station	Pump	162.78	162.78	162.78	14	27	59	79	2	19
Commercial	Bank (with Drive-Through)	1000sqft	148.15	86.32	31.9	27	26	47	74.4	6.6	19

Table 4.3 Mobile Trip Rates, Trip Purpose, Trip Type by Land Use

Land Use Type	Land Use Sub Type	Size Metric	Trip Rate			Primary %	Diverted %	PassBy %	Trip Type		
			Week day	Saturday	Sunday				C-C %	C-W %	C-NW %
Commercial	General Office Building	1000sqft	11.01	2.37	0.98	77	19	4	48	33	19
Commercial	Office Park	1000sqft	11.42	1.64	0.76	82	15	3	48	33	19
Commercial	Research & Development	1000sqft	8.11	1.9	1.11	82	15	3	48	33	19
Commercial	Government Office Building	1000sqft	68.93	0	0	50	34	16	62	33	5
Commercial	Government (Civic Center)	1000sqft	27.92			50	34	16	20	75	5
Commercial	Pharmacy/Drugstore with Drive Thru	1000sqft	88.16	88.16	88.16	38	13	49	73.5	7.5	19
Commercial	Pharmacy/Drugstore w/o Drive Thru	1000sqft	90.06	90.06	90.06	41	6	53	73.6	7.4	19
Commercial	Medical Office Building	1000sqft	36.13	8.96	1.55	60	30	10	51.4	29.6	19
Commercial	Hospital	1000sqft	16.5	10.18	8.91	73	25	2	16.1	64.9	19
Commercial	Hospital	Bed	11.81	8.14	7.19	73	25	2	16.1	64.9	19
Industrial	Unrefrigerated Warehouse-No Rail	1000sqft	2.59	2.59	2.59	92	5	3	0	59	41
Industrial	Unrefrigerated Warehouse-Rail	1000sqft	1.63	1.63	1.63	92	5	3	0	59	41
Industrial	Refrigerated Warehouse-No Rail	1000sqft	2.59	2.59	2.59	92	5	3	0	59	41
Industrial	Refrigerated Warehouse-Rail	1000sqft	1.63	1.63	1.63	92	5	3	0	59	41
Industrial	General Light Industry	1000sqft	6.97	1.32	0.68	92	5	3	28	59	13
Industrial	General Heavy Industry	1000sqft	1.5	1.5	1.5	92	5	3	28	59	13
Industrial	Industrial Park	1000sqft	6.96	2.49	0.73	79	19	2	28	59	13
Industrial	Manufacturing	1000sqft	3.82	1.49	0.62	92	5	3	28	59	13

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Great Basin Valleys Air Basin	Annual	2010	351.71	410.12	479.62	598.88	74.54	91.99	101.41	124.88
AB	Great Basin Valleys Air Basin	Annual	2011	351.58	409.65	479.10	599.56	74.30	90.81	101.24	125.01
AB	Great Basin Valleys Air Basin	Annual	2012	351.55	409.23	478.69	600.33	74.12	89.78	101.13	125.19
AB	Great Basin Valleys Air Basin	Annual	2013	351.50	408.84	478.36	601.12	73.86	88.90	101.03	125.40
AB	Great Basin Valleys Air Basin	Annual	2014	351.45	408.49	478.12	601.90	73.59	88.09	100.88	125.62
AB	Great Basin Valleys Air Basin	Annual	2015	351.50	408.21	477.92	602.74	73.49	87.37	100.88	125.86
AB	Great Basin Valleys Air Basin	Annual	2016	351.62	407.99	477.76	603.56	73.49	86.82	100.85	126.11
AB	Great Basin Valleys Air Basin	Annual	2017	351.64	407.78	477.63	604.31	73.40	86.29	100.83	126.37
AB	Great Basin Valleys Air Basin	Annual	2018	351.66	407.60	477.52	604.96	73.33	85.85	100.80	126.61
AB	Great Basin Valleys Air Basin	Annual	2019	351.69	407.52	477.42	605.53	73.29	85.59	100.75	126.84
AB	Great Basin Valleys Air Basin	Annual	2020	351.72	407.45	477.34	606.03	73.36	85.50	100.79	127.06
AB	Great Basin Valleys Air Basin	Annual	2021	351.66	407.35	477.26	606.36	73.36	85.50	100.84	127.21
AB	Great Basin Valleys Air Basin	Annual	2022	351.57	407.28	477.17	606.67	73.35	85.52	100.88	127.36
AB	Great Basin Valleys Air Basin	Annual	2023	351.48	407.18	477.10	606.89	73.33	85.53	100.90	127.53
AB	Great Basin Valleys Air Basin	Annual	2024	351.41	407.09	477.03	607.04	73.32	85.55	100.92	127.69
AB	Great Basin Valleys Air Basin	Annual	2025	351.37	407.16	477.00	607.21	73.31	85.62	100.95	127.84
AB	Great Basin Valleys Air Basin	Annual	2026	351.39	407.29	476.94	607.42	73.33	85.71	100.97	127.99
AB	Great Basin Valleys Air Basin	Annual	2027	351.40	407.43	476.89	607.63	73.34	85.79	100.99	128.14
AB	Great Basin Valleys Air Basin	Annual	2028	351.40	407.56	476.84	607.84	73.35	85.87	101.00	128.27
AB	Great Basin Valleys Air Basin	Annual	2029	351.39	407.69	476.77	608.06	73.36	85.94	101.00	128.39
AB	Great Basin Valleys Air Basin	Annual	2030	351.38	407.82	476.71	608.27	73.36	86.00	101.00	128.51
AB	Great Basin Valleys Air Basin	Annual	2031	351.38	407.96	476.68	608.50	73.36	86.07	101.01	128.63
AB	Great Basin Valleys Air Basin	Annual	2032	351.38	408.09	476.65	608.73	73.37	86.13	101.01	128.74
AB	Great Basin Valleys Air Basin	Annual	2033	351.38	408.21	476.62	608.94	73.37	86.18	101.01	128.84
AB	Great Basin Valleys Air Basin	Annual	2034	351.37	408.32	476.60	609.12	73.38	86.23	101.02	128.94
AB	Great Basin Valleys Air Basin	Annual	2035	351.37	408.41	476.58	609.28	73.38	86.28	101.02	129.02
AB	Great Basin Valleys Air Basin	Summer	2010	368.80	426.31	499.33	622.32	74.54	91.99	101.41	124.88
AB	Great Basin Valleys Air Basin	Summer	2011	368.81	426.47	498.98	623.07	74.30	90.81	101.24	125.01
AB	Great Basin Valleys Air Basin	Summer	2012	368.86	426.56	498.74	623.95	74.12	89.78	101.13	125.19
AB	Great Basin Valleys Air Basin	Summer	2013	368.89	426.59	498.57	624.87	73.86	88.90	101.03	125.40
AB	Great Basin Valleys Air Basin	Summer	2014	368.92	426.59	498.50	625.78	73.59	88.09	100.88	125.62
AB	Great Basin Valleys Air Basin	Summer	2015	369.01	426.63	498.39	626.79	73.49	87.37	100.88	125.86
AB	Great Basin Valleys Air Basin	Summer	2016	369.15	426.65	498.34	627.79	73.49	86.82	100.85	126.11
AB	Great Basin Valleys Air Basin	Summer	2017	369.19	426.65	498.29	628.71	73.40	86.29	100.83	126.37
AB	Great Basin Valleys Air Basin	Summer	2018	369.21	426.63	498.22	629.47	73.33	85.85	100.80	126.61
AB	Great Basin Valleys Air Basin	Summer	2019	369.25	426.71	498.16	630.15	73.29	85.59	100.75	126.84
AB	Great Basin Valleys Air Basin	Summer	2020	369.30	426.76	498.11	630.75	73.36	85.50	100.79	127.06
AB	Great Basin Valleys Air Basin	Summer	2021	369.22	426.73	498.07	631.17	73.36	85.50	100.84	127.21
AB	Great Basin Valleys Air Basin	Summer	2022	369.14	426.72	498.03	631.56	73.35	85.52	100.88	127.36
AB	Great Basin Valleys Air Basin	Summer	2023	369.04	426.67	498.01	631.85	73.33	85.53	100.90	127.53
AB	Great Basin Valleys Air Basin	Summer	2024	368.98	426.64	498.01	632.03	73.32	85.55	100.92	127.69
AB	Great Basin Valleys Air Basin	Summer	2025	368.96	426.73	498.02	632.24	73.31	85.62	100.95	127.84
AB	Great Basin Valleys Air Basin	Summer	2026	368.99	426.89	497.97	632.46	73.33	85.71	100.97	127.99
AB	Great Basin Valleys Air Basin	Summer	2027	369.03	427.08	497.94	632.69	73.34	85.79	100.99	128.14
AB	Great Basin Valleys Air Basin	Summer	2028	369.05	427.25	497.90	632.94	73.35	85.87	101.00	128.27
AB	Great Basin Valleys Air Basin	Summer	2029	369.06	427.42	497.85	633.19	73.36	85.94	101.00	128.39
AB	Great Basin Valleys Air Basin	Summer	2030	369.07	427.57	497.80	633.43	73.36	86.00	101.00	128.51
AB	Great Basin Valleys Air Basin	Summer	2031	369.06	427.77	497.77	633.69	73.36	86.07	101.01	128.63
AB	Great Basin Valleys Air Basin	Summer	2032	369.06	427.93	497.74	633.93	73.37	86.13	101.01	128.74
AB	Great Basin Valleys Air Basin	Summer	2033	369.06	428.08	497.72	634.18	73.37	86.18	101.01	128.84
AB	Great Basin Valleys Air Basin	Summer	2034	369.05	428.21	497.70	634.38	73.38	86.23	101.02	128.94
AB	Great Basin Valleys Air Basin	Summer	2035	369.04	428.32	497.68	634.56	73.38	86.28	101.02	129.02
AB	Great Basin Valleys Air Basin	Winter	2010	367.72	425.30	498.12	620.89	74.54	91.99	101.41	124.88
AB	Great Basin Valleys Air Basin	Winter	2011	367.73	425.41	497.76	621.64	74.30	90.81	101.24	125.01

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Great Basin Valleys Air Basin	Winter	2012	367.77	425.48	497.51	622.51	74.12	89.78	101.13	125.19
AB	Great Basin Valleys Air Basin	Winter	2013	367.80	425.47	497.33	623.43	73.86	88.90	101.03	125.40
AB	Great Basin Valleys Air Basin	Winter	2014	367.82	425.45	497.25	624.33	73.59	88.09	100.88	125.62
AB	Great Basin Valleys Air Basin	Winter	2015	367.92	425.48	497.13	625.32	73.49	87.37	100.88	125.86
AB	Great Basin Valleys Air Basin	Winter	2016	368.05	425.48	497.08	626.32	73.49	86.82	100.85	126.11
AB	Great Basin Valleys Air Basin	Winter	2017	368.09	425.46	497.03	627.23	73.40	86.29	100.83	126.37
AB	Great Basin Valleys Air Basin	Winter	2018	368.11	425.44	496.95	627.98	73.33	85.85	100.80	126.61
AB	Great Basin Valleys Air Basin	Winter	2019	368.14	425.50	496.89	628.66	73.29	85.59	100.75	126.84
AB	Great Basin Valleys Air Basin	Winter	2020	368.19	425.55	496.84	629.25	73.36	85.50	100.79	127.06
AB	Great Basin Valleys Air Basin	Winter	2021	368.12	425.51	496.80	629.66	73.36	85.50	100.84	127.21
AB	Great Basin Valleys Air Basin	Winter	2022	368.04	425.50	496.75	630.05	73.35	85.52	100.88	127.36
AB	Great Basin Valleys Air Basin	Winter	2023	367.94	425.45	496.73	630.33	73.33	85.53	100.90	127.53
AB	Great Basin Valleys Air Basin	Winter	2024	367.88	425.41	496.72	630.51	73.32	85.55	100.92	127.69
AB	Great Basin Valleys Air Basin	Winter	2025	367.85	425.50	496.73	630.71	73.31	85.62	100.95	127.84
AB	Great Basin Valleys Air Basin	Winter	2026	367.89	425.66	496.68	630.94	73.33	85.71	100.97	127.99
AB	Great Basin Valleys Air Basin	Winter	2027	367.93	425.85	496.65	631.16	73.34	85.79	100.99	128.14
AB	Great Basin Valleys Air Basin	Winter	2028	367.95	426.02	496.61	631.41	73.35	85.87	101.00	128.27
AB	Great Basin Valleys Air Basin	Winter	2029	367.95	426.19	496.56	631.66	73.36	85.94	101.00	128.39
AB	Great Basin Valleys Air Basin	Winter	2030	367.96	426.33	496.51	631.90	73.36	86.00	101.00	128.51
AB	Great Basin Valleys Air Basin	Winter	2031	367.95	426.53	496.47	632.15	73.36	86.07	101.01	128.63
AB	Great Basin Valleys Air Basin	Winter	2032	367.95	426.69	496.45	632.40	73.37	86.13	101.01	128.74
AB	Great Basin Valleys Air Basin	Winter	2033	367.95	426.84	496.42	632.64	73.37	86.18	101.01	128.84
AB	Great Basin Valleys Air Basin	Winter	2034	367.94	426.96	496.41	632.84	73.38	86.23	101.02	128.94
AB	Great Basin Valleys Air Basin	Winter	2035	367.94	427.07	496.38	633.02	73.38	86.28	101.02	129.02
AB	Lake County Air Basin	Annual	2010	342.07	393.50	467.77	584.22	74.77	89.34	101.91	124.46
AB	Lake County Air Basin	Annual	2011	342.02	394.05	467.30	584.79	74.52	88.47	101.71	124.54
AB	Lake County Air Basin	Annual	2012	342.06	394.51	466.93	585.54	74.36	87.81	101.56	124.69
AB	Lake County Air Basin	Annual	2013	342.12	394.89	466.63	586.41	74.20	87.25	101.40	124.90
AB	Lake County Air Basin	Annual	2014	342.14	395.21	466.41	587.25	73.98	86.77	101.22	125.12
AB	Lake County Air Basin	Annual	2015	342.23	395.51	466.24	588.17	73.90	86.33	101.09	125.37
AB	Lake County Air Basin	Annual	2016	342.33	395.78	466.10	589.06	73.88	85.99	101.00	125.66
AB	Lake County Air Basin	Annual	2017	342.36	396.00	465.97	589.89	73.79	85.60	100.88	125.95
AB	Lake County Air Basin	Annual	2018	342.39	396.17	465.87	590.62	73.73	85.27	100.83	126.22
AB	Lake County Air Basin	Annual	2019	342.41	396.35	465.79	591.26	73.69	85.13	100.79	126.48
AB	Lake County Air Basin	Annual	2020	342.44	396.52	465.72	591.82	73.77	85.14	100.79	126.73
AB	Lake County Air Basin	Annual	2021	342.39	396.64	465.65	592.21	73.79	85.21	100.84	126.90
AB	Lake County Air Basin	Annual	2022	342.31	396.75	465.57	592.55	73.78	85.27	100.85	127.07
AB	Lake County Air Basin	Annual	2023	342.19	396.83	465.51	592.77	73.76	85.32	100.87	127.26
AB	Lake County Air Basin	Annual	2024	342.07	396.89	465.44	592.97	73.71	85.36	100.88	127.45
AB	Lake County Air Basin	Annual	2025	342.01	396.99	465.40	593.14	73.71	85.45	100.91	127.61
AB	Lake County Air Basin	Annual	2026	342.02	397.10	465.36	593.32	73.73	85.55	100.93	127.78
AB	Lake County Air Basin	Annual	2027	342.03	397.21	465.31	593.53	73.74	85.64	100.94	127.94
AB	Lake County Air Basin	Annual	2028	342.03	397.32	465.27	593.73	73.75	85.72	100.95	128.09
AB	Lake County Air Basin	Annual	2029	342.02	397.43	465.24	593.93	73.75	85.80	100.96	128.22
AB	Lake County Air Basin	Annual	2030	342.00	397.54	465.21	594.14	73.75	85.88	100.95	128.35
AB	Lake County Air Basin	Annual	2031	342.00	397.66	465.19	594.38	73.76	85.96	100.95	128.48
AB	Lake County Air Basin	Annual	2032	341.99	397.76	465.18	594.62	73.76	86.03	100.96	128.61
AB	Lake County Air Basin	Annual	2033	341.99	397.84	465.18	594.84	73.77	86.09	100.96	128.72
AB	Lake County Air Basin	Annual	2034	341.98	397.92	465.17	595.03	73.77	86.15	100.97	128.82
AB	Lake County Air Basin	Annual	2035	341.97	397.97	465.16	595.21	73.78	86.20	100.97	128.92
AB	Lake County Air Basin	Summer	2010	365.54	417.38	498.77	621.97	74.77	89.34	101.91	124.46
AB	Lake County Air Basin	Summer	2011	365.78	418.72	498.60	622.61	74.52	88.47	101.71	124.54
AB	Lake County Air Basin	Summer	2012	366.03	419.77	498.49	623.54	74.36	87.81	101.56	124.69
AB	Lake County Air Basin	Summer	2013	366.25	420.60	498.41	624.68	74.20	87.25	101.40	124.90

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Lake County Air Basin	Summer	2014	366.39	421.26	498.37	625.78	73.98	86.77	101.22	125.12
AB	Lake County Air Basin	Summer	2015	366.55	421.85	498.36	627.02	73.90	86.33	101.09	125.37
AB	Lake County Air Basin	Summer	2016	366.69	422.33	498.33	628.23	73.88	85.99	101.00	125.66
AB	Lake County Air Basin	Summer	2017	366.75	422.72	498.28	629.33	73.79	85.60	100.88	125.95
AB	Lake County Air Basin	Summer	2018	366.77	423.03	498.21	630.31	73.73	85.27	100.83	126.22
AB	Lake County Air Basin	Summer	2019	366.79	423.31	498.14	631.16	73.69	85.13	100.79	126.48
AB	Lake County Air Basin	Summer	2020	366.81	423.55	498.08	631.89	73.77	85.14	100.79	126.73
AB	Lake County Air Basin	Summer	2021	366.76	423.74	498.00	632.43	73.79	85.21	100.84	126.90
AB	Lake County Air Basin	Summer	2022	366.67	423.91	497.93	632.88	73.78	85.27	100.85	127.07
AB	Lake County Air Basin	Summer	2023	366.57	424.04	497.87	633.19	73.76	85.32	100.87	127.26
AB	Lake County Air Basin	Summer	2024	366.46	424.16	497.81	633.47	73.71	85.36	100.88	127.45
AB	Lake County Air Basin	Summer	2025	366.41	424.28	497.76	633.69	73.71	85.45	100.91	127.61
AB	Lake County Air Basin	Summer	2026	366.43	424.42	497.70	633.89	73.73	85.55	100.93	127.78
AB	Lake County Air Basin	Summer	2027	366.46	424.56	497.65	634.10	73.74	85.64	100.94	127.94
AB	Lake County Air Basin	Summer	2028	366.47	424.70	497.62	634.32	73.75	85.72	100.95	128.09
AB	Lake County Air Basin	Summer	2029	366.48	424.86	497.59	634.55	73.75	85.80	100.96	128.22
AB	Lake County Air Basin	Summer	2030	366.48	425.00	497.56	634.80	73.75	85.88	100.95	128.35
AB	Lake County Air Basin	Summer	2031	366.48	425.18	497.58	635.06	73.76	85.96	100.95	128.48
AB	Lake County Air Basin	Summer	2032	366.47	425.33	497.59	635.34	73.76	86.03	100.96	128.61
AB	Lake County Air Basin	Summer	2033	366.46	425.44	497.60	635.60	73.77	86.09	100.96	128.72
AB	Lake County Air Basin	Summer	2034	366.45	425.54	497.60	635.84	73.77	86.15	100.97	128.82
AB	Lake County Air Basin	Summer	2035	366.44	425.60	497.60	636.06	73.78	86.20	100.97	128.92
AB	Lake County Air Basin	Winter	2010	355.28	406.94	485.21	605.47	74.77	89.34	101.91	124.46
AB	Lake County Air Basin	Winter	2011	355.39	407.93	484.91	606.07	74.52	88.47	101.71	124.54
AB	Lake County Air Basin	Winter	2012	355.55	408.73	484.69	606.93	74.36	87.81	101.56	124.69
AB	Lake County Air Basin	Winter	2013	355.70	409.36	484.52	607.95	74.20	87.25	101.40	124.90
AB	Lake County Air Basin	Winter	2014	355.79	409.87	484.39	608.93	73.98	86.77	101.22	125.12
AB	Lake County Air Basin	Winter	2015	355.91	410.33	484.31	610.03	73.90	86.33	101.09	125.37
AB	Lake County Air Basin	Winter	2016	356.04	410.72	484.24	611.10	73.88	85.99	101.00	125.66
AB	Lake County Air Basin	Winter	2017	356.08	411.04	484.15	612.08	73.79	85.60	100.88	125.95
AB	Lake County Air Basin	Winter	2018	356.11	411.29	484.07	612.96	73.73	85.27	100.83	126.22
AB	Lake County Air Basin	Winter	2019	356.13	411.52	484.00	613.71	73.69	85.13	100.79	126.48
AB	Lake County Air Basin	Winter	2020	356.15	411.73	483.93	614.36	73.77	85.14	100.79	126.73
AB	Lake County Air Basin	Winter	2021	356.11	411.89	483.85	614.84	73.79	85.21	100.84	126.90
AB	Lake County Air Basin	Winter	2022	356.02	412.03	483.78	615.25	73.78	85.27	100.85	127.07
AB	Lake County Air Basin	Winter	2023	355.91	412.15	483.72	615.52	73.76	85.32	100.87	127.26
AB	Lake County Air Basin	Winter	2024	355.79	412.24	483.66	615.76	73.71	85.36	100.88	127.45
AB	Lake County Air Basin	Winter	2025	355.74	412.35	483.61	615.96	73.71	85.45	100.91	127.61
AB	Lake County Air Basin	Winter	2026	355.76	412.47	483.56	616.15	73.73	85.55	100.93	127.78
AB	Lake County Air Basin	Winter	2027	355.78	412.60	483.51	616.36	73.74	85.64	100.94	127.94
AB	Lake County Air Basin	Winter	2028	355.78	412.73	483.47	616.58	73.75	85.72	100.95	128.09
AB	Lake County Air Basin	Winter	2029	355.78	412.87	483.44	616.79	73.75	85.80	100.96	128.22
AB	Lake County Air Basin	Winter	2030	355.78	412.99	483.41	617.02	73.75	85.88	100.95	128.35
AB	Lake County Air Basin	Winter	2031	355.77	413.15	483.42	617.27	73.76	85.96	100.95	128.48
AB	Lake County Air Basin	Winter	2032	355.77	413.27	483.42	617.53	73.76	86.03	100.96	128.61
AB	Lake County Air Basin	Winter	2033	355.76	413.37	483.42	617.77	73.77	86.09	100.96	128.72
AB	Lake County Air Basin	Winter	2034	355.75	413.46	483.42	618.00	73.77	86.15	100.97	128.82
AB	Lake County Air Basin	Winter	2035	355.74	413.52	483.42	618.20	73.78	86.20	100.97	128.92
AB	Lake Tahoe Air Basin	Annual	2010	356.47	412.59	488.71	604.93	74.34	87.24	99.87	123.01
AB	Lake Tahoe Air Basin	Annual	2011	356.51	412.59	488.19	605.81	74.16	86.67	99.91	123.23
AB	Lake Tahoe Air Basin	Annual	2012	356.56	412.72	487.78	606.86	73.99	86.30	99.99	123.52
AB	Lake Tahoe Air Basin	Annual	2013	356.68	412.85	487.47	608.00	73.92	86.00	100.07	123.86
AB	Lake Tahoe Air Basin	Annual	2014	356.72	412.95	487.22	609.08	73.71	85.68	100.13	124.20
AB	Lake Tahoe Air Basin	Annual	2015	356.81	413.11	487.02	610.25	73.64	85.47	100.21	124.57

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Lake Tahoe Air Basin	Annual	2016	356.94	413.27	486.89	611.36	73.65	85.26	100.29	124.95
AB	Lake Tahoe Air Basin	Annual	2017	356.99	413.40	486.78	612.39	73.62	85.07	100.35	125.32
AB	Lake Tahoe Air Basin	Annual	2018	357.02	413.53	486.70	613.30	73.52	84.96	100.42	125.67
AB	Lake Tahoe Air Basin	Annual	2019	357.02	413.71	486.65	614.10	73.44	84.95	100.50	126.01
AB	Lake Tahoe Air Basin	Annual	2020	357.04	413.87	486.61	614.78	73.51	85.01	100.60	126.32
AB	Lake Tahoe Air Basin	Annual	2021	356.98	413.98	486.59	615.36	73.53	85.12	100.68	126.59
AB	Lake Tahoe Air Basin	Annual	2022	356.93	414.08	486.56	615.86	73.53	85.21	100.75	126.83
AB	Lake Tahoe Air Basin	Annual	2023	356.85	414.11	486.52	616.25	73.53	85.29	100.80	127.07
AB	Lake Tahoe Air Basin	Annual	2024	356.72	414.14	486.45	616.56	73.48	85.36	100.85	127.28
AB	Lake Tahoe Air Basin	Annual	2025	356.68	414.26	486.40	616.85	73.48	85.46	100.89	127.48
AB	Lake Tahoe Air Basin	Annual	2026	356.67	414.44	486.37	617.11	73.50	85.57	100.93	127.67
AB	Lake Tahoe Air Basin	Annual	2027	356.66	414.59	486.34	617.37	73.52	85.66	100.95	127.84
AB	Lake Tahoe Air Basin	Annual	2028	356.66	414.75	486.32	617.64	73.52	85.75	100.97	128.00
AB	Lake Tahoe Air Basin	Annual	2029	356.64	414.90	486.29	617.91	73.53	85.84	100.98	128.15
AB	Lake Tahoe Air Basin	Annual	2030	356.63	415.05	486.24	618.17	73.53	85.92	100.99	128.30
AB	Lake Tahoe Air Basin	Annual	2031	356.65	415.20	486.20	618.44	73.54	85.99	100.99	128.44
AB	Lake Tahoe Air Basin	Annual	2032	356.65	415.33	486.17	618.72	73.54	86.06	101.00	128.57
AB	Lake Tahoe Air Basin	Annual	2033	356.66	415.45	486.15	618.96	73.55	86.13	101.00	128.69
AB	Lake Tahoe Air Basin	Annual	2034	356.66	415.57	486.12	619.18	73.55	86.19	101.01	128.81
AB	Lake Tahoe Air Basin	Annual	2035	356.66	415.65	486.10	619.37	73.56	86.24	101.01	128.91
AB	Lake Tahoe Air Basin	Summer	2010	355.60	411.74	487.57	603.46	74.34	87.24	99.87	123.01
AB	Lake Tahoe Air Basin	Summer	2011	355.64	411.71	487.04	604.33	74.16	86.67	99.91	123.23
AB	Lake Tahoe Air Basin	Summer	2012	355.68	411.82	486.63	605.37	73.99	86.30	99.99	123.52
AB	Lake Tahoe Air Basin	Summer	2013	355.79	411.94	486.31	606.50	73.92	86.00	100.07	123.86
AB	Lake Tahoe Air Basin	Summer	2014	355.83	412.02	486.05	607.58	73.71	85.68	100.13	124.20
AB	Lake Tahoe Air Basin	Summer	2015	355.92	412.17	485.85	608.73	73.64	85.47	100.21	124.57
AB	Lake Tahoe Air Basin	Summer	2016	356.05	412.33	485.71	609.83	73.65	85.26	100.29	124.95
AB	Lake Tahoe Air Basin	Summer	2017	356.10	412.44	485.60	610.85	73.62	85.07	100.35	125.32
AB	Lake Tahoe Air Basin	Summer	2018	356.13	412.57	485.52	611.75	73.52	84.96	100.42	125.67
AB	Lake Tahoe Air Basin	Summer	2019	356.13	412.74	485.46	612.55	73.44	84.95	100.50	126.01
AB	Lake Tahoe Air Basin	Summer	2020	356.15	412.89	485.43	613.23	73.51	85.01	100.60	126.32
AB	Lake Tahoe Air Basin	Summer	2021	356.09	413.00	485.41	613.80	73.53	85.12	100.68	126.59
AB	Lake Tahoe Air Basin	Summer	2022	356.03	413.09	485.38	614.30	73.53	85.21	100.75	126.83
AB	Lake Tahoe Air Basin	Summer	2023	355.96	413.13	485.34	614.69	73.53	85.29	100.80	127.07
AB	Lake Tahoe Air Basin	Summer	2024	355.83	413.15	485.27	615.00	73.48	85.36	100.85	127.28
AB	Lake Tahoe Air Basin	Summer	2025	355.78	413.27	485.22	615.29	73.48	85.46	100.89	127.48
AB	Lake Tahoe Air Basin	Summer	2026	355.77	413.44	485.19	615.55	73.50	85.57	100.93	127.67
AB	Lake Tahoe Air Basin	Summer	2027	355.77	413.59	485.16	615.81	73.52	85.66	100.95	127.84
AB	Lake Tahoe Air Basin	Summer	2028	355.76	413.76	485.14	616.07	73.52	85.75	100.97	128.00
AB	Lake Tahoe Air Basin	Summer	2029	355.74	413.90	485.10	616.34	73.53	85.84	100.98	128.15
AB	Lake Tahoe Air Basin	Summer	2030	355.74	414.05	485.06	616.61	73.53	85.92	100.99	128.30
AB	Lake Tahoe Air Basin	Summer	2031	355.75	414.20	485.02	616.87	73.54	85.99	100.99	128.44
AB	Lake Tahoe Air Basin	Summer	2032	355.76	414.33	484.99	617.14	73.54	86.06	101.00	128.57
AB	Lake Tahoe Air Basin	Summer	2033	355.76	414.45	484.96	617.39	73.55	86.13	101.00	128.69
AB	Lake Tahoe Air Basin	Summer	2034	355.76	414.56	484.94	617.61	73.55	86.19	101.01	128.81
AB	Lake Tahoe Air Basin	Summer	2035	355.76	414.64	484.92	617.79	73.56	86.24	101.01	128.91
AB	Lake Tahoe Air Basin	Winter	2010	355.55	411.69	487.51	603.37	74.34	87.24	99.87	123.01
AB	Lake Tahoe Air Basin	Winter	2011	355.59	411.66	486.98	604.24	74.16	86.67	99.91	123.23
AB	Lake Tahoe Air Basin	Winter	2012	355.64	411.77	486.56	605.28	73.99	86.30	99.99	123.52
AB	Lake Tahoe Air Basin	Winter	2013	355.74	411.89	486.25	606.41	73.92	86.00	100.07	123.86
AB	Lake Tahoe Air Basin	Winter	2014	355.78	411.97	485.98	607.48	73.71	85.68	100.13	124.20
AB	Lake Tahoe Air Basin	Winter	2015	355.87	412.11	485.78	608.63	73.64	85.47	100.21	124.57
AB	Lake Tahoe Air Basin	Winter	2016	356.00	412.27	485.65	609.74	73.65	85.26	100.29	124.95
AB	Lake Tahoe Air Basin	Winter	2017	356.05	412.39	485.53	610.76	73.62	85.07	100.35	125.32

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Lake Tahoe Air Basin	Winter	2018	356.08	412.52	485.45	611.66	73.52	84.96	100.42	125.67
AB	Lake Tahoe Air Basin	Winter	2019	356.08	412.69	485.40	612.46	73.44	84.95	100.50	126.01
AB	Lake Tahoe Air Basin	Winter	2020	356.10	412.84	485.37	613.13	73.51	85.01	100.60	126.32
AB	Lake Tahoe Air Basin	Winter	2021	356.04	412.95	485.35	613.70	73.53	85.12	100.68	126.59
AB	Lake Tahoe Air Basin	Winter	2022	355.98	413.04	485.31	614.20	73.53	85.21	100.75	126.83
AB	Lake Tahoe Air Basin	Winter	2023	355.91	413.07	485.28	614.59	73.53	85.29	100.80	127.07
AB	Lake Tahoe Air Basin	Winter	2024	355.78	413.10	485.21	614.90	73.48	85.36	100.85	127.28
AB	Lake Tahoe Air Basin	Winter	2025	355.73	413.22	485.16	615.19	73.48	85.46	100.89	127.48
AB	Lake Tahoe Air Basin	Winter	2026	355.72	413.39	485.13	615.45	73.50	85.57	100.93	127.67
AB	Lake Tahoe Air Basin	Winter	2027	355.72	413.54	485.10	615.71	73.52	85.66	100.95	127.84
AB	Lake Tahoe Air Basin	Winter	2028	355.71	413.70	485.07	615.98	73.52	85.75	100.97	128.00
AB	Lake Tahoe Air Basin	Winter	2029	355.70	413.85	485.04	616.24	73.53	85.84	100.98	128.15
AB	Lake Tahoe Air Basin	Winter	2030	355.69	414.00	484.99	616.51	73.53	85.92	100.99	128.30
AB	Lake Tahoe Air Basin	Winter	2031	355.70	414.15	484.96	616.78	73.54	85.99	100.99	128.44
AB	Lake Tahoe Air Basin	Winter	2032	355.71	414.28	484.93	617.05	73.54	86.06	101.00	128.57
AB	Lake Tahoe Air Basin	Winter	2033	355.71	414.39	484.90	617.29	73.55	86.13	101.00	128.69
AB	Lake Tahoe Air Basin	Winter	2034	355.71	414.51	484.88	617.51	73.55	86.19	101.01	128.81
AB	Lake Tahoe Air Basin	Winter	2035	355.71	414.59	484.85	617.70	73.56	86.24	101.01	128.91
AB	Mojave Desert Air Basin	Annual	2010	343.11	394.68	468.99	590.86	73.72	86.74	100.30	125.32
AB	Mojave Desert Air Basin	Annual	2011	343.64	395.54	469.03	592.03	73.66	86.21	100.29	125.53
AB	Mojave Desert Air Basin	Annual	2012	343.83	396.10	468.85	592.82	73.64	85.86	100.31	125.76
AB	Mojave Desert Air Basin	Annual	2013	343.61	395.96	468.10	592.75	73.63	85.55	100.34	126.01
AB	Mojave Desert Air Basin	Annual	2014	343.79	396.35	468.03	593.54	73.61	85.26	100.36	126.25
AB	Mojave Desert Air Basin	Annual	2015	343.46	395.74	466.94	593.04	73.61	85.08	100.41	126.51
AB	Mojave Desert Air Basin	Annual	2016	343.59	396.07	466.87	593.71	73.64	84.97	100.46	126.76
AB	Mojave Desert Air Basin	Annual	2017	343.70	396.36	466.83	594.35	73.64	84.82	100.48	127.01
AB	Mojave Desert Air Basin	Annual	2018	343.78	396.61	466.78	594.88	73.65	84.74	100.50	127.24
AB	Mojave Desert Air Basin	Annual	2019	343.84	396.80	466.60	595.24	73.67	84.82	100.55	127.46
AB	Mojave Desert Air Basin	Annual	2020	343.89	397.05	466.55	595.62	73.75	84.94	100.63	127.66
AB	Mojave Desert Air Basin	Annual	2021	344.44	397.74	467.03	596.67	73.81	85.09	100.70	127.82
AB	Mojave Desert Air Basin	Annual	2022	344.45	397.97	467.01	596.93	73.85	85.23	100.76	127.94
AB	Mojave Desert Air Basin	Annual	2023	344.44	398.17	466.98	597.13	73.88	85.35	100.81	128.10
AB	Mojave Desert Air Basin	Annual	2024	344.17	397.99	466.53	596.83	73.89	85.45	100.85	128.24
AB	Mojave Desert Air Basin	Annual	2025	344.18	398.15	466.52	597.01	73.91	85.55	100.89	128.37
AB	Mojave Desert Air Basin	Annual	2026	344.19	398.32	466.50	597.17	73.93	85.65	100.91	128.50
AB	Mojave Desert Air Basin	Annual	2027	344.20	398.48	466.48	597.33	73.94	85.73	100.93	128.62
AB	Mojave Desert Air Basin	Annual	2028	344.20	398.63	466.46	597.49	73.95	85.81	100.95	128.72
AB	Mojave Desert Air Basin	Annual	2029	344.20	398.78	466.44	597.64	73.96	85.88	100.96	128.81
AB	Mojave Desert Air Basin	Annual	2030	344.19	398.92	466.41	597.78	73.96	85.94	100.96	128.90
AB	Mojave Desert Air Basin	Annual	2031	345.29	400.17	467.56	599.64	73.96	86.01	100.97	128.98
AB	Mojave Desert Air Basin	Annual	2032	345.26	400.28	467.53	599.70	73.97	86.07	100.98	129.06
AB	Mojave Desert Air Basin	Annual	2033	345.23	400.38	467.50	599.76	73.97	86.12	100.98	129.12
AB	Mojave Desert Air Basin	Annual	2034	345.20	400.47	467.47	599.81	73.97	86.16	100.99	129.19
AB	Mojave Desert Air Basin	Annual	2035	345.17	400.54	467.45	599.85	73.98	86.20	100.99	129.24
AB	Mojave Desert Air Basin	Summer	2010	378.64	430.09	514.82	649.00	73.72	86.74	100.30	125.32
AB	Mojave Desert Air Basin	Summer	2011	379.34	431.77	515.20	650.27	73.66	86.21	100.29	125.53
AB	Mojave Desert Air Basin	Summer	2012	379.64	432.95	515.24	651.14	73.64	85.86	100.31	125.76
AB	Mojave Desert Air Basin	Summer	2013	379.46	433.16	514.62	651.13	73.63	85.55	100.34	126.01
AB	Mojave Desert Air Basin	Summer	2014	379.68	433.88	514.72	652.08	73.61	85.26	100.36	126.25
AB	Mojave Desert Air Basin	Summer	2015	379.34	433.42	513.70	651.66	73.61	85.08	100.41	126.51
AB	Mojave Desert Air Basin	Summer	2016	379.52	433.92	513.75	652.50	73.64	84.97	100.46	126.76
AB	Mojave Desert Air Basin	Summer	2017	379.64	434.35	513.78	653.28	73.64	84.82	100.48	127.01
AB	Mojave Desert Air Basin	Summer	2018	379.71	434.69	513.76	653.91	73.65	84.74	100.50	127.24
AB	Mojave Desert Air Basin	Summer	2019	379.77	434.97	513.59	654.37	73.67	84.82	100.55	127.46

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Mojave Desert Air Basin	Summer	2020	379.81	435.29	513.53	654.85	73.75	84.94	100.63	127.66
AB	Mojave Desert Air Basin	Summer	2021	380.43	436.16	514.08	656.10	73.81	85.09	100.70	127.82
AB	Mojave Desert Air Basin	Summer	2022	380.46	436.52	514.06	656.46	73.85	85.23	100.76	127.94
AB	Mojave Desert Air Basin	Summer	2023	380.45	436.83	514.04	656.72	73.88	85.35	100.81	128.10
AB	Mojave Desert Air Basin	Summer	2024	380.12	436.68	513.52	656.37	73.89	85.45	100.85	128.24
AB	Mojave Desert Air Basin	Summer	2025	380.13	436.95	513.52	656.58	73.91	85.55	100.89	128.37
AB	Mojave Desert Air Basin	Summer	2026	380.14	437.20	513.50	656.78	73.93	85.65	100.91	128.50
AB	Mojave Desert Air Basin	Summer	2027	380.15	437.43	513.49	656.96	73.94	85.73	100.93	128.62
AB	Mojave Desert Air Basin	Summer	2028	380.15	437.66	513.48	657.14	73.95	85.81	100.95	128.72
AB	Mojave Desert Air Basin	Summer	2029	380.14	437.88	513.47	657.31	73.96	85.88	100.96	128.81
AB	Mojave Desert Air Basin	Summer	2030	380.14	438.08	513.46	657.48	73.96	85.94	100.96	128.90
AB	Mojave Desert Air Basin	Summer	2031	381.35	439.55	514.76	659.57	73.96	86.01	100.97	128.98
AB	Mojave Desert Air Basin	Summer	2032	381.29	439.73	514.74	659.65	73.97	86.07	100.98	129.06
AB	Mojave Desert Air Basin	Summer	2033	381.25	439.88	514.72	659.74	73.97	86.12	100.98	129.12
AB	Mojave Desert Air Basin	Summer	2034	381.20	440.01	514.71	659.82	73.97	86.16	100.99	129.19
AB	Mojave Desert Air Basin	Summer	2035	381.17	440.11	514.69	659.90	73.98	86.20	100.99	129.24
AB	Mojave Desert Air Basin	Winter	2010	332.64	384.30	455.49	573.78	73.72	86.74	100.30	125.32
AB	Mojave Desert Air Basin	Winter	2011	333.12	384.93	455.44	574.92	73.66	86.21	100.29	125.53
AB	Mojave Desert Air Basin	Winter	2012	333.27	385.32	455.20	575.69	73.64	85.86	100.31	125.76
AB	Mojave Desert Air Basin	Winter	2013	333.05	385.06	454.41	575.60	73.63	85.55	100.34	126.01
AB	Mojave Desert Air Basin	Winter	2014	333.21	385.37	454.28	576.35	73.61	85.26	100.36	126.25
AB	Mojave Desert Air Basin	Winter	2015	332.88	384.72	453.17	575.82	73.61	85.08	100.41	126.51
AB	Mojave Desert Air Basin	Winter	2016	333.01	385.01	453.07	576.45	73.64	84.97	100.46	126.76
AB	Mojave Desert Air Basin	Winter	2017	333.11	385.25	453.01	577.05	73.64	84.82	100.48	127.01
AB	Mojave Desert Air Basin	Winter	2018	333.19	385.48	452.95	577.56	73.65	84.74	100.50	127.24
AB	Mojave Desert Air Basin	Winter	2019	333.26	385.66	452.78	577.90	73.67	84.82	100.55	127.46
AB	Mojave Desert Air Basin	Winter	2020	333.31	385.88	452.72	578.26	73.75	84.94	100.63	127.66
AB	Mojave Desert Air Basin	Winter	2021	333.84	386.51	453.18	579.23	73.81	85.09	100.70	127.82
AB	Mojave Desert Air Basin	Winter	2022	333.85	386.71	453.16	579.47	73.85	85.23	100.76	127.94
AB	Mojave Desert Air Basin	Winter	2023	333.84	386.88	453.13	579.65	73.88	85.35	100.81	128.10
AB	Mojave Desert Air Basin	Winter	2024	333.58	386.69	452.71	579.37	73.89	85.45	100.85	128.24
AB	Mojave Desert Air Basin	Winter	2025	333.59	386.82	452.70	579.54	73.91	85.55	100.89	128.37
AB	Mojave Desert Air Basin	Winter	2026	333.61	386.97	452.67	579.69	73.93	85.65	100.91	128.50
AB	Mojave Desert Air Basin	Winter	2027	333.62	387.10	452.64	579.84	73.94	85.73	100.93	128.62
AB	Mojave Desert Air Basin	Winter	2028	333.62	387.24	452.62	579.99	73.95	85.81	100.95	128.72
AB	Mojave Desert Air Basin	Winter	2029	333.62	387.37	452.60	580.13	73.96	85.88	100.96	128.81
AB	Mojave Desert Air Basin	Winter	2030	333.61	387.49	452.57	580.27	73.96	85.94	100.96	128.90
AB	Mojave Desert Air Basin	Winter	2031	334.68	388.66	453.66	582.05	73.96	86.01	100.97	128.98
AB	Mojave Desert Air Basin	Winter	2032	334.65	388.75	453.62	582.10	73.97	86.07	100.98	129.06
AB	Mojave Desert Air Basin	Winter	2033	334.62	388.83	453.59	582.15	73.97	86.12	100.98	129.12
AB	Mojave Desert Air Basin	Winter	2034	334.59	388.91	453.56	582.18	73.97	86.16	100.99	129.19
AB	Mojave Desert Air Basin	Winter	2035	334.57	388.97	453.53	582.21	73.98	86.20	100.99	129.24
AB	Mountain Counties Air Basin	Annual	2010	337.73	394.74	462.55	581.26	74.08	90.29	100.75	125.10
AB	Mountain Counties Air Basin	Annual	2011	337.82	394.79	462.03	581.86	73.91	89.26	100.66	125.21
AB	Mountain Counties Air Basin	Annual	2012	337.95	394.82	461.63	582.55	73.76	88.44	100.64	125.36
AB	Mountain Counties Air Basin	Annual	2013	338.09	394.86	461.34	583.31	73.65	87.72	100.62	125.55
AB	Mountain Counties Air Basin	Annual	2014	338.21	394.89	461.12	584.05	73.52	87.09	100.58	125.75
AB	Mountain Counties Air Basin	Annual	2015	338.36	394.93	460.94	584.84	73.48	86.55	100.58	125.97
AB	Mountain Counties Air Basin	Annual	2016	338.51	394.99	460.82	585.57	73.47	86.12	100.59	126.21
AB	Mountain Counties Air Basin	Annual	2017	338.61	395.01	460.71	586.27	73.44	85.65	100.57	126.46
AB	Mountain Counties Air Basin	Annual	2018	338.67	395.04	460.64	586.87	73.40	85.31	100.58	126.69
AB	Mountain Counties Air Basin	Annual	2019	337.56	394.13	459.45	585.79	73.39	85.18	100.60	126.91
AB	Mountain Counties Air Basin	Annual	2020	337.62	394.23	459.40	586.24	73.48	85.19	100.67	127.12
AB	Mountain Counties Air Basin	Annual	2021	337.66	394.34	459.35	586.55	73.54	85.26	100.73	127.25

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Mountain Counties Air Basin	Annual	2022	337.68	394.44	459.30	586.78	73.58	85.34	100.79	127.34
AB	Mountain Counties Air Basin	Annual	2023	337.66	394.51	459.24	586.97	73.60	85.39	100.83	127.51
AB	Mountain Counties Air Basin	Annual	2024	337.62	394.56	459.21	587.12	73.61	85.45	100.87	127.66
AB	Mountain Counties Air Basin	Annual	2025	337.61	394.61	459.18	587.29	73.62	85.53	100.90	127.82
AB	Mountain Counties Air Basin	Annual	2026	337.62	394.78	459.14	587.48	73.64	85.62	100.93	127.97
AB	Mountain Counties Air Basin	Annual	2027	337.63	394.92	459.10	587.67	73.66	85.70	100.95	128.11
AB	Mountain Counties Air Basin	Annual	2028	337.63	395.07	459.06	587.86	73.67	85.78	100.96	128.23
AB	Mountain Counties Air Basin	Annual	2029	337.63	395.23	459.02	588.06	73.67	85.85	100.96	128.35
AB	Mountain Counties Air Basin	Annual	2030	337.62	395.37	458.97	588.27	73.68	85.92	100.96	128.47
AB	Mountain Counties Air Basin	Annual	2031	337.63	395.50	458.95	588.48	73.68	85.98	100.97	128.58
AB	Mountain Counties Air Basin	Annual	2032	337.64	395.62	458.93	588.71	73.69	86.04	100.97	128.70
AB	Mountain Counties Air Basin	Annual	2033	337.64	395.72	458.92	588.91	73.69	86.10	100.98	128.80
AB	Mountain Counties Air Basin	Annual	2034	337.64	395.82	458.90	589.08	73.70	86.15	100.98	128.89
AB	Mountain Counties Air Basin	Annual	2035	337.64	395.90	458.89	589.24	73.70	86.20	100.98	128.98
AB	Mountain Counties Air Basin	Summer	2010	367.32	424.29	500.18	628.91	74.08	90.29	100.75	125.10
AB	Mountain Counties Air Basin	Summer	2011	367.66	425.17	499.91	629.58	73.91	89.26	100.66	125.21
AB	Mountain Counties Air Basin	Summer	2012	367.99	425.86	499.73	630.44	73.76	88.44	100.64	125.36
AB	Mountain Counties Air Basin	Summer	2013	368.29	426.43	499.63	631.41	73.65	87.72	100.62	125.55
AB	Mountain Counties Air Basin	Summer	2014	368.54	426.87	499.60	632.42	73.52	87.09	100.58	125.75
AB	Mountain Counties Air Basin	Summer	2015	368.78	427.27	499.58	633.49	73.48	86.55	100.58	125.97
AB	Mountain Counties Air Basin	Summer	2016	368.99	427.61	499.58	634.51	73.47	86.12	100.59	126.21
AB	Mountain Counties Air Basin	Summer	2017	369.12	427.89	499.57	635.47	73.44	85.65	100.57	126.46
AB	Mountain Counties Air Basin	Summer	2018	369.20	428.10	499.54	636.29	73.40	85.31	100.58	126.69
AB	Mountain Counties Air Basin	Summer	2019	367.97	427.24	498.26	635.21	73.39	85.18	100.60	126.91
AB	Mountain Counties Air Basin	Summer	2020	368.01	427.48	498.21	635.80	73.48	85.19	100.67	127.12
AB	Mountain Counties Air Basin	Summer	2021	368.06	427.68	498.13	636.19	73.54	85.26	100.73	127.25
AB	Mountain Counties Air Basin	Summer	2022	368.08	427.87	498.06	636.51	73.58	85.34	100.79	127.34
AB	Mountain Counties Air Basin	Summer	2023	368.06	428.03	497.99	636.75	73.60	85.39	100.83	127.51
AB	Mountain Counties Air Basin	Summer	2024	368.04	428.16	497.96	636.93	73.61	85.45	100.87	127.66
AB	Mountain Counties Air Basin	Summer	2025	368.03	428.28	497.93	637.11	73.62	85.53	100.90	127.82
AB	Mountain Counties Air Basin	Summer	2026	368.04	428.50	497.91	637.31	73.64	85.62	100.93	127.97
AB	Mountain Counties Air Basin	Summer	2027	368.05	428.70	497.89	637.51	73.66	85.70	100.95	128.11
AB	Mountain Counties Air Basin	Summer	2028	368.06	428.91	497.87	637.72	73.67	85.78	100.96	128.23
AB	Mountain Counties Air Basin	Summer	2029	368.07	429.12	497.85	637.95	73.67	85.85	100.96	128.35
AB	Mountain Counties Air Basin	Summer	2030	368.07	429.33	497.82	638.18	73.68	85.92	100.96	128.47
AB	Mountain Counties Air Basin	Summer	2031	368.08	429.52	497.80	638.46	73.68	85.98	100.97	128.58
AB	Mountain Counties Air Basin	Summer	2032	368.09	429.68	497.78	638.73	73.69	86.04	100.97	128.70
AB	Mountain Counties Air Basin	Summer	2033	368.10	429.81	497.77	638.99	73.69	86.10	100.98	128.80
AB	Mountain Counties Air Basin	Summer	2034	368.10	429.93	497.75	639.22	73.70	86.15	100.98	128.89
AB	Mountain Counties Air Basin	Summer	2035	368.10	430.02	497.74	639.43	73.70	86.20	100.98	128.98
AB	Mountain Counties Air Basin	Winter	2010	330.51	387.48	453.53	569.65	74.08	90.29	100.75	125.10
AB	Mountain Counties Air Basin	Winter	2011	330.54	387.32	452.95	570.23	73.91	89.26	100.66	125.21
AB	Mountain Counties Air Basin	Winter	2012	330.61	387.20	452.50	570.89	73.76	88.44	100.64	125.36
AB	Mountain Counties Air Basin	Winter	2013	330.72	387.10	452.16	571.58	73.65	87.72	100.62	125.55
AB	Mountain Counties Air Basin	Winter	2014	330.81	387.02	451.90	572.27	73.52	87.09	100.58	125.75
AB	Mountain Counties Air Basin	Winter	2015	330.94	386.98	451.69	572.98	73.48	86.55	100.58	125.97
AB	Mountain Counties Air Basin	Winter	2016	331.07	386.97	451.53	573.65	73.47	86.12	100.59	126.21
AB	Mountain Counties Air Basin	Winter	2017	331.16	386.93	451.40	574.28	73.44	85.65	100.57	126.46
AB	Mountain Counties Air Basin	Winter	2018	331.22	386.91	451.31	574.83	73.40	85.31	100.58	126.69
AB	Mountain Counties Air Basin	Winter	2019	330.14	385.98	450.15	573.74	73.39	85.18	100.60	126.91
AB	Mountain Counties Air Basin	Winter	2020	330.19	386.05	450.10	574.16	73.48	85.19	100.67	127.12
AB	Mountain Counties Air Basin	Winter	2021	330.24	386.14	450.05	574.44	73.54	85.26	100.73	127.25
AB	Mountain Counties Air Basin	Winter	2022	330.25	386.21	450.00	574.66	73.58	85.34	100.79	127.34
AB	Mountain Counties Air Basin	Winter	2023	330.22	386.26	449.94	574.82	73.60	85.39	100.83	127.51

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Mountain Counties Air Basin	Winter	2024	330.18	386.28	449.90	574.97	73.61	85.45	100.87	127.66
AB	Mountain Counties Air Basin	Winter	2025	330.17	386.33	449.87	575.13	73.62	85.53	100.90	127.82
AB	Mountain Counties Air Basin	Winter	2026	330.18	386.48	449.82	575.31	73.64	85.62	100.93	127.97
AB	Mountain Counties Air Basin	Winter	2027	330.19	386.60	449.78	575.50	73.66	85.70	100.95	128.11
AB	Mountain Counties Air Basin	Winter	2028	330.19	386.74	449.74	575.69	73.67	85.78	100.96	128.23
AB	Mountain Counties Air Basin	Winter	2029	330.18	386.88	449.69	575.87	73.67	85.85	100.96	128.35
AB	Mountain Counties Air Basin	Winter	2030	330.17	387.00	449.63	576.07	73.68	85.92	100.96	128.47
AB	Mountain Counties Air Basin	Winter	2031	330.18	387.12	449.61	576.27	73.68	85.98	100.97	128.58
AB	Mountain Counties Air Basin	Winter	2032	330.18	387.23	449.59	576.48	73.69	86.04	100.97	128.70
AB	Mountain Counties Air Basin	Winter	2033	330.18	387.32	449.58	576.66	73.69	86.10	100.98	128.80
AB	Mountain Counties Air Basin	Winter	2034	330.18	387.41	449.56	576.82	73.70	86.15	100.98	128.89
AB	Mountain Counties Air Basin	Winter	2035	330.18	387.48	449.55	576.96	73.70	86.20	100.98	128.98
AB	North Central Coast Air Basin	Annual	2010	352.08	409.85	484.60	606.53	72.96	88.37	99.87	123.92
AB	North Central Coast Air Basin	Annual	2011	352.06	409.40	483.84	606.61	72.93	87.57	99.90	124.13
AB	North Central Coast Air Basin	Annual	2012	352.19	409.24	483.32	607.40	72.89	86.90	99.95	124.37
AB	North Central Coast Air Basin	Annual	2013	352.37	409.19	482.92	608.27	72.92	86.40	100.03	124.65
AB	North Central Coast Air Basin	Annual	2014	352.53	409.12	482.60	609.12	72.92	85.94	100.10	124.93
AB	North Central Coast Air Basin	Annual	2015	352.73	409.11	482.36	609.99	72.98	85.55	100.18	125.24
AB	North Central Coast Air Basin	Annual	2016	352.92	409.09	482.18	610.81	73.05	85.20	100.28	125.55
AB	North Central Coast Air Basin	Annual	2017	353.06	409.10	482.04	611.59	73.09	84.93	100.35	125.86
AB	North Central Coast Air Basin	Annual	2018	353.17	409.13	481.94	612.28	73.12	84.71	100.43	126.15
AB	North Central Coast Air Basin	Annual	2019	353.27	409.25	481.87	612.89	73.16	84.66	100.51	126.43
AB	North Central Coast Air Basin	Annual	2020	353.37	409.39	481.83	613.44	73.25	84.73	100.59	126.69
AB	North Central Coast Air Basin	Annual	2021	354.32	410.59	483.10	615.32	73.33	84.87	100.68	126.92
AB	North Central Coast Air Basin	Annual	2022	354.37	410.77	483.07	615.74	73.38	84.99	100.74	127.10
AB	North Central Coast Air Basin	Annual	2023	354.37	410.92	483.04	616.07	73.42	85.10	100.80	127.31
AB	North Central Coast Air Basin	Annual	2024	354.34	411.03	483.02	616.34	73.43	85.19	100.84	127.49
AB	North Central Coast Air Basin	Annual	2025	354.34	411.14	483.01	616.61	73.45	85.28	100.88	127.66
AB	North Central Coast Air Basin	Annual	2026	353.30	409.99	481.54	614.89	73.47	85.37	100.91	127.83
AB	North Central Coast Air Basin	Annual	2027	353.33	410.12	481.49	615.18	73.49	85.45	100.93	127.98
AB	North Central Coast Air Basin	Annual	2028	353.35	410.27	481.44	615.46	73.50	85.52	100.94	128.12
AB	North Central Coast Air Basin	Annual	2029	353.36	410.41	481.37	615.73	73.51	85.58	100.94	128.25
AB	North Central Coast Air Basin	Annual	2030	353.37	410.56	481.31	616.01	73.51	85.65	100.94	128.38
AB	North Central Coast Air Basin	Annual	2031	353.39	410.72	481.27	616.28	73.52	85.71	100.95	128.50
AB	North Central Coast Air Basin	Annual	2032	353.41	410.88	481.25	616.56	73.52	85.77	100.96	128.62
AB	North Central Coast Air Basin	Annual	2033	353.43	411.02	481.23	616.82	73.53	85.83	100.96	128.73
AB	North Central Coast Air Basin	Annual	2034	353.45	411.15	481.21	617.05	73.53	85.88	100.96	128.83
AB	North Central Coast Air Basin	Annual	2035	353.47	411.25	481.20	617.25	73.54	85.93	100.97	128.92
AB	North Central Coast Air Basin	Summer	2010	372.98	431.76	511.84	642.11	72.96	88.37	99.87	123.92
AB	North Central Coast Air Basin	Summer	2011	373.14	431.60	511.31	642.11	72.93	87.57	99.90	124.13
AB	North Central Coast Air Basin	Summer	2012	373.41	431.71	511.01	642.95	72.89	86.90	99.95	124.37
AB	North Central Coast Air Basin	Summer	2013	373.71	431.90	510.79	643.91	72.92	86.40	100.03	124.65
AB	North Central Coast Air Basin	Summer	2014	373.96	432.06	510.63	644.90	72.92	85.94	100.10	124.93
AB	North Central Coast Air Basin	Summer	2015	374.21	432.22	510.51	645.93	72.98	85.55	100.18	125.24
AB	North Central Coast Air Basin	Summer	2016	374.44	432.38	510.41	646.92	73.05	85.20	100.28	125.55
AB	North Central Coast Air Basin	Summer	2017	374.60	432.55	510.33	647.86	73.09	84.93	100.35	125.86
AB	North Central Coast Air Basin	Summer	2018	374.71	432.72	510.25	648.67	73.12	84.71	100.43	126.15
AB	North Central Coast Air Basin	Summer	2019	374.81	432.96	510.19	649.38	73.16	84.66	100.51	126.43
AB	North Central Coast Air Basin	Summer	2020	374.91	433.20	510.15	650.02	73.25	84.73	100.59	126.69
AB	North Central Coast Air Basin	Summer	2021	375.91	434.52	511.49	652.05	73.33	84.87	100.68	126.92
AB	North Central Coast Air Basin	Summer	2022	375.97	434.78	511.48	652.54	73.38	84.99	100.74	127.10
AB	North Central Coast Air Basin	Summer	2023	375.98	434.99	511.46	652.91	73.42	85.10	100.80	127.31
AB	North Central Coast Air Basin	Summer	2024	375.97	435.16	511.45	653.21	73.43	85.19	100.84	127.49
AB	North Central Coast Air Basin	Summer	2025	375.98	435.32	511.45	653.50	73.45	85.28	100.88	127.66

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	North Central Coast Air Basin	Summer	2026	374.88	434.13	509.90	651.66	73.47	85.37	100.91	127.83
AB	North Central Coast Air Basin	Summer	2027	374.91	434.30	509.87	651.96	73.49	85.45	100.93	127.98
AB	North Central Coast Air Basin	Summer	2028	374.94	434.48	509.85	652.26	73.50	85.52	100.94	128.12
AB	North Central Coast Air Basin	Summer	2029	374.97	434.67	509.80	652.55	73.51	85.58	100.94	128.25
AB	North Central Coast Air Basin	Summer	2030	374.99	434.87	509.76	652.86	73.51	85.65	100.94	128.38
AB	North Central Coast Air Basin	Summer	2031	375.02	435.07	509.74	653.15	73.52	85.71	100.95	128.50
AB	North Central Coast Air Basin	Summer	2032	375.05	435.26	509.73	653.46	73.52	85.77	100.96	128.62
AB	North Central Coast Air Basin	Summer	2033	375.08	435.43	509.73	653.75	73.53	85.83	100.96	128.73
AB	North Central Coast Air Basin	Summer	2034	375.11	435.58	509.72	654.02	73.53	85.88	100.96	128.83
AB	North Central Coast Air Basin	Summer	2035	375.13	435.71	509.72	654.27	73.54	85.93	100.97	128.92
AB	North Central Coast Air Basin	Winter	2010	350.54	408.22	482.61	603.75	72.96	88.37	99.87	123.92
AB	North Central Coast Air Basin	Winter	2011	350.51	407.75	481.84	603.84	72.93	87.57	99.90	124.13
AB	North Central Coast Air Basin	Winter	2012	350.63	407.55	481.30	604.63	72.89	86.90	99.95	124.37
AB	North Central Coast Air Basin	Winter	2013	350.80	407.48	480.89	605.48	72.92	86.40	100.03	124.65
AB	North Central Coast Air Basin	Winter	2014	350.96	407.39	480.56	606.32	72.92	85.94	100.10	124.93
AB	North Central Coast Air Basin	Winter	2015	351.15	407.36	480.31	607.18	72.98	85.55	100.18	125.24
AB	North Central Coast Air Basin	Winter	2016	351.33	407.32	480.12	607.99	73.05	85.20	100.28	125.55
AB	North Central Coast Air Basin	Winter	2017	351.48	407.33	479.98	608.75	73.09	84.93	100.35	125.86
AB	North Central Coast Air Basin	Winter	2018	351.58	407.34	479.88	609.43	73.12	84.71	100.43	126.15
AB	North Central Coast Air Basin	Winter	2019	351.68	407.44	479.81	610.03	73.16	84.66	100.51	126.43
AB	North Central Coast Air Basin	Winter	2020	351.78	407.58	479.76	610.57	73.25	84.73	100.59	126.69
AB	North Central Coast Air Basin	Winter	2021	352.73	408.76	481.03	612.44	73.33	84.87	100.68	126.92
AB	North Central Coast Air Basin	Winter	2022	352.78	408.94	481.00	612.85	73.38	84.99	100.74	127.10
AB	North Central Coast Air Basin	Winter	2023	352.78	409.08	480.97	613.18	73.42	85.10	100.80	127.31
AB	North Central Coast Air Basin	Winter	2024	352.74	409.19	480.94	613.44	73.43	85.19	100.84	127.49
AB	North Central Coast Air Basin	Winter	2025	352.74	409.30	480.93	613.72	73.45	85.28	100.88	127.66
AB	North Central Coast Air Basin	Winter	2026	351.70	408.15	479.46	612.01	73.47	85.37	100.91	127.83
AB	North Central Coast Air Basin	Winter	2027	351.73	408.27	479.41	612.29	73.49	85.45	100.93	127.98
AB	North Central Coast Air Basin	Winter	2028	351.74	408.41	479.36	612.56	73.50	85.52	100.94	128.12
AB	North Central Coast Air Basin	Winter	2029	351.75	408.56	479.28	612.84	73.51	85.58	100.94	128.25
AB	North Central Coast Air Basin	Winter	2030	351.76	408.70	479.22	613.11	73.51	85.65	100.94	128.38
AB	North Central Coast Air Basin	Winter	2031	351.78	408.85	479.18	613.38	73.52	85.71	100.95	128.50
AB	North Central Coast Air Basin	Winter	2032	351.80	409.00	479.15	613.65	73.52	85.77	100.96	128.62
AB	North Central Coast Air Basin	Winter	2033	351.82	409.14	479.13	613.90	73.53	85.83	100.96	128.73
AB	North Central Coast Air Basin	Winter	2034	351.84	409.26	479.11	614.13	73.53	85.88	100.96	128.83
AB	North Central Coast Air Basin	Winter	2035	351.85	409.37	479.10	614.33	73.54	85.93	100.97	128.92
AB	North Coast Air Basin	Annual	2010	346.03	400.52	475.28	596.35	73.12	86.55	100.74	124.00
AB	North Coast Air Basin	Annual	2011	345.93	400.69	474.62	597.04	73.06	86.04	100.65	124.19
AB	North Coast Air Basin	Annual	2012	345.88	400.89	474.07	597.81	73.00	85.72	100.63	124.43
AB	North Coast Air Basin	Annual	2013	345.91	401.05	473.63	598.65	72.98	85.44	100.63	124.70
AB	North Coast Air Basin	Annual	2014	345.92	401.20	473.28	599.46	72.94	85.23	100.60	124.98
AB	North Coast Air Basin	Annual	2015	345.95	401.33	472.95	600.24	72.94	85.05	100.58	125.28
AB	North Coast Air Basin	Annual	2016	345.81	401.21	472.40	600.55	72.98	84.93	100.60	125.59
AB	North Coast Air Basin	Annual	2017	345.82	401.32	472.15	601.21	72.98	84.80	100.61	125.90
AB	North Coast Air Basin	Annual	2018	345.82	401.41	471.93	601.76	72.98	84.71	100.61	126.20
AB	North Coast Air Basin	Annual	2019	345.82	401.53	471.77	602.23	72.99	84.74	100.64	126.48
AB	North Coast Air Basin	Annual	2020	345.82	401.63	471.60	602.62	73.08	84.82	100.70	126.74
AB	North Coast Air Basin	Annual	2021	345.79	401.71	471.46	602.93	73.14	84.94	100.77	126.95
AB	North Coast Air Basin	Annual	2022	345.72	401.75	471.32	603.19	73.17	85.04	100.81	127.14
AB	North Coast Air Basin	Annual	2023	345.59	401.76	471.18	603.35	73.18	85.12	100.85	127.34
AB	North Coast Air Basin	Annual	2024	345.43	401.81	471.02	603.47	73.17	85.21	100.88	127.52
AB	North Coast Air Basin	Annual	2025	345.31	401.90	470.89	603.58	73.18	85.30	100.91	127.68
AB	North Coast Air Basin	Annual	2026	345.13	401.82	470.57	603.35	73.20	85.41	100.93	127.84
AB	North Coast Air Basin	Annual	2027	345.10	401.94	470.44	603.43	73.21	85.52	100.95	127.99

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	North Coast Air Basin	Annual	2028	345.05	402.06	470.32	603.52	73.22	85.61	100.96	128.14
AB	North Coast Air Basin	Annual	2029	345.00	402.17	470.19	603.61	73.23	85.70	100.96	128.27
AB	North Coast Air Basin	Annual	2030	344.94	402.27	470.04	603.71	73.23	85.78	100.96	128.39
AB	North Coast Air Basin	Annual	2031	344.89	402.39	469.96	603.89	73.24	85.87	100.96	128.52
AB	North Coast Air Basin	Annual	2032	344.84	402.47	469.89	604.06	73.24	85.94	100.97	128.64
AB	North Coast Air Basin	Annual	2033	344.80	402.54	469.82	604.20	73.25	86.01	100.97	128.75
AB	North Coast Air Basin	Annual	2034	344.75	402.59	469.75	604.33	73.25	86.07	100.97	128.85
AB	North Coast Air Basin	Annual	2035	344.70	402.62	469.68	604.43	73.26	86.13	100.98	128.94
AB	North Coast Air Basin	Summer	2010	351.51	406.21	482.43	606.18	73.12	86.55	100.74	124.00
AB	North Coast Air Basin	Summer	2011	351.45	406.55	481.82	606.87	73.06	86.04	100.65	124.19
AB	North Coast Air Basin	Summer	2012	351.44	406.87	481.30	607.68	73.00	85.72	100.63	124.43
AB	North Coast Air Basin	Summer	2013	351.49	407.13	480.89	608.55	72.98	85.44	100.63	124.70
AB	North Coast Air Basin	Summer	2014	351.51	407.36	480.57	609.42	72.94	85.23	100.60	124.98
AB	North Coast Air Basin	Summer	2015	351.54	407.54	480.27	610.23	72.94	85.05	100.58	125.28
AB	North Coast Air Basin	Summer	2016	351.38	407.46	479.71	610.56	72.98	84.93	100.60	125.59
AB	North Coast Air Basin	Summer	2017	351.39	407.61	479.45	611.26	72.98	84.80	100.61	125.90
AB	North Coast Air Basin	Summer	2018	351.37	407.72	479.23	611.82	72.98	84.71	100.61	126.20
AB	North Coast Air Basin	Summer	2019	351.35	407.87	479.06	612.30	72.99	84.74	100.64	126.48
AB	North Coast Air Basin	Summer	2020	351.34	407.98	478.88	612.71	73.08	84.82	100.70	126.74
AB	North Coast Air Basin	Summer	2021	351.30	408.08	478.72	613.02	73.14	84.94	100.77	126.95
AB	North Coast Air Basin	Summer	2022	351.22	408.14	478.58	613.27	73.17	85.04	100.81	127.14
AB	North Coast Air Basin	Summer	2023	351.08	408.16	478.43	613.43	73.18	85.12	100.85	127.34
AB	North Coast Air Basin	Summer	2024	350.90	408.23	478.27	613.55	73.17	85.21	100.88	127.52
AB	North Coast Air Basin	Summer	2025	350.77	408.33	478.13	613.64	73.18	85.30	100.91	127.68
AB	North Coast Air Basin	Summer	2026	350.58	408.26	477.79	613.38	73.20	85.41	100.93	127.84
AB	North Coast Air Basin	Summer	2027	350.54	408.38	477.65	613.43	73.21	85.52	100.95	127.99
AB	North Coast Air Basin	Summer	2028	350.49	408.51	477.52	613.51	73.22	85.61	100.96	128.14
AB	North Coast Air Basin	Summer	2029	350.43	408.63	477.38	613.58	73.23	85.70	100.96	128.27
AB	North Coast Air Basin	Summer	2030	350.36	408.73	477.22	613.66	73.23	85.78	100.96	128.39
AB	North Coast Air Basin	Summer	2031	350.30	408.86	477.13	613.84	73.24	85.87	100.96	128.52
AB	North Coast Air Basin	Summer	2032	350.25	408.94	477.05	614.01	73.24	85.94	100.97	128.64
AB	North Coast Air Basin	Summer	2033	350.19	409.01	476.97	614.15	73.25	86.01	100.97	128.75
AB	North Coast Air Basin	Summer	2034	350.13	409.05	476.89	614.28	73.25	86.07	100.97	128.85
AB	North Coast Air Basin	Summer	2035	350.07	409.06	476.81	614.38	73.26	86.13	100.98	128.94
AB	North Coast Air Basin	Winter	2010	342.74	397.09	470.93	590.57	73.12	86.55	100.74	124.00
AB	North Coast Air Basin	Winter	2011	342.60	397.17	470.23	591.24	73.06	86.04	100.65	124.19
AB	North Coast Air Basin	Winter	2012	342.54	397.29	469.66	592.00	73.00	85.72	100.63	124.43
AB	North Coast Air Basin	Winter	2013	342.55	397.39	469.20	592.80	72.98	85.44	100.63	124.70
AB	North Coast Air Basin	Winter	2014	342.55	397.49	468.83	593.59	72.94	85.23	100.60	124.98
AB	North Coast Air Basin	Winter	2015	342.58	397.57	468.49	594.34	72.94	85.05	100.58	125.28
AB	North Coast Air Basin	Winter	2016	342.44	397.43	467.93	594.63	72.98	84.93	100.60	125.59
AB	North Coast Air Basin	Winter	2017	342.46	397.52	467.68	595.27	72.98	84.80	100.61	125.90
AB	North Coast Air Basin	Winter	2018	342.46	397.59	467.46	595.80	72.98	84.71	100.61	126.20
AB	North Coast Air Basin	Winter	2019	342.46	397.69	467.30	596.26	72.99	84.74	100.64	126.48
AB	North Coast Air Basin	Winter	2020	342.47	397.78	467.14	596.65	73.08	84.82	100.70	126.74
AB	North Coast Air Basin	Winter	2021	342.45	397.84	467.00	596.95	73.14	84.94	100.77	126.95
AB	North Coast Air Basin	Winter	2022	342.38	397.87	466.87	597.20	73.17	85.04	100.81	127.14
AB	North Coast Air Basin	Winter	2023	342.26	397.88	466.74	597.36	73.18	85.12	100.85	127.34
AB	North Coast Air Basin	Winter	2024	342.10	397.91	466.57	597.49	73.17	85.21	100.88	127.52
AB	North Coast Air Basin	Winter	2025	341.99	397.99	466.45	597.60	73.18	85.30	100.91	127.68
AB	North Coast Air Basin	Winter	2026	341.81	397.91	466.13	597.38	73.20	85.41	100.93	127.84
AB	North Coast Air Basin	Winter	2027	341.78	398.02	466.02	597.47	73.21	85.52	100.95	127.99
AB	North Coast Air Basin	Winter	2028	341.74	398.13	465.90	597.57	73.22	85.61	100.96	128.14
AB	North Coast Air Basin	Winter	2029	341.69	398.24	465.77	597.67	73.23	85.70	100.96	128.27

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	North Coast Air Basin	Winter	2030	341.63	398.33	465.62	597.77	73.23	85.78	100.96	128.39
AB	North Coast Air Basin	Winter	2031	341.59	398.44	465.55	597.95	73.24	85.87	100.96	128.52
AB	North Coast Air Basin	Winter	2032	341.55	398.52	465.48	598.12	73.24	85.94	100.97	128.64
AB	North Coast Air Basin	Winter	2033	341.50	398.60	465.41	598.26	73.25	86.01	100.97	128.75
AB	North Coast Air Basin	Winter	2034	341.46	398.65	465.35	598.38	73.25	86.07	100.97	128.85
AB	North Coast Air Basin	Winter	2035	341.41	398.68	465.29	598.48	73.26	86.13	100.98	128.94
AB	Northeast Plateau Air Basin	Annual	2010	377.75	443.26	517.72	646.50	74.51	94.16	102.11	125.01
AB	Northeast Plateau Air Basin	Annual	2011	377.64	442.37	517.03	647.16	74.33	92.57	101.85	125.11
AB	Northeast Plateau Air Basin	Annual	2012	377.60	441.62	516.49	647.98	74.16	91.28	101.68	125.24
AB	Northeast Plateau Air Basin	Annual	2013	377.56	441.00	516.04	648.87	73.94	90.24	101.46	125.42
AB	Northeast Plateau Air Basin	Annual	2014	377.59	440.43	515.70	649.73	73.82	89.19	101.27	125.61
AB	Northeast Plateau Air Basin	Annual	2015	377.66	439.94	515.40	650.62	73.75	88.24	101.11	125.83
AB	Northeast Plateau Air Basin	Annual	2016	377.76	439.50	515.18	651.48	73.75	87.42	101.02	126.07
AB	Northeast Plateau Air Basin	Annual	2017	377.77	439.13	514.99	652.27	73.65	86.65	100.88	126.32
AB	Northeast Plateau Air Basin	Annual	2018	377.76	438.85	514.83	652.95	73.55	86.12	100.80	126.56
AB	Northeast Plateau Air Basin	Annual	2019	377.78	438.67	514.70	653.55	73.52	85.77	100.76	126.78
AB	Northeast Plateau Air Basin	Annual	2020	377.81	438.53	514.58	654.05	73.60	85.62	100.80	127.00
AB	Northeast Plateau Air Basin	Annual	2021	377.76	438.41	514.47	654.40	73.63	85.60	100.85	127.16
AB	Northeast Plateau Air Basin	Annual	2022	377.67	438.26	514.35	654.67	73.63	85.57	100.87	127.26
AB	Northeast Plateau Air Basin	Annual	2023	377.54	438.15	514.25	654.84	73.62	85.55	100.90	127.43
AB	Northeast Plateau Air Basin	Annual	2024	377.40	438.07	514.15	654.98	73.59	85.56	100.92	127.59
AB	Northeast Plateau Air Basin	Annual	2025	377.34	438.12	514.08	655.10	73.60	85.62	100.94	127.74
AB	Northeast Plateau Air Basin	Annual	2026	377.35	438.23	513.97	655.34	73.62	85.71	100.97	127.89
AB	Northeast Plateau Air Basin	Annual	2027	377.35	438.35	513.87	655.58	73.63	85.79	100.98	128.04
AB	Northeast Plateau Air Basin	Annual	2028	377.34	438.46	513.78	655.82	73.64	85.87	100.99	128.18
AB	Northeast Plateau Air Basin	Annual	2029	377.32	438.58	513.68	656.05	73.64	85.94	100.99	128.31
AB	Northeast Plateau Air Basin	Annual	2030	377.31	438.68	513.58	656.29	73.65	86.00	100.99	128.43
AB	Northeast Plateau Air Basin	Annual	2031	377.30	438.81	513.55	656.54	73.65	86.06	100.99	128.55
AB	Northeast Plateau Air Basin	Annual	2032	377.30	438.90	513.52	656.81	73.66	86.12	100.99	128.68
AB	Northeast Plateau Air Basin	Annual	2033	377.29	438.99	513.49	657.04	73.66	86.18	101.00	128.78
AB	Northeast Plateau Air Basin	Annual	2034	377.28	439.07	513.47	657.24	73.67	86.22	101.00	128.89
AB	Northeast Plateau Air Basin	Annual	2035	377.27	439.12	513.45	657.42	73.67	86.26	101.00	128.98
AB	Northeast Plateau Air Basin	Summer	2010	394.23	458.88	539.40	673.34	74.51	94.16	102.11	125.01
AB	Northeast Plateau Air Basin	Summer	2011	394.34	458.69	538.93	674.13	74.33	92.57	101.85	125.11
AB	Northeast Plateau Air Basin	Summer	2012	394.46	458.48	538.57	675.13	74.16	91.28	101.68	125.24
AB	Northeast Plateau Air Basin	Summer	2013	394.54	458.28	538.29	676.23	73.94	90.24	101.46	125.42
AB	Northeast Plateau Air Basin	Summer	2014	394.66	458.04	538.09	677.30	73.82	89.19	101.27	125.61
AB	Northeast Plateau Air Basin	Summer	2015	394.79	457.86	537.92	678.42	73.75	88.24	101.11	125.83
AB	Northeast Plateau Air Basin	Summer	2016	394.92	457.67	537.80	679.49	73.75	87.42	101.02	126.07
AB	Northeast Plateau Air Basin	Summer	2017	394.95	457.50	537.69	680.48	73.65	86.65	100.88	126.32
AB	Northeast Plateau Air Basin	Summer	2018	394.94	457.37	537.57	681.33	73.55	86.12	100.80	126.56
AB	Northeast Plateau Air Basin	Summer	2019	394.96	457.30	537.48	682.08	73.52	85.77	100.76	126.78
AB	Northeast Plateau Air Basin	Summer	2020	394.99	457.28	537.38	682.70	73.60	85.62	100.80	127.00
AB	Northeast Plateau Air Basin	Summer	2021	394.94	457.25	537.27	683.15	73.63	85.60	100.85	127.16
AB	Northeast Plateau Air Basin	Summer	2022	394.85	457.20	537.18	683.51	73.63	85.57	100.87	127.26
AB	Northeast Plateau Air Basin	Summer	2023	394.73	457.17	537.08	683.76	73.62	85.55	100.90	127.43
AB	Northeast Plateau Air Basin	Summer	2024	394.60	457.16	537.01	683.96	73.59	85.56	100.92	127.59
AB	Northeast Plateau Air Basin	Summer	2025	394.55	457.25	536.94	684.14	73.60	85.62	100.94	127.74
AB	Northeast Plateau Air Basin	Summer	2026	394.57	457.40	536.85	684.40	73.62	85.71	100.97	127.89
AB	Northeast Plateau Air Basin	Summer	2027	394.58	457.55	536.76	684.67	73.63	85.79	100.98	128.04
AB	Northeast Plateau Air Basin	Summer	2028	394.60	457.70	536.68	684.95	73.64	85.87	100.99	128.18
AB	Northeast Plateau Air Basin	Summer	2029	394.59	457.87	536.60	685.23	73.64	85.94	100.99	128.31
AB	Northeast Plateau Air Basin	Summer	2030	394.59	458.00	536.52	685.51	73.65	86.00	100.99	128.43
AB	Northeast Plateau Air Basin	Summer	2031	394.59	458.17	536.50	685.81	73.65	86.06	100.99	128.55

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Northeast Plateau Air Basin	Summer	2032	394.59	458.30	536.49	686.12	73.66	86.12	100.99	128.68
AB	Northeast Plateau Air Basin	Summer	2033	394.59	458.41	536.47	686.39	73.66	86.18	101.00	128.78
AB	Northeast Plateau Air Basin	Summer	2034	394.58	458.50	536.45	686.63	73.67	86.22	101.00	128.89
AB	Northeast Plateau Air Basin	Summer	2035	394.57	458.57	536.44	686.85	73.67	86.26	101.00	128.98
AB	Northeast Plateau Air Basin	Winter	2010	372.12	437.93	510.31	637.33	74.51	94.16	102.11	125.01
AB	Northeast Plateau Air Basin	Winter	2011	371.94	436.79	509.55	637.95	74.33	92.57	101.85	125.11
AB	Northeast Plateau Air Basin	Winter	2012	371.85	435.86	508.94	638.70	74.16	91.28	101.68	125.24
AB	Northeast Plateau Air Basin	Winter	2013	371.76	435.10	508.44	639.52	73.94	90.24	101.46	125.42
AB	Northeast Plateau Air Basin	Winter	2014	371.76	434.41	508.05	640.31	73.82	89.19	101.27	125.61
AB	Northeast Plateau Air Basin	Winter	2015	371.82	433.82	507.71	641.12	73.75	88.24	101.11	125.83
AB	Northeast Plateau Air Basin	Winter	2016	371.90	433.30	507.45	641.90	73.75	87.42	101.02	126.07
AB	Northeast Plateau Air Basin	Winter	2017	371.90	432.86	507.23	642.63	73.65	86.65	100.88	126.32
AB	Northeast Plateau Air Basin	Winter	2018	371.89	432.53	507.06	643.25	73.55	86.12	100.80	126.56
AB	Northeast Plateau Air Basin	Winter	2019	371.91	432.30	506.92	643.80	73.52	85.77	100.76	126.78
AB	Northeast Plateau Air Basin	Winter	2020	371.94	432.13	506.80	644.25	73.60	85.62	100.80	127.00
AB	Northeast Plateau Air Basin	Winter	2021	371.90	431.97	506.68	644.58	73.63	85.60	100.85	127.16
AB	Northeast Plateau Air Basin	Winter	2022	371.79	431.80	506.56	644.81	73.63	85.57	100.87	127.26
AB	Northeast Plateau Air Basin	Winter	2023	371.66	431.66	506.44	644.96	73.62	85.55	100.90	127.43
AB	Northeast Plateau Air Basin	Winter	2024	371.52	431.55	506.34	645.08	73.59	85.56	100.92	127.59
AB	Northeast Plateau Air Basin	Winter	2025	371.46	431.58	506.27	645.18	73.60	85.62	100.94	127.74
AB	Northeast Plateau Air Basin	Winter	2026	371.46	431.69	506.16	645.40	73.62	85.71	100.97	127.89
AB	Northeast Plateau Air Basin	Winter	2027	371.46	431.79	506.05	645.63	73.63	85.79	100.98	128.04
AB	Northeast Plateau Air Basin	Winter	2028	371.45	431.88	505.95	645.86	73.64	85.87	100.99	128.18
AB	Northeast Plateau Air Basin	Winter	2029	371.43	431.99	505.85	646.08	73.64	85.94	100.99	128.31
AB	Northeast Plateau Air Basin	Winter	2030	371.40	432.08	505.74	646.30	73.65	86.00	100.99	128.43
AB	Northeast Plateau Air Basin	Winter	2031	371.39	432.19	505.70	646.54	73.65	86.06	100.99	128.55
AB	Northeast Plateau Air Basin	Winter	2032	371.39	432.28	505.67	646.80	73.66	86.12	100.99	128.68
AB	Northeast Plateau Air Basin	Winter	2033	371.38	432.35	505.64	647.01	73.66	86.18	101.00	128.78
AB	Northeast Plateau Air Basin	Winter	2034	371.37	432.42	505.61	647.20	73.67	86.22	101.00	128.89
AB	Northeast Plateau Air Basin	Winter	2035	371.36	432.48	505.59	647.37	73.67	86.26	101.00	128.98
AB	Sacramento Valley Air Basin	Annual	2010	339.47	391.58	465.54	585.89	73.13	87.05	100.12	125.04
AB	Sacramento Valley Air Basin	Annual	2011	339.70	392.07	465.28	586.41	73.13	86.45	100.12	125.22
AB	Sacramento Valley Air Basin	Annual	2012	339.92	392.53	465.05	586.98	73.14	86.02	100.16	125.43
AB	Sacramento Valley Air Basin	Annual	2013	340.13	392.91	464.86	587.61	73.18	85.67	100.21	125.66
AB	Sacramento Valley Air Basin	Annual	2014	340.32	393.25	464.72	588.24	73.20	85.38	100.25	125.90
AB	Sacramento Valley Air Basin	Annual	2015	340.50	393.55	464.61	588.90	73.26	85.16	100.28	126.15
AB	Sacramento Valley Air Basin	Annual	2016	341.42	394.73	465.46	590.86	73.34	84.98	100.34	126.41
AB	Sacramento Valley Air Basin	Annual	2017	341.54	394.94	465.36	591.43	73.39	84.78	100.38	126.66
AB	Sacramento Valley Air Basin	Annual	2018	341.62	395.12	465.27	591.91	73.42	84.66	100.43	126.91
AB	Sacramento Valley Air Basin	Annual	2019	340.51	393.97	463.69	590.45	73.48	84.72	100.49	127.12
AB	Sacramento Valley Air Basin	Annual	2020	340.58	394.18	463.62	590.84	73.58	84.83	100.57	127.33
AB	Sacramento Valley Air Basin	Annual	2021	340.67	394.43	463.65	591.21	73.65	84.97	100.65	127.48
AB	Sacramento Valley Air Basin	Annual	2022	340.69	394.59	463.59	591.44	73.71	85.11	100.72	127.61
AB	Sacramento Valley Air Basin	Annual	2023	340.68	394.72	463.54	591.60	73.75	85.22	100.77	127.77
AB	Sacramento Valley Air Basin	Annual	2024	340.67	394.84	463.48	591.71	73.77	85.32	100.82	127.92
AB	Sacramento Valley Air Basin	Annual	2025	340.66	394.94	463.43	591.82	73.79	85.41	100.86	128.06
AB	Sacramento Valley Air Basin	Annual	2026	340.83	395.25	463.58	592.22	73.81	85.50	100.89	128.20
AB	Sacramento Valley Air Basin	Annual	2027	340.82	395.35	463.54	592.33	73.83	85.58	100.91	128.33
AB	Sacramento Valley Air Basin	Annual	2028	340.82	395.45	463.50	592.44	73.84	85.66	100.93	128.44
AB	Sacramento Valley Air Basin	Annual	2029	340.81	395.55	463.45	592.55	73.84	85.73	100.94	128.55
AB	Sacramento Valley Air Basin	Annual	2030	340.79	395.65	463.41	592.66	73.85	85.80	100.95	128.65
AB	Sacramento Valley Air Basin	Annual	2031	340.77	395.75	463.38	592.83	73.85	85.86	100.96	128.75
AB	Sacramento Valley Air Basin	Annual	2032	340.75	395.84	463.35	592.99	73.86	85.92	100.96	128.84
AB	Sacramento Valley Air Basin	Annual	2033	340.73	395.91	463.32	593.13	73.86	85.97	100.97	128.92

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Sacramento Valley Air Basin	Annual	2034	340.71	395.98	463.29	593.27	73.87	86.02	100.97	129.00
AB	Sacramento Valley Air Basin	Annual	2035	340.69	396.02	463.26	593.38	73.87	86.07	100.98	129.07
AB	Sacramento Valley Air Basin	Summer	2010	376.00	429.82	513.57	646.23	73.13	87.05	100.12	125.04
AB	Sacramento Valley Air Basin	Summer	2011	376.48	431.05	513.58	646.73	73.13	86.45	100.12	125.22
AB	Sacramento Valley Air Basin	Summer	2012	376.91	432.08	513.58	647.38	73.14	86.02	100.16	125.43
AB	Sacramento Valley Air Basin	Summer	2013	377.28	432.92	513.60	648.19	73.18	85.67	100.21	125.66
AB	Sacramento Valley Air Basin	Summer	2014	377.59	433.62	513.66	649.04	73.20	85.38	100.25	125.90
AB	Sacramento Valley Air Basin	Summer	2015	377.87	434.22	513.73	649.95	73.26	85.16	100.28	126.15
AB	Sacramento Valley Air Basin	Summer	2016	378.93	435.71	514.80	652.32	73.34	84.98	100.34	126.41
AB	Sacramento Valley Air Basin	Summer	2017	379.08	436.13	514.80	653.13	73.39	84.78	100.38	126.66
AB	Sacramento Valley Air Basin	Summer	2018	379.17	436.45	514.75	653.82	73.42	84.66	100.43	126.91
AB	Sacramento Valley Air Basin	Summer	2019	377.91	435.23	513.00	652.30	73.48	84.72	100.49	127.12
AB	Sacramento Valley Air Basin	Summer	2020	377.97	435.53	512.92	652.83	73.58	84.83	100.57	127.33
AB	Sacramento Valley Air Basin	Summer	2021	378.06	435.87	512.93	653.31	73.65	84.97	100.65	127.48
AB	Sacramento Valley Air Basin	Summer	2022	378.08	436.12	512.86	653.62	73.71	85.11	100.72	127.61
AB	Sacramento Valley Air Basin	Summer	2023	378.08	436.32	512.79	653.85	73.75	85.22	100.77	127.77
AB	Sacramento Valley Air Basin	Summer	2024	378.07	436.51	512.72	653.98	73.77	85.32	100.82	127.92
AB	Sacramento Valley Air Basin	Summer	2025	378.07	436.68	512.67	654.11	73.79	85.41	100.86	128.06
AB	Sacramento Valley Air Basin	Summer	2026	378.25	437.06	512.85	654.54	73.81	85.50	100.89	128.20
AB	Sacramento Valley Air Basin	Summer	2027	378.25	437.21	512.82	654.66	73.83	85.58	100.91	128.33
AB	Sacramento Valley Air Basin	Summer	2028	378.26	437.36	512.81	654.79	73.84	85.66	100.93	128.44
AB	Sacramento Valley Air Basin	Summer	2029	378.26	437.53	512.79	654.92	73.84	85.73	100.94	128.55
AB	Sacramento Valley Air Basin	Summer	2030	378.25	437.69	512.77	655.06	73.85	85.80	100.95	128.65
AB	Sacramento Valley Air Basin	Summer	2031	378.24	437.85	512.75	655.24	73.85	85.86	100.96	128.75
AB	Sacramento Valley Air Basin	Summer	2032	378.23	437.99	512.73	655.43	73.86	85.92	100.96	128.84
AB	Sacramento Valley Air Basin	Summer	2033	378.22	438.09	512.71	655.61	73.86	85.97	100.97	128.92
AB	Sacramento Valley Air Basin	Summer	2034	378.21	438.19	512.69	655.79	73.87	86.02	100.97	129.00
AB	Sacramento Valley Air Basin	Summer	2035	378.19	438.26	512.67	655.95	73.87	86.07	100.98	129.07
AB	Sacramento Valley Air Basin	Winter	2010	329.45	381.14	452.22	569.20	73.13	87.05	100.12	125.04
AB	Sacramento Valley Air Basin	Winter	2011	329.60	381.43	451.86	569.72	73.13	86.45	100.12	125.22
AB	Sacramento Valley Air Basin	Winter	2012	329.76	381.73	451.56	570.27	73.14	86.02	100.16	125.43
AB	Sacramento Valley Air Basin	Winter	2013	329.93	381.98	451.31	570.86	73.18	85.67	100.21	125.66
AB	Sacramento Valley Air Basin	Winter	2014	330.08	382.22	451.11	571.43	73.20	85.38	100.25	125.90
AB	Sacramento Valley Air Basin	Winter	2015	330.24	382.45	450.95	572.00	73.26	85.16	100.28	126.15
AB	Sacramento Valley Air Basin	Winter	2016	331.12	383.54	451.74	573.86	73.34	84.98	100.34	126.41
AB	Sacramento Valley Air Basin	Winter	2017	331.23	383.69	451.61	574.36	73.39	84.78	100.38	126.66
AB	Sacramento Valley Air Basin	Winter	2018	331.30	383.82	451.51	574.78	73.42	84.66	100.43	126.91
AB	Sacramento Valley Air Basin	Winter	2019	330.23	382.69	449.98	573.34	73.48	84.72	100.49	127.12
AB	Sacramento Valley Air Basin	Winter	2020	330.31	382.88	449.92	573.69	73.58	84.83	100.57	127.33
AB	Sacramento Valley Air Basin	Winter	2021	330.40	383.10	449.95	574.02	73.65	84.97	100.65	127.48
AB	Sacramento Valley Air Basin	Winter	2022	330.42	383.25	449.90	574.22	73.71	85.11	100.72	127.61
AB	Sacramento Valley Air Basin	Winter	2023	330.41	383.35	449.84	574.36	73.75	85.22	100.77	127.77
AB	Sacramento Valley Air Basin	Winter	2024	330.40	383.45	449.79	574.46	73.77	85.32	100.82	127.92
AB	Sacramento Valley Air Basin	Winter	2025	330.38	383.54	449.74	574.57	73.79	85.41	100.86	128.06
AB	Sacramento Valley Air Basin	Winter	2026	330.55	383.83	449.88	574.96	73.81	85.50	100.89	128.20
AB	Sacramento Valley Air Basin	Winter	2027	330.54	383.91	449.84	575.06	73.83	85.58	100.91	128.33
AB	Sacramento Valley Air Basin	Winter	2028	330.53	383.99	449.79	575.17	73.84	85.66	100.93	128.44
AB	Sacramento Valley Air Basin	Winter	2029	330.52	384.08	449.74	575.27	73.84	85.73	100.94	128.55
AB	Sacramento Valley Air Basin	Winter	2030	330.50	384.16	449.69	575.37	73.85	85.80	100.95	128.65
AB	Sacramento Valley Air Basin	Winter	2031	330.48	384.24	449.65	575.53	73.85	85.86	100.96	128.75
AB	Sacramento Valley Air Basin	Winter	2032	330.45	384.32	449.62	575.68	73.86	85.92	100.96	128.84
AB	Sacramento Valley Air Basin	Winter	2033	330.43	384.39	449.58	575.82	73.86	85.97	100.97	128.92
AB	Sacramento Valley Air Basin	Winter	2034	330.41	384.44	449.55	575.94	73.87	86.02	100.97	129.00
AB	Sacramento Valley Air Basin	Winter	2035	330.39	384.48	449.51	576.04	73.87	86.07	100.98	129.07

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Salton Sea Air Basin	Annual	2010	341.46	391.26	466.98	588.92	72.93	84.54	99.89	125.12
AB	Salton Sea Air Basin	Annual	2011	340.83	391.09	465.62	588.09	73.00	84.47	99.94	125.40
AB	Salton Sea Air Basin	Annual	2012	341.10	391.81	465.53	588.82	73.09	84.44	100.03	125.69
AB	Salton Sea Air Basin	Annual	2013	339.89	390.79	463.45	587.06	73.20	84.46	100.12	126.01
AB	Salton Sea Air Basin	Annual	2014	340.06	391.30	463.35	587.74	73.28	84.51	100.21	126.32
AB	Salton Sea Air Basin	Annual	2015	337.14	388.08	459.06	582.96	73.36	84.58	100.30	126.63
AB	Salton Sea Air Basin	Annual	2016	337.23	388.43	458.97	583.49	73.43	84.66	100.39	126.92
AB	Salton Sea Air Basin	Annual	2017	337.28	388.72	458.87	583.97	73.48	84.73	100.46	127.20
AB	Salton Sea Air Basin	Annual	2018	337.30	388.94	458.77	584.35	73.51	84.81	100.51	127.46
AB	Salton Sea Air Basin	Annual	2019	337.18	389.02	458.52	584.48	73.55	84.95	100.58	127.69
AB	Salton Sea Air Basin	Annual	2020	337.18	389.22	458.46	584.79	73.61	85.11	100.66	127.91
AB	Salton Sea Air Basin	Annual	2021	337.69	390.02	459.17	585.99	73.66	85.25	100.73	128.08
AB	Salton Sea Air Basin	Annual	2022	337.68	390.23	459.20	586.30	73.68	85.37	100.78	128.23
AB	Salton Sea Air Basin	Annual	2023	337.64	390.41	459.22	586.55	73.68	85.48	100.83	128.38
AB	Salton Sea Air Basin	Annual	2024	341.70	395.19	464.82	593.82	73.69	85.57	100.86	128.50
AB	Salton Sea Air Basin	Annual	2025	341.66	395.34	464.85	594.02	73.69	85.66	100.90	128.62
AB	Salton Sea Air Basin	Annual	2026	341.65	395.52	464.87	594.24	73.69	85.74	100.92	128.73
AB	Salton Sea Air Basin	Annual	2027	341.63	395.69	464.90	594.45	73.69	85.81	100.94	128.82
AB	Salton Sea Air Basin	Annual	2028	341.62	395.85	464.93	594.65	73.69	85.88	100.95	128.91
AB	Salton Sea Air Basin	Annual	2029	341.61	396.01	464.96	594.85	73.69	85.94	100.96	128.98
AB	Salton Sea Air Basin	Annual	2030	341.59	396.17	464.99	595.05	73.69	86.00	100.97	129.05
AB	Salton Sea Air Basin	Annual	2031	346.94	402.31	472.49	604.70	73.69	86.05	100.98	129.12
AB	Salton Sea Air Basin	Annual	2032	346.94	402.50	472.58	605.00	73.69	86.10	100.98	129.18
AB	Salton Sea Air Basin	Annual	2033	346.94	402.68	472.66	605.29	73.69	86.15	100.99	129.23
AB	Salton Sea Air Basin	Annual	2034	346.96	402.84	472.74	605.57	73.69	86.19	100.99	129.28
AB	Salton Sea Air Basin	Annual	2035	346.97	402.99	472.83	605.83	73.70	86.22	100.99	129.33
AB	Salton Sea Air Basin	Summer	2010	347.94	398.06	475.64	600.02	72.93	84.54	99.89	125.12
AB	Salton Sea Air Basin	Summer	2011	347.40	398.07	474.36	599.23	73.00	84.47	99.94	125.40
AB	Salton Sea Air Basin	Summer	2012	347.71	398.93	474.30	599.96	73.09	84.44	100.03	125.69
AB	Salton Sea Air Basin	Summer	2013	346.51	397.99	472.23	598.20	73.20	84.46	100.12	126.01
AB	Salton Sea Air Basin	Summer	2014	346.72	398.61	472.18	598.94	73.28	84.51	100.21	126.32
AB	Salton Sea Air Basin	Summer	2015	343.80	395.45	467.91	594.18	73.36	84.58	100.30	126.63
AB	Salton Sea Air Basin	Summer	2016	343.92	395.87	467.86	594.79	73.43	84.66	100.39	126.92
AB	Salton Sea Air Basin	Summer	2017	343.99	396.22	467.80	595.33	73.48	84.73	100.46	127.20
AB	Salton Sea Air Basin	Summer	2018	344.01	396.49	467.72	595.75	73.51	84.81	100.51	127.46
AB	Salton Sea Air Basin	Summer	2019	343.91	396.62	467.49	595.93	73.55	84.95	100.58	127.69
AB	Salton Sea Air Basin	Summer	2020	343.92	396.85	467.43	596.26	73.61	85.11	100.66	127.91
AB	Salton Sea Air Basin	Summer	2021	344.42	397.64	468.12	597.44	73.66	85.25	100.73	128.08
AB	Salton Sea Air Basin	Summer	2022	344.40	397.86	468.13	597.74	73.68	85.37	100.78	128.23
AB	Salton Sea Air Basin	Summer	2023	344.36	398.04	468.14	597.97	73.68	85.48	100.83	128.38
AB	Salton Sea Air Basin	Summer	2024	348.46	402.88	473.79	605.31	73.69	85.57	100.86	128.50
AB	Salton Sea Air Basin	Summer	2025	348.42	403.03	473.81	605.50	73.69	85.66	100.90	128.62
AB	Salton Sea Air Basin	Summer	2026	348.41	403.21	473.82	605.69	73.69	85.74	100.92	128.73
AB	Salton Sea Air Basin	Summer	2027	348.39	403.37	473.84	605.88	73.69	85.81	100.94	128.82
AB	Salton Sea Air Basin	Summer	2028	348.38	403.54	473.86	606.07	73.69	85.88	100.95	128.91
AB	Salton Sea Air Basin	Summer	2029	348.37	403.70	473.88	606.25	73.69	85.94	100.96	128.98
AB	Salton Sea Air Basin	Summer	2030	348.36	403.86	473.90	606.44	73.69	86.00	100.97	129.05
AB	Salton Sea Air Basin	Summer	2031	353.82	410.13	481.56	616.27	73.69	86.05	100.98	129.12
AB	Salton Sea Air Basin	Summer	2032	353.82	410.32	481.63	616.55	73.69	86.10	100.98	129.18
AB	Salton Sea Air Basin	Summer	2033	353.83	410.49	481.71	616.83	73.69	86.15	100.99	129.23
AB	Salton Sea Air Basin	Summer	2034	353.84	410.65	481.79	617.09	73.69	86.19	100.99	129.28
AB	Salton Sea Air Basin	Summer	2035	353.84	410.79	481.87	617.33	73.70	86.22	100.99	129.33
AB	Salton Sea Air Basin	Winter	2010	322.01	371.13	441.23	556.43	72.93	84.54	99.89	125.12
AB	Salton Sea Air Basin	Winter	2011	321.32	370.64	439.87	555.70	73.00	84.47	99.94	125.40

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	Salton Sea Air Basin	Winter	2012	321.51	371.06	439.70	556.40	73.09	84.44	100.03	125.69
AB	Salton Sea Air Basin	Winter	2013	320.31	369.85	437.64	554.68	73.20	84.46	100.12	126.01
AB	Salton Sea Air Basin	Winter	2014	320.43	370.15	437.46	555.24	73.28	84.51	100.21	126.32
AB	Salton Sea Air Basin	Winter	2015	317.65	366.97	433.34	550.64	73.36	84.58	100.30	126.63
AB	Salton Sea Air Basin	Winter	2016	317.72	367.19	433.19	551.06	73.43	84.66	100.39	126.92
AB	Salton Sea Air Basin	Winter	2017	317.76	367.38	433.05	551.44	73.48	84.73	100.46	127.20
AB	Salton Sea Air Basin	Winter	2018	317.77	367.53	432.94	551.76	73.51	84.81	100.51	127.46
AB	Salton Sea Air Basin	Winter	2019	317.66	367.56	432.69	551.84	73.55	84.95	100.58	127.69
AB	Salton Sea Air Basin	Winter	2020	317.66	367.71	432.63	552.09	73.61	85.11	100.66	127.91
AB	Salton Sea Air Basin	Winter	2021	318.16	368.43	433.31	553.22	73.66	85.25	100.73	128.08
AB	Salton Sea Air Basin	Winter	2022	318.16	368.61	433.35	553.51	73.68	85.37	100.78	128.23
AB	Salton Sea Air Basin	Winter	2023	318.13	368.75	433.38	553.75	73.68	85.48	100.83	128.38
AB	Salton Sea Air Basin	Winter	2024	321.95	373.25	438.66	560.61	73.69	85.57	100.86	128.50
AB	Salton Sea Air Basin	Winter	2025	321.92	373.37	438.70	560.81	73.69	85.66	100.90	128.62
AB	Salton Sea Air Basin	Winter	2026	321.91	373.53	438.74	561.04	73.69	85.74	100.92	128.73
AB	Salton Sea Air Basin	Winter	2027	321.90	373.68	438.78	561.26	73.69	85.81	100.94	128.82
AB	Salton Sea Air Basin	Winter	2028	321.88	373.82	438.82	561.46	73.69	85.88	100.95	128.91
AB	Salton Sea Air Basin	Winter	2029	321.86	373.96	438.84	561.66	73.69	85.94	100.96	128.98
AB	Salton Sea Air Basin	Winter	2030	321.84	374.09	438.87	561.85	73.69	86.00	100.97	129.05
AB	Salton Sea Air Basin	Winter	2031	326.88	379.86	445.94	570.95	73.69	86.05	100.98	129.12
AB	Salton Sea Air Basin	Winter	2032	326.88	380.03	446.02	571.24	73.69	86.10	100.98	129.18
AB	Salton Sea Air Basin	Winter	2033	326.89	380.18	446.09	571.52	73.69	86.15	100.99	129.23
AB	Salton Sea Air Basin	Winter	2034	326.90	380.33	446.17	571.77	73.69	86.19	100.99	129.28
AB	Salton Sea Air Basin	Winter	2035	326.91	380.46	446.25	572.01	73.70	86.22	100.99	129.33
AB	San Diego Air Basin	Annual	2010	352.52	405.15	482.46	610.22	72.99	83.92	99.34	125.27
AB	San Diego Air Basin	Annual	2011	353.81	407.05	483.85	612.57	73.01	83.88	99.44	125.44
AB	San Diego Air Basin	Annual	2012	354.03	407.67	483.80	613.09	73.05	83.89	99.57	125.64
AB	San Diego Air Basin	Annual	2013	354.28	408.23	483.77	613.65	73.12	83.94	99.70	125.85
AB	San Diego Air Basin	Annual	2014	354.50	408.76	483.75	614.21	73.17	83.99	99.82	126.06
AB	San Diego Air Basin	Annual	2015	354.72	409.25	483.74	614.79	73.24	84.07	99.93	126.29
AB	San Diego Air Basin	Annual	2016	354.92	409.69	483.74	615.32	73.32	84.16	100.05	126.52
AB	San Diego Air Basin	Annual	2017	355.08	410.10	483.73	615.84	73.37	84.25	100.15	126.74
AB	San Diego Air Basin	Annual	2018	355.21	410.47	483.74	616.29	73.41	84.35	100.25	126.96
AB	San Diego Air Basin	Annual	2019	355.33	410.82	483.74	616.69	73.46	84.52	100.35	127.15
AB	San Diego Air Basin	Annual	2020	355.43	411.15	483.75	617.07	73.55	84.69	100.45	127.34
AB	San Diego Air Basin	Annual	2021	356.07	412.11	484.56	618.41	73.62	84.87	100.55	127.52
AB	San Diego Air Basin	Annual	2022	356.11	412.36	484.56	618.69	73.67	85.02	100.63	127.67
AB	San Diego Air Basin	Annual	2023	356.12	412.55	484.56	618.89	73.71	85.15	100.70	127.83
AB	San Diego Air Basin	Annual	2024	356.12	412.71	484.55	619.06	73.72	85.27	100.76	127.98
AB	San Diego Air Basin	Annual	2025	356.11	412.86	484.55	619.23	73.74	85.38	100.81	128.12
AB	San Diego Air Basin	Annual	2026	356.13	413.01	484.54	619.39	73.76	85.48	100.85	128.26
AB	San Diego Air Basin	Annual	2027	356.14	413.16	484.53	619.54	73.77	85.57	100.88	128.38
AB	San Diego Air Basin	Annual	2028	356.15	413.30	484.51	619.69	73.78	85.66	100.90	128.48
AB	San Diego Air Basin	Annual	2029	356.15	413.45	484.50	619.84	73.79	85.74	100.92	128.58
AB	San Diego Air Basin	Annual	2030	356.14	413.59	484.49	619.98	73.79	85.81	100.93	128.68
AB	San Diego Air Basin	Annual	2031	356.14	413.74	484.48	620.13	73.80	85.89	100.94	128.77
AB	San Diego Air Basin	Annual	2032	356.14	413.87	484.48	620.29	73.80	85.96	100.95	128.86
AB	San Diego Air Basin	Annual	2033	356.14	414.00	484.47	620.43	73.80	86.02	100.96	128.93
AB	San Diego Air Basin	Annual	2034	356.13	414.10	484.46	620.55	73.80	86.08	100.97	129.01
AB	San Diego Air Basin	Annual	2035	356.13	414.20	484.46	620.67	73.81	86.13	100.97	129.08
AB	San Diego Air Basin	Summer	2010	372.46	426.19	509.00	643.64	72.99	83.92	99.34	125.27
AB	San Diego Air Basin	Summer	2011	373.89	428.41	510.48	645.96	73.01	83.88	99.44	125.44
AB	San Diego Air Basin	Summer	2012	374.19	429.26	510.46	646.43	73.05	83.89	99.57	125.64
AB	San Diego Air Basin	Summer	2013	374.48	430.00	510.47	646.99	73.12	83.94	99.70	125.85

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	San Diego Air Basin	Summer	2014	374.75	430.67	510.51	647.60	73.17	83.99	99.82	126.06
AB	San Diego Air Basin	Summer	2015	375.00	431.27	510.56	648.26	73.24	84.07	99.93	126.29
AB	San Diego Air Basin	Summer	2016	375.24	431.81	510.61	648.90	73.32	84.16	100.05	126.52
AB	San Diego Air Basin	Summer	2017	375.42	432.30	510.65	649.52	73.37	84.25	100.15	126.74
AB	San Diego Air Basin	Summer	2018	375.55	432.74	510.67	650.05	73.41	84.35	100.25	126.96
AB	San Diego Air Basin	Summer	2019	375.68	433.15	510.68	650.53	73.46	84.52	100.35	127.15
AB	San Diego Air Basin	Summer	2020	375.78	433.52	510.68	650.97	73.55	84.69	100.45	127.34
AB	San Diego Air Basin	Summer	2021	376.47	434.60	511.57	652.47	73.62	84.87	100.55	127.52
AB	San Diego Air Basin	Summer	2022	376.52	434.90	511.57	652.82	73.67	85.02	100.63	127.67
AB	San Diego Air Basin	Summer	2023	376.54	435.14	511.57	653.07	73.71	85.15	100.70	127.83
AB	San Diego Air Basin	Summer	2024	376.54	435.34	511.56	653.27	73.72	85.27	100.76	127.98
AB	San Diego Air Basin	Summer	2025	376.54	435.52	511.56	653.45	73.74	85.38	100.81	128.12
AB	San Diego Air Basin	Summer	2026	376.55	435.72	511.54	653.62	73.76	85.48	100.85	128.26
AB	San Diego Air Basin	Summer	2027	376.56	435.90	511.53	653.77	73.77	85.57	100.88	128.38
AB	San Diego Air Basin	Summer	2028	376.57	436.07	511.51	653.92	73.78	85.66	100.90	128.48
AB	San Diego Air Basin	Summer	2029	376.58	436.25	511.49	654.06	73.79	85.74	100.92	128.58
AB	San Diego Air Basin	Summer	2030	376.58	436.43	511.48	654.21	73.79	85.81	100.93	128.68
AB	San Diego Air Basin	Summer	2031	376.57	436.61	511.47	654.35	73.80	85.89	100.94	128.77
AB	San Diego Air Basin	Summer	2032	376.57	436.77	511.46	654.51	73.80	85.96	100.95	128.86
AB	San Diego Air Basin	Summer	2033	376.57	436.92	511.45	654.65	73.80	86.02	100.96	128.93
AB	San Diego Air Basin	Summer	2034	376.57	437.04	511.45	654.79	73.80	86.08	100.97	129.01
AB	San Diego Air Basin	Summer	2035	376.57	437.14	511.44	654.92	73.81	86.13	100.97	129.08
AB	San Diego Air Basin	Winter	2010	348.91	401.34	477.65	604.17	72.99	83.92	99.34	125.27
AB	San Diego Air Basin	Winter	2011	350.18	403.18	479.04	606.53	73.01	83.88	99.44	125.44
AB	San Diego Air Basin	Winter	2012	350.39	403.76	478.98	607.06	73.05	83.89	99.57	125.64
AB	San Diego Air Basin	Winter	2013	350.62	404.30	478.94	607.62	73.12	83.94	99.70	125.85
AB	San Diego Air Basin	Winter	2014	350.83	404.79	478.91	608.17	73.17	83.99	99.82	126.06
AB	San Diego Air Basin	Winter	2015	351.05	405.26	478.89	608.73	73.24	84.07	99.93	126.29
AB	San Diego Air Basin	Winter	2016	351.25	405.69	478.88	609.25	73.32	84.16	100.05	126.52
AB	San Diego Air Basin	Winter	2017	351.40	406.08	478.87	609.75	73.37	84.25	100.15	126.74
AB	San Diego Air Basin	Winter	2018	351.53	406.44	478.86	610.18	73.41	84.35	100.25	126.96
AB	San Diego Air Basin	Winter	2019	351.65	406.78	478.87	610.57	73.46	84.52	100.35	127.15
AB	San Diego Air Basin	Winter	2020	351.75	407.10	478.87	610.94	73.55	84.69	100.45	127.34
AB	San Diego Air Basin	Winter	2021	352.38	408.04	479.67	612.25	73.62	84.87	100.55	127.52
AB	San Diego Air Basin	Winter	2022	352.42	408.28	479.67	612.51	73.67	85.02	100.63	127.67
AB	San Diego Air Basin	Winter	2023	352.43	408.47	479.67	612.71	73.71	85.15	100.70	127.83
AB	San Diego Air Basin	Winter	2024	352.42	408.62	479.66	612.87	73.72	85.27	100.76	127.98
AB	San Diego Air Basin	Winter	2025	352.42	408.75	479.66	613.03	73.74	85.38	100.81	128.12
AB	San Diego Air Basin	Winter	2026	352.43	408.90	479.65	613.20	73.76	85.48	100.85	128.26
AB	San Diego Air Basin	Winter	2027	352.44	409.04	479.64	613.35	73.77	85.57	100.88	128.38
AB	San Diego Air Basin	Winter	2028	352.45	409.18	479.63	613.50	73.78	85.66	100.90	128.48
AB	San Diego Air Basin	Winter	2029	352.45	409.32	479.62	613.64	73.79	85.74	100.92	128.58
AB	San Diego Air Basin	Winter	2030	352.45	409.46	479.60	613.79	73.79	85.81	100.93	128.68
AB	San Diego Air Basin	Winter	2031	352.44	409.60	479.60	613.94	73.80	85.89	100.94	128.77
AB	San Diego Air Basin	Winter	2032	352.44	409.73	479.59	614.10	73.80	85.96	100.95	128.86
AB	San Diego Air Basin	Winter	2033	352.44	409.85	479.59	614.23	73.80	86.02	100.96	128.93
AB	San Diego Air Basin	Winter	2034	352.44	409.95	479.58	614.36	73.80	86.08	100.97	129.01
AB	San Diego Air Basin	Winter	2035	352.43	410.04	479.57	614.47	73.81	86.13	100.97	129.08
AB	San Francisco Air Basin	Annual	2010	338.39	388.50	461.86	581.62	72.94	84.37	99.40	124.69
AB	San Francisco Air Basin	Annual	2011	338.52	388.90	461.72	582.11	72.98	84.25	99.50	124.89
AB	San Francisco Air Basin	Annual	2012	338.67	389.32	461.62	582.66	73.02	84.19	99.62	125.11
AB	San Francisco Air Basin	Annual	2013	338.86	389.72	461.54	583.26	73.09	84.17	99.74	125.34
AB	San Francisco Air Basin	Annual	2014	339.03	390.09	461.49	583.86	73.15	84.17	99.85	125.59
AB	San Francisco Air Basin	Annual	2015	339.22	390.46	461.45	584.47	73.23	84.19	99.96	125.85

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	San Francisco Air Basin	Annual	2016	339.41	390.83	461.42	585.05	73.32	84.24	100.07	126.10
AB	San Francisco Air Basin	Annual	2017	339.54	391.17	461.39	585.61	73.38	84.29	100.17	126.36
AB	San Francisco Air Basin	Annual	2018	339.67	391.45	461.36	586.09	73.44	84.35	100.26	126.61
AB	San Francisco Air Basin	Annual	2019	339.78	391.75	461.34	586.50	73.50	84.48	100.35	126.84
AB	San Francisco Air Basin	Annual	2020	339.88	392.02	461.33	586.89	73.60	84.63	100.45	127.06
AB	San Francisco Air Basin	Annual	2021	339.96	392.27	461.33	587.20	73.68	84.79	100.54	127.24
AB	San Francisco Air Basin	Annual	2022	339.99	392.48	461.33	587.46	73.74	84.93	100.62	127.39
AB	San Francisco Air Basin	Annual	2023	339.99	392.64	461.32	587.66	73.78	85.06	100.69	127.56
AB	San Francisco Air Basin	Annual	2024	339.97	392.77	461.30	587.83	73.80	85.17	100.75	127.71
AB	San Francisco Air Basin	Annual	2025	339.96	392.89	461.29	588.00	73.82	85.27	100.80	127.87
AB	San Francisco Air Basin	Annual	2026	339.97	393.04	461.27	588.18	73.85	85.38	100.84	128.01
AB	San Francisco Air Basin	Annual	2027	339.98	393.18	461.25	588.35	73.86	85.47	100.87	128.15
AB	San Francisco Air Basin	Annual	2028	339.97	393.32	461.22	588.52	73.87	85.55	100.89	128.26
AB	San Francisco Air Basin	Annual	2029	339.96	393.47	461.20	588.68	73.88	85.63	100.91	128.38
AB	San Francisco Air Basin	Annual	2030	339.95	393.63	461.17	588.85	73.89	85.71	100.92	128.49
AB	San Francisco Air Basin	Annual	2031	339.94	393.79	461.16	589.02	73.89	85.79	100.93	128.59
AB	San Francisco Air Basin	Annual	2032	339.94	393.94	461.14	589.20	73.90	85.86	100.94	128.69
AB	San Francisco Air Basin	Annual	2033	339.93	394.08	461.13	589.36	73.90	85.92	100.95	128.79
AB	San Francisco Air Basin	Annual	2034	339.92	394.20	461.11	589.50	73.90	85.98	100.95	128.87
AB	San Francisco Air Basin	Annual	2035	339.91	394.31	461.10	589.63	73.91	86.04	100.96	128.96
AB	San Francisco Air Basin	Summer	2010	364.35	415.41	496.51	625.57	72.94	84.37	99.40	124.69
AB	San Francisco Air Basin	Summer	2011	364.64	416.20	496.43	625.96	72.98	84.25	99.50	124.89
AB	San Francisco Air Basin	Summer	2012	364.93	416.94	496.39	626.48	73.02	84.19	99.62	125.11
AB	San Francisco Air Basin	Summer	2013	365.22	417.62	496.38	627.12	73.09	84.17	99.74	125.34
AB	San Francisco Air Basin	Summer	2014	365.47	418.22	496.42	627.81	73.15	84.17	99.85	125.59
AB	San Francisco Air Basin	Summer	2015	365.72	418.79	496.47	628.57	73.23	84.19	99.96	125.85
AB	San Francisco Air Basin	Summer	2016	365.95	419.33	496.52	629.31	73.32	84.24	100.07	126.10
AB	San Francisco Air Basin	Summer	2017	366.11	419.82	496.57	630.02	73.38	84.29	100.17	126.36
AB	San Francisco Air Basin	Summer	2018	366.24	420.25	496.57	630.62	73.44	84.35	100.26	126.61
AB	San Francisco Air Basin	Summer	2019	366.36	420.66	496.58	631.14	73.50	84.48	100.35	126.84
AB	San Francisco Air Basin	Summer	2020	366.46	421.03	496.57	631.62	73.60	84.63	100.45	127.06
AB	San Francisco Air Basin	Summer	2021	366.53	421.37	496.57	632.00	73.68	84.79	100.54	127.24
AB	San Francisco Air Basin	Summer	2022	366.57	421.66	496.56	632.33	73.74	84.93	100.62	127.39
AB	San Francisco Air Basin	Summer	2023	366.57	421.90	496.54	632.57	73.78	85.06	100.69	127.56
AB	San Francisco Air Basin	Summer	2024	366.55	422.10	496.51	632.76	73.80	85.17	100.75	127.71
AB	San Francisco Air Basin	Summer	2025	366.54	422.28	496.49	632.95	73.82	85.27	100.80	127.87
AB	San Francisco Air Basin	Summer	2026	366.55	422.48	496.46	633.14	73.85	85.38	100.84	128.01
AB	San Francisco Air Basin	Summer	2027	366.56	422.68	496.44	633.31	73.86	85.47	100.87	128.15
AB	San Francisco Air Basin	Summer	2028	366.57	422.88	496.41	633.48	73.87	85.55	100.89	128.26
AB	San Francisco Air Basin	Summer	2029	366.56	423.10	496.39	633.66	73.88	85.63	100.91	128.38
AB	San Francisco Air Basin	Summer	2030	366.56	423.32	496.37	633.84	73.89	85.71	100.92	128.49
AB	San Francisco Air Basin	Summer	2031	366.56	423.55	496.35	634.03	73.89	85.79	100.93	128.59
AB	San Francisco Air Basin	Summer	2032	366.55	423.75	496.34	634.22	73.90	85.86	100.94	128.69
AB	San Francisco Air Basin	Summer	2033	366.55	423.93	496.32	634.41	73.90	85.92	100.95	128.79
AB	San Francisco Air Basin	Summer	2034	366.54	424.09	496.31	634.58	73.90	85.98	100.95	128.87
AB	San Francisco Air Basin	Summer	2035	366.54	424.21	496.30	634.74	73.91	86.04	100.96	128.96
AB	San Francisco Air Basin	Winter	2010	335.32	385.28	457.66	576.18	72.94	84.37	99.40	124.69
AB	San Francisco Air Basin	Winter	2011	335.43	385.63	457.52	576.68	72.98	84.25	99.50	124.89
AB	San Francisco Air Basin	Winter	2012	335.56	386.01	457.41	577.23	73.02	84.19	99.62	125.11
AB	San Francisco Air Basin	Winter	2013	335.74	386.37	457.32	577.82	73.09	84.17	99.74	125.34
AB	San Francisco Air Basin	Winter	2014	335.90	386.72	457.25	578.40	73.15	84.17	99.85	125.59
AB	San Francisco Air Basin	Winter	2015	336.08	387.07	457.20	579.00	73.23	84.19	99.96	125.85
AB	San Francisco Air Basin	Winter	2016	336.26	387.41	457.16	579.56	73.32	84.24	100.07	126.10
AB	San Francisco Air Basin	Winter	2017	336.39	387.73	457.12	580.10	73.38	84.29	100.17	126.36

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	San Francisco Air Basin	Winter	2018	336.52	388.00	457.08	580.55	73.44	84.35	100.26	126.61
AB	San Francisco Air Basin	Winter	2019	336.63	388.27	457.06	580.95	73.50	84.48	100.35	126.84
AB	San Francisco Air Basin	Winter	2020	336.73	388.53	457.05	581.32	73.60	84.63	100.45	127.06
AB	San Francisco Air Basin	Winter	2021	336.80	388.77	457.05	581.62	73.68	84.79	100.54	127.24
AB	San Francisco Air Basin	Winter	2022	336.84	388.97	457.05	581.88	73.74	84.93	100.62	127.39
AB	San Francisco Air Basin	Winter	2023	336.84	389.12	457.04	582.08	73.78	85.06	100.69	127.56
AB	San Francisco Air Basin	Winter	2024	336.82	389.24	457.02	582.24	73.80	85.17	100.75	127.71
AB	San Francisco Air Basin	Winter	2025	336.81	389.35	457.00	582.41	73.82	85.27	100.80	127.87
AB	San Francisco Air Basin	Winter	2026	336.82	389.49	456.98	582.60	73.85	85.38	100.84	128.01
AB	San Francisco Air Basin	Winter	2027	336.82	389.62	456.96	582.77	73.86	85.47	100.87	128.15
AB	San Francisco Air Basin	Winter	2028	336.82	389.76	456.94	582.93	73.87	85.55	100.89	128.26
AB	San Francisco Air Basin	Winter	2029	336.80	389.90	456.91	583.10	73.88	85.63	100.91	128.38
AB	San Francisco Air Basin	Winter	2030	336.79	390.05	456.89	583.27	73.89	85.71	100.92	128.49
AB	San Francisco Air Basin	Winter	2031	336.78	390.20	456.87	583.44	73.89	85.79	100.93	128.59
AB	San Francisco Air Basin	Winter	2032	336.77	390.35	456.86	583.61	73.90	85.86	100.94	128.69
AB	San Francisco Air Basin	Winter	2033	336.76	390.48	456.84	583.76	73.90	85.92	100.95	128.79
AB	San Francisco Air Basin	Winter	2034	336.76	390.60	456.82	583.90	73.90	85.98	100.95	128.87
AB	San Francisco Air Basin	Winter	2035	336.74	390.70	456.80	584.02	73.91	86.04	100.96	128.96
AB	San Joaquin Valley Air Basin	Annual	2010	344.53	395.23	472.07	594.91	73.37	85.32	100.36	124.58
AB	San Joaquin Valley Air Basin	Annual	2011	344.79	396.17	471.84	595.64	73.37	85.05	100.34	124.82
AB	San Joaquin Valley Air Basin	Annual	2012	344.82	396.68	471.40	596.04	73.39	84.87	100.35	125.07
AB	San Joaquin Valley Air Basin	Annual	2013	345.18	397.48	471.50	597.02	73.43	84.73	100.37	125.34
AB	San Joaquin Valley Air Basin	Annual	2014	345.41	398.05	471.41	597.81	73.45	84.65	100.38	125.62
AB	San Joaquin Valley Air Basin	Annual	2015	346.20	399.25	472.24	599.62	73.50	84.60	100.40	125.92
AB	San Joaquin Valley Air Basin	Annual	2016	346.40	399.70	472.19	600.39	73.57	84.57	100.44	126.22
AB	San Joaquin Valley Air Basin	Annual	2017	346.53	400.08	472.14	601.11	73.60	84.54	100.44	126.51
AB	San Joaquin Valley Air Basin	Annual	2018	347.36	401.34	473.27	602.98	73.63	84.56	100.47	126.79
AB	San Joaquin Valley Air Basin	Annual	2019	347.49	401.71	473.29	603.59	73.68	84.67	100.51	127.05
AB	San Joaquin Valley Air Basin	Annual	2020	347.59	402.04	473.30	604.13	73.77	84.83	100.58	127.28
AB	San Joaquin Valley Air Basin	Annual	2021	347.55	402.06	472.98	604.31	73.84	84.99	100.66	127.48
AB	San Joaquin Valley Air Basin	Annual	2022	347.60	402.27	472.95	604.67	73.89	85.13	100.73	127.64
AB	San Joaquin Valley Air Basin	Annual	2023	347.63	402.44	472.93	604.96	73.92	85.25	100.78	127.82
AB	San Joaquin Valley Air Basin	Annual	2024	347.85	403.02	473.49	605.81	73.94	85.37	100.83	127.98
AB	San Joaquin Valley Air Basin	Annual	2025	347.86	403.16	473.48	606.02	73.96	85.47	100.86	128.14
AB	San Joaquin Valley Air Basin	Annual	2026	348.71	404.36	474.80	607.63	73.98	85.57	100.89	128.28
AB	San Joaquin Valley Air Basin	Annual	2027	348.72	404.49	474.74	607.80	73.99	85.65	100.92	128.41
AB	San Joaquin Valley Air Basin	Annual	2028	348.73	404.62	474.69	607.97	74.00	85.74	100.93	128.53
AB	San Joaquin Valley Air Basin	Annual	2029	348.73	404.75	474.65	608.15	74.01	85.81	100.94	128.63
AB	San Joaquin Valley Air Basin	Annual	2030	348.73	404.88	474.61	608.33	74.01	85.88	100.95	128.74
AB	San Joaquin Valley Air Basin	Annual	2031	348.73	405.01	474.57	608.48	74.02	85.95	100.96	128.83
AB	San Joaquin Valley Air Basin	Annual	2032	348.73	405.13	474.53	608.63	74.02	86.02	100.96	128.92
AB	San Joaquin Valley Air Basin	Annual	2033	348.73	405.23	474.50	608.78	74.02	86.07	100.97	129.00
AB	San Joaquin Valley Air Basin	Annual	2034	348.73	405.32	474.47	608.91	74.03	86.12	100.97	129.08
AB	San Joaquin Valley Air Basin	Annual	2035	348.74	405.39	474.45	609.03	74.03	86.17	100.98	129.15
AB	San Joaquin Valley Air Basin	Summer	2010	378.79	430.24	517.12	652.23	73.37	85.32	100.36	124.58
AB	San Joaquin Valley Air Basin	Summer	2011	379.32	432.07	517.21	652.97	73.37	85.05	100.34	124.82
AB	San Joaquin Valley Air Basin	Summer	2012	379.51	433.17	516.96	653.39	73.39	84.87	100.35	125.07
AB	San Joaquin Valley Air Basin	Summer	2013	380.02	434.48	517.27	654.53	73.43	84.73	100.37	125.34
AB	San Joaquin Valley Air Basin	Summer	2014	380.35	435.44	517.38	655.51	73.45	84.65	100.38	125.62
AB	San Joaquin Valley Air Basin	Summer	2015	381.29	437.04	518.48	657.68	73.50	84.60	100.40	125.92
AB	San Joaquin Valley Air Basin	Summer	2016	381.55	437.73	518.55	658.71	73.57	84.57	100.44	126.22
AB	San Joaquin Valley Air Basin	Summer	2017	381.72	438.33	518.60	659.66	73.60	84.54	100.44	126.51
AB	San Joaquin Valley Air Basin	Summer	2018	382.62	439.83	519.89	661.84	73.63	84.56	100.47	126.79
AB	San Joaquin Valley Air Basin	Summer	2019	382.75	440.33	519.93	662.62	73.68	84.67	100.51	127.05

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	San Joaquin Valley Air Basin	Summer	2020	382.86	440.77	519.95	663.30	73.77	84.83	100.58	127.28
AB	San Joaquin Valley Air Basin	Summer	2021	382.80	440.85	519.59	663.56	73.84	84.99	100.66	127.48
AB	San Joaquin Valley Air Basin	Summer	2022	382.85	441.14	519.54	664.00	73.89	85.13	100.73	127.64
AB	San Joaquin Valley Air Basin	Summer	2023	382.88	441.39	519.49	664.34	73.92	85.25	100.78	127.82
AB	San Joaquin Valley Air Basin	Summer	2024	383.14	442.10	520.11	665.29	73.94	85.37	100.83	127.98
AB	San Joaquin Valley Air Basin	Summer	2025	383.16	442.31	520.10	665.52	73.96	85.47	100.86	128.14
AB	San Joaquin Valley Air Basin	Summer	2026	384.09	443.68	521.54	667.23	73.98	85.57	100.89	128.28
AB	San Joaquin Valley Air Basin	Summer	2027	384.11	443.88	521.48	667.40	73.99	85.65	100.92	128.41
AB	San Joaquin Valley Air Basin	Summer	2028	384.12	444.07	521.44	667.58	74.00	85.74	100.93	128.53
AB	San Joaquin Valley Air Basin	Summer	2029	384.14	444.28	521.41	667.76	74.01	85.81	100.94	128.63
AB	San Joaquin Valley Air Basin	Summer	2030	384.15	444.48	521.38	667.96	74.01	85.88	100.95	128.74
AB	San Joaquin Valley Air Basin	Summer	2031	384.15	444.67	521.34	668.13	74.02	85.95	100.96	128.83
AB	San Joaquin Valley Air Basin	Summer	2032	384.15	444.83	521.31	668.31	74.02	86.02	100.96	128.92
AB	San Joaquin Valley Air Basin	Summer	2033	384.15	444.97	521.29	668.48	74.02	86.07	100.97	129.00
AB	San Joaquin Valley Air Basin	Summer	2034	384.16	445.10	521.27	668.66	74.03	86.12	100.97	129.08
AB	San Joaquin Valley Air Basin	Summer	2035	384.17	445.18	521.25	668.82	74.03	86.17	100.98	129.15
AB	San Joaquin Valley Air Basin	Winter	2010	331.71	382.09	455.17	573.36	73.37	85.32	100.36	124.58
AB	San Joaquin Valley Air Basin	Winter	2011	331.86	382.70	454.81	574.06	73.37	85.05	100.34	124.82
AB	San Joaquin Valley Air Basin	Winter	2012	331.84	382.98	454.30	574.45	73.39	84.87	100.35	125.07
AB	San Joaquin Valley Air Basin	Winter	2013	332.15	383.59	454.32	575.38	73.43	84.73	100.37	125.34
AB	San Joaquin Valley Air Basin	Winter	2014	332.34	384.02	454.16	576.11	73.45	84.65	100.38	125.62
AB	San Joaquin Valley Air Basin	Winter	2015	333.08	385.08	454.89	577.78	73.50	84.60	100.40	125.92
AB	San Joaquin Valley Air Basin	Winter	2016	333.25	385.43	454.79	578.46	73.57	84.57	100.44	126.22
AB	San Joaquin Valley Air Basin	Winter	2017	333.38	385.74	454.71	579.09	73.60	84.54	100.44	126.51
AB	San Joaquin Valley Air Basin	Winter	2018	334.17	386.90	455.78	580.83	73.63	84.56	100.47	126.79
AB	San Joaquin Valley Air Basin	Winter	2019	334.29	387.21	455.78	581.37	73.68	84.67	100.51	127.05
AB	San Joaquin Valley Air Basin	Winter	2020	334.40	387.49	455.79	581.86	73.77	84.83	100.58	127.28
AB	San Joaquin Valley Air Basin	Winter	2021	334.35	387.50	455.49	582.01	73.84	84.99	100.66	127.48
AB	San Joaquin Valley Air Basin	Winter	2022	334.40	387.67	455.46	582.34	73.89	85.13	100.73	127.64
AB	San Joaquin Valley Air Basin	Winter	2023	334.42	387.81	455.44	582.61	73.92	85.25	100.78	127.82
AB	San Joaquin Valley Air Basin	Winter	2024	334.63	388.34	455.98	583.42	73.94	85.37	100.83	127.98
AB	San Joaquin Valley Air Basin	Winter	2025	334.64	388.44	455.97	583.62	73.96	85.47	100.86	128.14
AB	San Joaquin Valley Air Basin	Winter	2026	335.45	389.58	457.23	585.17	73.98	85.57	100.89	128.28
AB	San Joaquin Valley Air Basin	Winter	2027	335.46	389.68	457.17	585.33	73.99	85.65	100.92	128.41
AB	San Joaquin Valley Air Basin	Winter	2028	335.46	389.78	457.12	585.50	74.00	85.74	100.93	128.53
AB	San Joaquin Valley Air Basin	Winter	2029	335.46	389.88	457.06	585.66	74.01	85.81	100.94	128.63
AB	San Joaquin Valley Air Basin	Winter	2030	335.45	389.98	457.02	585.83	74.01	85.88	100.95	128.74
AB	San Joaquin Valley Air Basin	Winter	2031	335.45	390.08	456.97	585.97	74.02	85.95	100.96	128.83
AB	San Joaquin Valley Air Basin	Winter	2032	335.44	390.18	456.93	586.11	74.02	86.02	100.96	128.92
AB	San Joaquin Valley Air Basin	Winter	2033	335.44	390.27	456.89	586.24	74.02	86.07	100.97	129.00
AB	San Joaquin Valley Air Basin	Winter	2034	335.44	390.34	456.86	586.35	74.03	86.12	100.97	129.08
AB	San Joaquin Valley Air Basin	Winter	2035	335.44	390.41	456.83	586.45	74.03	86.17	100.98	129.15
AB	South Central Coast Air Basin	Annual	2010	324.53	377.77	444.25	560.00	73.41	85.83	99.73	124.93
AB	South Central Coast Air Basin	Annual	2011	324.89	378.44	444.27	561.13	73.37	85.48	99.79	125.12
AB	South Central Coast Air Basin	Annual	2012	324.92	378.63	443.93	561.68	73.33	85.24	99.87	125.34
AB	South Central Coast Air Basin	Annual	2013	325.01	378.79	443.66	562.26	73.34	85.04	99.96	125.57
AB	South Central Coast Air Basin	Annual	2014	325.07	378.92	443.44	562.79	73.32	84.87	100.05	125.81
AB	South Central Coast Air Basin	Annual	2015	326.78	381.05	445.42	566.18	73.34	84.73	100.13	126.06
AB	South Central Coast Air Basin	Annual	2016	326.90	381.17	445.27	566.68	73.38	84.63	100.22	126.32
AB	South Central Coast Air Basin	Annual	2017	326.98	381.27	445.14	567.15	73.40	84.54	100.30	126.57
AB	South Central Coast Air Basin	Annual	2018	327.04	381.38	445.03	567.56	73.42	84.52	100.38	126.81
AB	South Central Coast Air Basin	Annual	2019	327.63	382.30	445.61	568.85	73.45	84.60	100.46	127.04
AB	South Central Coast Air Basin	Annual	2020	327.67	382.43	445.52	569.15	73.55	84.73	100.55	127.25
AB	South Central Coast Air Basin	Annual	2021	328.64	383.97	446.70	571.13	73.62	84.87	100.64	127.42

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	South Central Coast Air Basin	Annual	2022	328.67	384.16	446.72	571.43	73.67	85.01	100.71	127.55
AB	South Central Coast Air Basin	Annual	2023	328.66	384.31	446.73	571.67	73.70	85.12	100.77	127.71
AB	South Central Coast Air Basin	Annual	2024	329.35	385.50	447.67	573.19	73.72	85.23	100.81	127.86
AB	South Central Coast Air Basin	Annual	2025	329.34	385.64	447.71	573.44	73.74	85.32	100.85	128.01
AB	South Central Coast Air Basin	Annual	2026	328.64	385.23	446.70	572.50	73.76	85.42	100.88	128.15
AB	South Central Coast Air Basin	Annual	2027	328.66	385.40	446.71	572.75	73.77	85.50	100.91	128.27
AB	South Central Coast Air Basin	Annual	2028	328.66	385.57	446.73	573.00	73.78	85.58	100.92	128.39
AB	South Central Coast Air Basin	Annual	2029	328.65	385.74	446.73	573.24	73.79	85.65	100.93	128.50
AB	South Central Coast Air Basin	Annual	2030	328.64	385.91	446.73	573.47	73.79	85.72	100.94	128.60
AB	South Central Coast Air Basin	Annual	2031	329.38	387.27	447.77	575.16	73.80	85.79	100.95	128.70
AB	South Central Coast Air Basin	Annual	2032	329.33	387.45	447.79	575.40	73.80	85.85	100.95	128.79
AB	South Central Coast Air Basin	Annual	2033	329.30	387.60	447.82	575.61	73.81	85.91	100.96	128.88
AB	South Central Coast Air Basin	Annual	2034	329.26	387.75	447.85	575.81	73.81	85.97	100.97	128.96
AB	South Central Coast Air Basin	Annual	2035	329.23	387.87	447.88	576.00	73.81	86.02	100.97	129.03
AB	South Central Coast Air Basin	Summer	2010	336.60	390.99	459.84	580.17	73.41	85.83	99.73	124.93
AB	South Central Coast Air Basin	Summer	2011	337.01	391.88	459.94	581.29	73.37	85.48	99.79	125.12
AB	South Central Coast Air Basin	Summer	2012	337.08	392.23	459.65	581.83	73.33	85.24	99.87	125.34
AB	South Central Coast Air Basin	Summer	2013	337.19	392.52	459.44	582.43	73.34	85.04	99.96	125.57
AB	South Central Coast Air Basin	Summer	2014	337.26	392.75	459.26	582.99	73.32	84.87	100.05	125.81
AB	South Central Coast Air Basin	Summer	2015	339.04	395.04	461.36	586.53	73.34	84.73	100.13	126.06
AB	South Central Coast Air Basin	Summer	2016	339.17	395.24	461.23	587.08	73.38	84.63	100.22	126.32
AB	South Central Coast Air Basin	Summer	2017	339.26	395.40	461.12	587.60	73.40	84.54	100.30	126.57
AB	South Central Coast Air Basin	Summer	2018	339.31	395.56	461.01	588.05	73.42	84.52	100.38	126.81
AB	South Central Coast Air Basin	Summer	2019	339.92	396.55	461.61	589.41	73.45	84.60	100.46	127.04
AB	South Central Coast Air Basin	Summer	2020	339.95	396.69	461.51	589.72	73.55	84.73	100.55	127.25
AB	South Central Coast Air Basin	Summer	2021	340.97	398.35	462.76	591.83	73.62	84.87	100.64	127.42
AB	South Central Coast Air Basin	Summer	2022	340.99	398.58	462.80	592.18	73.67	85.01	100.71	127.55
AB	South Central Coast Air Basin	Summer	2023	340.98	398.77	462.82	592.45	73.70	85.12	100.77	127.71
AB	South Central Coast Air Basin	Summer	2024	341.72	400.07	463.83	594.09	73.72	85.23	100.81	127.86
AB	South Central Coast Air Basin	Summer	2025	341.71	400.25	463.89	594.37	73.74	85.32	100.85	128.01
AB	South Central Coast Air Basin	Summer	2026	341.01	399.87	462.89	593.44	73.76	85.42	100.88	128.15
AB	South Central Coast Air Basin	Summer	2027	341.03	400.07	462.92	593.72	73.77	85.50	100.91	128.27
AB	South Central Coast Air Basin	Summer	2028	341.04	400.28	462.96	594.00	73.78	85.58	100.92	128.39
AB	South Central Coast Air Basin	Summer	2029	341.04	400.49	462.98	594.26	73.79	85.65	100.93	128.50
AB	South Central Coast Air Basin	Summer	2030	341.03	400.70	463.00	594.53	73.79	85.72	100.94	128.60
AB	South Central Coast Air Basin	Summer	2031	341.80	402.15	464.10	596.30	73.80	85.79	100.95	128.70
AB	South Central Coast Air Basin	Summer	2032	341.75	402.36	464.14	596.56	73.80	85.85	100.95	128.79
AB	South Central Coast Air Basin	Summer	2033	341.71	402.55	464.19	596.80	73.81	85.91	100.96	128.88
AB	South Central Coast Air Basin	Summer	2034	341.67	402.72	464.23	597.03	73.81	85.97	100.97	128.96
AB	South Central Coast Air Basin	Summer	2035	341.63	402.86	464.29	597.25	73.81	86.02	100.97	129.03
AB	South Central Coast Air Basin	Winter	2010	322.51	375.46	441.66	556.61	73.41	85.83	99.73	124.93
AB	South Central Coast Air Basin	Winter	2011	322.86	376.09	441.67	557.75	73.37	85.48	99.79	125.12
AB	South Central Coast Air Basin	Winter	2012	322.89	376.25	441.32	558.31	73.33	85.24	99.87	125.34
AB	South Central Coast Air Basin	Winter	2013	322.98	376.39	441.05	558.88	73.34	85.04	99.96	125.57
AB	South Central Coast Air Basin	Winter	2014	323.04	376.50	440.82	559.41	73.32	84.87	100.05	125.81
AB	South Central Coast Air Basin	Winter	2015	324.74	378.60	442.79	562.78	73.34	84.73	100.13	126.06
AB	South Central Coast Air Basin	Winter	2016	324.86	378.71	442.63	563.27	73.38	84.63	100.22	126.32
AB	South Central Coast Air Basin	Winter	2017	324.94	378.80	442.50	563.74	73.40	84.54	100.30	126.57
AB	South Central Coast Air Basin	Winter	2018	325.00	378.91	442.39	564.14	73.42	84.52	100.38	126.81
AB	South Central Coast Air Basin	Winter	2019	325.59	379.82	442.98	565.43	73.45	84.60	100.46	127.04
AB	South Central Coast Air Basin	Winter	2020	325.64	379.94	442.89	565.73	73.55	84.73	100.55	127.25
AB	South Central Coast Air Basin	Winter	2021	326.60	381.46	444.05	567.67	73.62	84.87	100.64	127.42
AB	South Central Coast Air Basin	Winter	2022	326.62	381.64	444.06	567.96	73.67	85.01	100.71	127.55
AB	South Central Coast Air Basin	Winter	2023	326.61	381.78	444.07	568.19	73.70	85.12	100.77	127.71

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	South Central Coast Air Basin	Winter	2024	327.29	382.96	444.99	569.69	73.72	85.23	100.81	127.86
AB	South Central Coast Air Basin	Winter	2025	327.28	383.09	445.02	569.93	73.74	85.32	100.85	128.01
AB	South Central Coast Air Basin	Winter	2026	326.58	382.67	444.01	568.98	73.76	85.42	100.88	128.15
AB	South Central Coast Air Basin	Winter	2027	326.60	382.83	444.02	569.23	73.77	85.50	100.91	128.27
AB	South Central Coast Air Basin	Winter	2028	326.60	382.99	444.03	569.47	73.78	85.58	100.92	128.39
AB	South Central Coast Air Basin	Winter	2029	326.59	383.15	444.03	569.70	73.79	85.65	100.93	128.50
AB	South Central Coast Air Basin	Winter	2030	326.57	383.32	444.02	569.92	73.79	85.72	100.94	128.60
AB	South Central Coast Air Basin	Winter	2031	327.31	384.66	445.05	571.59	73.80	85.79	100.95	128.70
AB	South Central Coast Air Basin	Winter	2032	327.27	384.82	445.06	571.82	73.80	85.85	100.95	128.79
AB	South Central Coast Air Basin	Winter	2033	327.23	384.97	445.09	572.03	73.81	85.91	100.96	128.88
AB	South Central Coast Air Basin	Winter	2034	327.19	385.12	445.11	572.22	73.81	85.97	100.97	128.96
AB	South Central Coast Air Basin	Winter	2035	327.16	385.23	445.14	572.40	73.81	86.02	100.97	129.03
AB	South Coast Air Basin	Annual	2010	358.01	409.57	488.94	615.29	73.21	84.03	99.45	125.25
AB	South Coast Air Basin	Annual	2011	358.53	410.51	489.32	616.38	73.23	83.98	99.55	125.45
AB	South Coast Air Basin	Annual	2012	358.66	410.89	489.10	616.67	73.27	83.98	99.67	125.65
AB	South Coast Air Basin	Annual	2013	358.86	411.36	488.94	617.04	73.33	83.99	99.79	125.87
AB	South Coast Air Basin	Annual	2014	359.00	411.69	488.76	617.38	73.38	84.02	99.90	126.09
AB	South Coast Air Basin	Annual	2015	359.50	412.41	489.04	618.24	73.44	84.07	100.01	126.32
AB	South Coast Air Basin	Annual	2016	359.61	412.71	488.91	618.65	73.51	84.14	100.12	126.56
AB	South Coast Air Basin	Annual	2017	359.68	413.00	488.78	619.05	73.56	84.22	100.22	126.80
AB	South Coast Air Basin	Annual	2018	359.73	413.24	488.67	619.35	73.60	84.30	100.30	127.02
AB	South Coast Air Basin	Annual	2019	359.08	412.70	487.70	618.60	73.64	84.46	100.39	127.22
AB	South Coast Air Basin	Annual	2020	359.10	412.90	487.57	618.80	73.73	84.62	100.49	127.42
AB	South Coast Air Basin	Annual	2021	359.91	414.09	488.60	620.48	73.80	84.79	100.58	127.58
AB	South Coast Air Basin	Annual	2022	359.87	414.26	488.52	620.66	73.85	84.93	100.66	127.72
AB	South Coast Air Basin	Annual	2023	359.81	414.38	488.43	620.76	73.88	85.06	100.72	127.88
AB	South Coast Air Basin	Annual	2024	361.76	416.80	491.03	624.19	73.90	85.17	100.77	128.02
AB	South Coast Air Basin	Annual	2025	361.68	416.85	490.94	624.25	73.92	85.28	100.82	128.15
AB	South Coast Air Basin	Annual	2026	361.64	416.95	490.83	624.31	73.94	85.38	100.85	128.29
AB	South Coast Air Basin	Annual	2027	361.59	417.03	490.72	624.36	73.95	85.47	100.88	128.40
AB	South Coast Air Basin	Annual	2028	361.53	417.11	490.61	624.40	73.96	85.56	100.90	128.50
AB	South Coast Air Basin	Annual	2029	361.47	417.20	490.50	624.44	73.97	85.64	100.92	128.60
AB	South Coast Air Basin	Annual	2030	361.40	417.29	490.39	624.48	73.97	85.72	100.93	128.70
AB	South Coast Air Basin	Annual	2031	361.77	417.91	490.85	625.21	73.98	85.79	100.94	128.79
AB	South Coast Air Basin	Annual	2032	361.71	418.00	490.76	625.26	73.98	85.87	100.95	128.87
AB	South Coast Air Basin	Annual	2033	361.64	418.06	490.66	625.29	73.99	85.93	100.96	128.95
AB	South Coast Air Basin	Annual	2034	361.58	418.11	490.56	625.31	73.99	85.99	100.96	129.02
AB	South Coast Air Basin	Annual	2035	361.51	418.13	490.47	625.31	73.99	86.05	100.97	129.09
AB	South Coast Air Basin	Summer	2010	376.35	428.81	513.13	646.60	73.21	84.03	99.45	125.25
AB	South Coast Air Basin	Summer	2011	376.98	430.14	513.64	647.75	73.23	83.98	99.55	125.45
AB	South Coast Air Basin	Summer	2012	377.17	430.80	513.51	648.09	73.27	83.98	99.67	125.65
AB	South Coast Air Basin	Summer	2013	377.43	431.52	513.45	648.57	73.33	83.99	99.79	125.87
AB	South Coast Air Basin	Summer	2014	377.60	432.03	513.36	649.01	73.38	84.02	99.90	126.09
AB	South Coast Air Basin	Summer	2015	378.16	432.94	513.77	650.06	73.44	84.07	100.01	126.32
AB	South Coast Air Basin	Summer	2016	378.32	433.38	513.73	650.64	73.51	84.14	100.12	126.56
AB	South Coast Air Basin	Summer	2017	378.43	433.80	513.68	651.19	73.56	84.22	100.22	126.80
AB	South Coast Air Basin	Summer	2018	378.50	434.15	513.63	651.64	73.60	84.30	100.30	127.02
AB	South Coast Air Basin	Summer	2019	377.87	433.68	512.68	651.00	73.64	84.46	100.39	127.22
AB	South Coast Air Basin	Summer	2020	377.93	434.00	512.61	651.36	73.73	84.62	100.49	127.42
AB	South Coast Air Basin	Summer	2021	378.82	435.34	513.74	653.23	73.80	84.79	100.58	127.58
AB	South Coast Air Basin	Summer	2022	378.81	435.60	513.67	653.48	73.85	84.93	100.66	127.72
AB	South Coast Air Basin	Summer	2023	378.77	435.80	513.60	653.65	73.88	85.06	100.72	127.88
AB	South Coast Air Basin	Summer	2024	380.89	438.46	516.40	657.36	73.90	85.17	100.77	128.02
AB	South Coast Air Basin	Summer	2025	380.84	438.60	516.33	657.46	73.92	85.28	100.82	128.15

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AB	South Coast Air Basin	Summer	2026	380.82	438.77	516.25	657.54	73.94	85.38	100.85	128.29
AB	South Coast Air Basin	Summer	2027	380.79	438.92	516.17	657.62	73.95	85.47	100.88	128.40
AB	South Coast Air Basin	Summer	2028	380.76	439.07	516.09	657.69	73.96	85.56	100.90	128.50
AB	South Coast Air Basin	Summer	2029	380.72	439.23	516.01	657.76	73.97	85.64	100.92	128.60
AB	South Coast Air Basin	Summer	2030	380.68	439.39	515.93	657.84	73.97	85.72	100.93	128.70
AB	South Coast Air Basin	Summer	2031	381.11	440.14	516.48	658.70	73.98	85.79	100.94	128.79
AB	South Coast Air Basin	Summer	2032	381.07	440.30	516.43	658.81	73.98	85.87	100.95	128.87
AB	South Coast Air Basin	Summer	2033	381.03	440.42	516.37	658.90	73.99	85.93	100.96	128.95
AB	South Coast Air Basin	Summer	2034	380.99	440.52	516.30	658.98	73.99	85.99	100.96	129.02
AB	South Coast Air Basin	Summer	2035	380.95	440.59	516.24	659.05	73.99	86.05	100.97	129.09
AB	South Coast Air Basin	Winter	2010	352.27	403.73	481.40	605.84	73.21	84.03	99.45	125.25
AB	South Coast Air Basin	Winter	2011	352.77	404.58	481.76	606.95	73.23	83.98	99.55	125.45
AB	South Coast Air Basin	Winter	2012	352.88	404.90	481.53	607.26	73.27	83.98	99.67	125.65
AB	South Coast Air Basin	Winter	2013	353.07	405.31	481.36	607.63	73.33	83.99	99.79	125.87
AB	South Coast Air Basin	Winter	2014	353.20	405.60	481.16	607.96	73.38	84.02	99.90	126.09
AB	South Coast Air Basin	Winter	2015	353.69	406.27	481.43	608.80	73.44	84.07	100.01	126.32
AB	South Coast Air Basin	Winter	2016	353.79	406.55	481.28	609.19	73.51	84.14	100.12	126.56
AB	South Coast Air Basin	Winter	2017	353.86	406.81	481.14	609.56	73.56	84.22	100.22	126.80
AB	South Coast Air Basin	Winter	2018	353.91	407.02	481.03	609.84	73.60	84.30	100.30	127.02
AB	South Coast Air Basin	Winter	2019	353.27	406.48	480.07	609.09	73.64	84.46	100.39	127.22
AB	South Coast Air Basin	Winter	2020	353.29	406.67	479.94	609.28	73.73	84.62	100.49	127.42
AB	South Coast Air Basin	Winter	2021	354.09	407.82	480.96	610.92	73.80	84.79	100.58	127.58
AB	South Coast Air Basin	Winter	2022	354.06	407.97	480.88	611.08	73.85	84.93	100.66	127.72
AB	South Coast Air Basin	Winter	2023	354.00	408.08	480.79	611.18	73.88	85.06	100.72	127.88
AB	South Coast Air Basin	Winter	2024	355.90	410.43	483.35	614.53	73.90	85.17	100.77	128.02
AB	South Coast Air Basin	Winter	2025	355.83	410.47	483.26	614.59	73.92	85.28	100.82	128.15
AB	South Coast Air Basin	Winter	2026	355.79	410.55	483.16	614.66	73.94	85.38	100.85	128.29
AB	South Coast Air Basin	Winter	2027	355.74	410.63	483.05	614.71	73.95	85.47	100.88	128.40
AB	South Coast Air Basin	Winter	2028	355.68	410.70	482.94	614.76	73.96	85.56	100.90	128.50
AB	South Coast Air Basin	Winter	2029	355.62	410.78	482.83	614.80	73.97	85.64	100.92	128.60
AB	South Coast Air Basin	Winter	2030	355.55	410.85	482.72	614.84	73.97	85.72	100.93	128.70
AB	South Coast Air Basin	Winter	2031	355.91	411.44	483.17	615.55	73.98	85.79	100.94	128.79
AB	South Coast Air Basin	Winter	2032	355.85	411.52	483.08	615.60	73.98	85.87	100.95	128.87
AB	South Coast Air Basin	Winter	2033	355.79	411.58	482.99	615.63	73.99	85.93	100.96	128.95
AB	South Coast Air Basin	Winter	2034	355.73	411.62	482.89	615.65	73.99	85.99	100.96	129.02
AB	South Coast Air Basin	Winter	2035	355.66	411.64	482.80	615.65	73.99	86.05	100.97	129.09
AD	Amador County APCD	Annual	2010	304.65	351.36	416.56	520.77	74.42	88.71	101.28	124.30
AD	Amador County APCD	Annual	2011	304.66	351.60	416.18	521.37	74.22	87.90	101.12	124.48
AD	Amador County APCD	Annual	2012	304.71	351.83	415.89	522.08	74.04	87.30	101.03	124.70
AD	Amador County APCD	Annual	2013	304.79	351.99	415.66	522.86	73.92	86.76	100.95	124.94
AD	Amador County APCD	Annual	2014	304.86	352.15	415.48	523.60	73.78	86.37	100.90	125.21
AD	Amador County APCD	Annual	2015	304.98	352.29	415.35	524.39	73.76	85.97	100.78	125.49
AD	Amador County APCD	Annual	2016	305.08	352.44	415.24	525.15	73.74	85.71	100.76	125.78
AD	Amador County APCD	Annual	2017	305.13	352.54	415.14	525.85	73.67	85.39	100.65	126.08
AD	Amador County APCD	Annual	2018	305.17	352.64	415.05	526.46	73.63	85.21	100.62	126.36
AD	Amador County APCD	Annual	2019	305.20	352.73	414.99	526.98	73.61	85.07	100.64	126.62
AD	Amador County APCD	Annual	2020	305.25	352.84	414.93	527.43	73.70	85.10	100.70	126.87
AD	Amador County APCD	Annual	2021	305.27	352.92	414.87	527.78	73.76	85.17	100.76	127.07
AD	Amador County APCD	Annual	2022	305.25	352.98	414.81	528.07	73.79	85.24	100.80	127.21
AD	Amador County APCD	Annual	2023	305.17	353.01	414.75	528.29	73.79	85.29	100.83	127.40
AD	Amador County APCD	Annual	2024	305.08	353.05	414.70	528.47	73.77	85.35	100.86	127.58
AD	Amador County APCD	Annual	2025	305.03	353.13	414.66	528.63	73.78	85.43	100.90	127.75
AD	Amador County APCD	Annual	2026	305.04	353.24	414.62	528.79	73.80	85.53	100.92	127.91
AD	Amador County APCD	Annual	2027	305.05	353.36	414.57	528.95	73.81	85.62	100.94	128.05

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Amador County APCD	Annual	2028	305.05	353.48	414.54	529.12	73.82	85.70	100.96	128.19
AD	Amador County APCD	Annual	2029	305.04	353.60	414.51	529.29	73.83	85.78	100.96	128.32
AD	Amador County APCD	Annual	2030	305.03	353.72	414.47	529.46	73.83	85.85	100.96	128.44
AD	Amador County APCD	Annual	2031	305.02	353.84	414.44	529.67	73.83	85.93	100.97	128.56
AD	Amador County APCD	Annual	2032	305.02	353.95	414.42	529.88	73.84	85.99	100.97	128.68
AD	Amador County APCD	Annual	2033	305.01	354.05	414.40	530.07	73.84	86.06	100.98	128.78
AD	Amador County APCD	Annual	2034	305.01	354.14	414.39	530.24	73.85	86.11	100.98	128.88
AD	Amador County APCD	Annual	2035	305.01	354.21	414.37	530.39	73.85	86.16	100.98	128.97
AD	Amador County APCD	Summer	2010	335.39	381.81	456.97	570.78	74.42	88.71	101.28	124.30
AD	Amador County APCD	Summer	2011	335.69	383.05	456.90	571.49	74.22	87.90	101.12	124.48
AD	Amador County APCD	Summer	2012	335.97	384.03	456.85	572.39	74.04	87.30	101.03	124.70
AD	Amador County APCD	Summer	2013	336.23	384.81	456.85	573.45	73.92	86.76	100.95	124.94
AD	Amador County APCD	Summer	2014	336.43	385.43	456.87	574.47	73.78	86.37	100.90	125.21
AD	Amador County APCD	Summer	2015	336.65	385.97	456.94	575.58	73.76	85.97	100.78	125.49
AD	Amador County APCD	Summer	2016	336.82	386.42	456.98	576.67	73.74	85.71	100.76	125.78
AD	Amador County APCD	Summer	2017	336.90	386.79	457.00	577.65	73.67	85.39	100.65	126.08
AD	Amador County APCD	Summer	2018	336.95	387.08	456.98	578.50	73.63	85.21	100.62	126.36
AD	Amador County APCD	Summer	2019	336.99	387.35	456.95	579.23	73.61	85.07	100.64	126.62
AD	Amador County APCD	Summer	2020	337.02	387.58	456.90	579.85	73.70	85.10	100.70	126.87
AD	Amador County APCD	Summer	2021	337.03	387.78	456.85	580.34	73.76	85.17	100.76	127.07
AD	Amador County APCD	Summer	2022	337.01	387.96	456.79	580.75	73.79	85.24	100.80	127.21
AD	Amador County APCD	Summer	2023	336.93	388.10	456.74	581.05	73.79	85.29	100.83	127.40
AD	Amador County APCD	Summer	2024	336.85	388.24	456.69	581.30	73.77	85.35	100.86	127.58
AD	Amador County APCD	Summer	2025	336.80	388.38	456.65	581.51	73.78	85.43	100.90	127.75
AD	Amador County APCD	Summer	2026	336.83	388.54	456.62	581.67	73.80	85.53	100.92	127.91
AD	Amador County APCD	Summer	2027	336.85	388.70	456.59	581.84	73.81	85.62	100.94	128.05
AD	Amador County APCD	Summer	2028	336.86	388.88	456.57	582.04	73.82	85.70	100.96	128.19
AD	Amador County APCD	Summer	2029	336.87	389.06	456.55	582.24	73.83	85.78	100.96	128.32
AD	Amador County APCD	Summer	2030	336.87	389.25	456.52	582.44	73.83	85.85	100.96	128.44
AD	Amador County APCD	Summer	2031	336.87	389.46	456.50	582.71	73.83	85.93	100.97	128.56
AD	Amador County APCD	Summer	2032	336.87	389.62	456.48	582.98	73.84	85.99	100.97	128.68
AD	Amador County APCD	Summer	2033	336.86	389.77	456.47	583.23	73.84	86.06	100.98	128.78
AD	Amador County APCD	Summer	2034	336.85	389.90	456.45	583.45	73.85	86.11	100.98	128.88
AD	Amador County APCD	Summer	2035	336.85	389.98	456.44	583.66	73.85	86.16	100.98	128.97
AD	Amador County APCD	Winter	2010	295.29	342.08	404.24	505.53	74.42	88.71	101.28	124.30
AD	Amador County APCD	Winter	2011	295.21	342.02	403.78	506.10	74.22	87.90	101.12	124.48
AD	Amador County APCD	Winter	2012	295.18	342.01	403.41	506.75	74.04	87.30	101.03	124.70
AD	Amador County APCD	Winter	2013	295.22	341.99	403.11	507.45	73.92	86.76	100.95	124.94
AD	Amador County APCD	Winter	2014	295.24	342.01	402.87	508.11	73.78	86.37	100.90	125.21
AD	Amador County APCD	Winter	2015	295.33	342.02	402.67	508.79	73.76	85.97	100.78	125.49
AD	Amador County APCD	Winter	2016	295.41	342.08	402.52	509.45	73.74	85.71	100.76	125.78
AD	Amador County APCD	Winter	2017	295.45	342.10	402.38	510.06	73.67	85.39	100.65	126.08
AD	Amador County APCD	Winter	2018	295.49	342.14	402.28	510.60	73.63	85.21	100.62	126.36
AD	Amador County APCD	Winter	2019	295.52	342.18	402.21	511.06	73.61	85.07	100.64	126.62
AD	Amador County APCD	Winter	2020	295.57	342.25	402.15	511.46	73.70	85.10	100.70	126.87
AD	Amador County APCD	Winter	2021	295.59	342.29	402.08	511.77	73.76	85.17	100.76	127.07
AD	Amador County APCD	Winter	2022	295.58	342.32	402.02	512.02	73.79	85.24	100.80	127.21
AD	Amador County APCD	Winter	2023	295.49	342.32	401.95	512.21	73.79	85.29	100.83	127.40
AD	Amador County APCD	Winter	2024	295.40	342.33	401.90	512.37	73.77	85.35	100.86	127.58
AD	Amador County APCD	Winter	2025	295.35	342.39	401.87	512.52	73.78	85.43	100.90	127.75
AD	Amador County APCD	Winter	2026	295.36	342.49	401.82	512.68	73.80	85.53	100.92	127.91
AD	Amador County APCD	Winter	2027	295.36	342.59	401.77	512.84	73.81	85.62	100.94	128.05
AD	Amador County APCD	Winter	2028	295.35	342.69	401.74	513.00	73.82	85.70	100.96	128.19
AD	Amador County APCD	Winter	2029	295.34	342.79	401.70	513.16	73.83	85.78	100.96	128.32

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Amador County APCD	Winter	2030	295.32	342.89	401.65	513.32	73.83	85.85	100.96	128.44
AD	Amador County APCD	Winter	2031	295.32	342.99	401.63	513.51	73.83	85.93	100.97	128.56
AD	Amador County APCD	Winter	2032	295.32	343.09	401.61	513.70	73.84	85.99	100.97	128.68
AD	Amador County APCD	Winter	2033	295.31	343.17	401.59	513.88	73.84	86.06	100.98	128.78
AD	Amador County APCD	Winter	2034	295.31	343.24	401.57	514.03	73.85	86.11	100.98	128.88
AD	Amador County APCD	Winter	2035	295.30	343.31	401.56	514.17	73.85	86.16	100.98	128.97
AD	Antelope Valley APCD	Annual	2010	345.89	395.46	472.51	595.78	73.36	84.38	99.72	125.11
AD	Antelope Valley APCD	Annual	2011	348.87	399.45	476.26	601.40	73.38	84.28	99.78	125.35
AD	Antelope Valley APCD	Annual	2012	349.04	400.17	476.18	602.17	73.40	84.27	99.87	125.60
AD	Antelope Valley APCD	Annual	2013	350.49	402.29	477.89	605.21	73.42	84.25	99.97	125.87
AD	Antelope Valley APCD	Annual	2014	350.66	402.85	477.86	605.99	73.46	84.24	100.05	126.14
AD	Antelope Valley APCD	Annual	2015	355.63	408.92	484.44	615.13	73.50	84.26	100.16	126.42
AD	Antelope Valley APCD	Annual	2016	355.79	409.41	484.43	615.82	73.56	84.33	100.25	126.69
AD	Antelope Valley APCD	Annual	2017	355.91	409.84	484.42	616.46	73.60	84.36	100.32	126.95
AD	Antelope Valley APCD	Annual	2018	356.00	410.20	484.40	617.00	73.63	84.42	100.38	127.20
AD	Antelope Valley APCD	Annual	2019	357.84	412.61	486.79	620.54	73.67	84.58	100.46	127.42
AD	Antelope Valley APCD	Annual	2020	357.92	412.97	486.78	620.97	73.75	84.76	100.55	127.62
AD	Antelope Valley APCD	Annual	2021	360.97	416.79	490.85	626.51	73.82	84.94	100.64	127.79
AD	Antelope Valley APCD	Annual	2022	361.00	417.09	490.84	626.80	73.87	85.10	100.71	127.92
AD	Antelope Valley APCD	Annual	2023	361.00	417.34	490.82	627.02	73.90	85.24	100.77	128.08
AD	Antelope Valley APCD	Annual	2024	361.28	417.87	491.15	627.65	73.91	85.37	100.81	128.23
AD	Antelope Valley APCD	Annual	2025	361.29	418.06	491.14	627.84	73.93	85.48	100.86	128.37
AD	Antelope Valley APCD	Annual	2026	361.30	418.26	491.12	628.01	73.95	85.58	100.89	128.50
AD	Antelope Valley APCD	Annual	2027	361.31	418.44	491.10	628.17	73.97	85.67	100.91	128.62
AD	Antelope Valley APCD	Annual	2028	361.32	418.63	491.09	628.32	73.97	85.76	100.93	128.72
AD	Antelope Valley APCD	Annual	2029	361.32	418.81	491.07	628.47	73.98	85.84	100.94	128.81
AD	Antelope Valley APCD	Annual	2030	361.31	418.99	491.06	628.62	73.98	85.91	100.95	128.90
AD	Antelope Valley APCD	Annual	2031	366.94	425.72	498.73	638.58	73.99	85.98	100.96	128.98
AD	Antelope Valley APCD	Annual	2032	366.93	425.88	498.72	638.71	73.99	86.05	100.97	129.05
AD	Antelope Valley APCD	Annual	2033	366.93	426.03	498.71	638.83	74.00	86.10	100.98	129.12
AD	Antelope Valley APCD	Annual	2034	366.92	426.15	498.70	638.94	74.00	86.15	100.98	129.18
AD	Antelope Valley APCD	Annual	2035	366.92	426.26	498.69	639.04	74.00	86.20	100.99	129.24
AD	Antelope Valley APCD	Summer	2010	381.87	431.89	519.76	655.58	73.36	84.38	99.72	125.11
AD	Antelope Valley APCD	Summer	2011	385.34	436.89	524.09	661.69	73.38	84.28	99.78	125.35
AD	Antelope Valley APCD	Summer	2012	385.66	438.19	524.18	662.56	73.40	84.27	99.87	125.60
AD	Antelope Valley APCD	Summer	2013	387.37	440.97	526.26	666.03	73.42	84.25	99.97	125.87
AD	Antelope Valley APCD	Summer	2014	387.63	441.94	526.42	667.04	73.46	84.24	100.05	126.14
AD	Antelope Valley APCD	Summer	2015	393.20	448.92	533.87	677.32	73.50	84.26	100.16	126.42
AD	Antelope Valley APCD	Summer	2016	393.41	449.67	534.00	678.24	73.56	84.33	100.25	126.69
AD	Antelope Valley APCD	Summer	2017	393.56	450.33	534.08	679.07	73.60	84.36	100.32	126.95
AD	Antelope Valley APCD	Summer	2018	393.65	450.86	534.11	679.75	73.63	84.42	100.38	127.20
AD	Antelope Valley APCD	Summer	2019	395.68	453.61	536.75	683.71	73.67	84.58	100.46	127.42
AD	Antelope Valley APCD	Summer	2020	395.75	454.07	536.73	684.25	73.75	84.76	100.55	127.62
AD	Antelope Valley APCD	Summer	2021	399.16	458.42	541.24	690.46	73.82	84.94	100.64	127.79
AD	Antelope Valley APCD	Summer	2022	399.20	458.86	541.22	690.83	73.87	85.10	100.71	127.92
AD	Antelope Valley APCD	Summer	2023	399.21	459.24	541.20	691.10	73.90	85.24	100.77	128.08
AD	Antelope Valley APCD	Summer	2024	399.46	459.85	541.48	691.72	73.91	85.37	100.81	128.23
AD	Antelope Valley APCD	Summer	2025	399.48	460.16	541.47	691.93	73.93	85.48	100.86	128.37
AD	Antelope Valley APCD	Summer	2026	399.50	460.45	541.44	692.11	73.95	85.58	100.89	128.50
AD	Antelope Valley APCD	Summer	2027	399.52	460.73	541.42	692.27	73.97	85.67	100.91	128.62
AD	Antelope Valley APCD	Summer	2028	399.53	461.00	541.41	692.44	73.97	85.76	100.93	128.72
AD	Antelope Valley APCD	Summer	2029	399.53	461.26	541.39	692.59	73.98	85.84	100.94	128.81
AD	Antelope Valley APCD	Summer	2030	399.53	461.50	541.38	692.75	73.98	85.91	100.95	128.90
AD	Antelope Valley APCD	Summer	2031	405.74	468.99	549.84	703.69	73.99	85.98	100.96	128.98

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Antelope Valley APCD	Summer	2032	405.72	469.23	549.82	703.80	73.99	86.05	100.97	129.05
AD	Antelope Valley APCD	Summer	2033	405.71	469.41	549.81	703.92	74.00	86.10	100.98	129.12
AD	Antelope Valley APCD	Summer	2034	405.70	469.58	549.80	704.05	74.00	86.15	100.98	129.18
AD	Antelope Valley APCD	Summer	2035	405.69	469.70	549.79	704.16	74.00	86.20	100.99	129.24
AD	Antelope Valley APCD	Winter	2010	335.14	384.58	458.40	577.92	73.36	84.38	99.72	125.11
AD	Antelope Valley APCD	Winter	2011	337.98	388.27	461.98	583.39	73.38	84.28	99.78	125.35
AD	Antelope Valley APCD	Winter	2012	338.10	388.82	461.84	584.13	73.40	84.27	99.87	125.60
AD	Antelope Valley APCD	Winter	2013	339.47	390.73	463.43	587.03	73.42	84.25	99.97	125.87
AD	Antelope Valley APCD	Winter	2014	339.61	391.17	463.35	587.75	73.46	84.24	100.05	126.14
AD	Antelope Valley APCD	Winter	2015	344.39	396.95	469.65	596.52	73.50	84.26	100.16	126.42
AD	Antelope Valley APCD	Winter	2016	344.53	397.37	469.60	597.15	73.56	84.33	100.25	126.69
AD	Antelope Valley APCD	Winter	2017	344.65	397.72	469.56	597.73	73.60	84.36	100.32	126.95
AD	Antelope Valley APCD	Winter	2018	344.74	398.03	469.53	598.23	73.63	84.42	100.38	127.20
AD	Antelope Valley APCD	Winter	2019	346.52	400.35	471.84	601.64	73.67	84.58	100.46	127.42
AD	Antelope Valley APCD	Winter	2020	346.60	400.67	471.84	602.04	73.75	84.76	100.55	127.62
AD	Antelope Valley APCD	Winter	2021	349.54	404.32	475.76	607.37	73.82	84.94	100.64	127.79
AD	Antelope Valley APCD	Winter	2022	349.57	404.59	475.75	607.63	73.87	85.10	100.71	127.92
AD	Antelope Valley APCD	Winter	2023	349.56	404.80	475.74	607.83	73.90	85.24	100.77	128.08
AD	Antelope Valley APCD	Winter	2024	349.86	405.31	476.10	608.49	73.91	85.37	100.81	128.23
AD	Antelope Valley APCD	Winter	2025	349.87	405.47	476.09	608.67	73.93	85.48	100.86	128.37
AD	Antelope Valley APCD	Winter	2026	349.88	405.64	476.07	608.84	73.95	85.58	100.89	128.50
AD	Antelope Valley APCD	Winter	2027	349.89	405.80	476.06	609.00	73.97	85.67	100.91	128.62
AD	Antelope Valley APCD	Winter	2028	349.89	405.96	476.04	609.15	73.97	85.76	100.93	128.72
AD	Antelope Valley APCD	Winter	2029	349.89	406.12	476.02	609.30	73.98	85.84	100.94	128.81
AD	Antelope Valley APCD	Winter	2030	349.88	406.27	476.01	609.44	73.98	85.91	100.95	128.90
AD	Antelope Valley APCD	Winter	2031	355.33	412.77	483.44	619.10	73.99	85.98	100.96	128.98
AD	Antelope Valley APCD	Winter	2032	355.33	412.92	483.43	619.24	73.99	86.05	100.97	129.05
AD	Antelope Valley APCD	Winter	2033	355.33	413.05	483.42	619.36	74.00	86.10	100.98	129.12
AD	Antelope Valley APCD	Winter	2034	355.32	413.16	483.41	619.46	74.00	86.15	100.98	129.18
AD	Antelope Valley APCD	Winter	2035	355.32	413.26	483.40	619.56	74.00	86.20	100.99	129.24
AD	Bay Area AQMD	Annual	2010	338.39	388.50	461.86	581.62	72.94	84.37	99.40	124.69
AD	Bay Area AQMD	Annual	2011	338.52	388.90	461.72	582.11	72.98	84.25	99.50	124.89
AD	Bay Area AQMD	Annual	2012	338.67	389.32	461.62	582.66	73.02	84.19	99.62	125.11
AD	Bay Area AQMD	Annual	2013	338.86	389.72	461.54	583.26	73.09	84.17	99.74	125.34
AD	Bay Area AQMD	Annual	2014	339.03	390.09	461.49	583.86	73.15	84.17	99.85	125.59
AD	Bay Area AQMD	Annual	2015	339.22	390.46	461.45	584.47	73.23	84.19	99.96	125.85
AD	Bay Area AQMD	Annual	2016	339.41	390.83	461.42	585.05	73.32	84.24	100.07	126.10
AD	Bay Area AQMD	Annual	2017	339.54	391.17	461.39	585.61	73.38	84.29	100.17	126.36
AD	Bay Area AQMD	Annual	2018	339.67	391.45	461.36	586.09	73.44	84.35	100.26	126.61
AD	Bay Area AQMD	Annual	2019	339.78	391.75	461.34	586.50	73.50	84.48	100.35	126.84
AD	Bay Area AQMD	Annual	2020	339.88	392.02	461.33	586.89	73.60	84.63	100.45	127.06
AD	Bay Area AQMD	Annual	2021	339.96	392.27	461.33	587.20	73.68	84.79	100.54	127.24
AD	Bay Area AQMD	Annual	2022	339.99	392.48	461.33	587.46	73.74	84.93	100.62	127.39
AD	Bay Area AQMD	Annual	2023	339.99	392.64	461.32	587.66	73.78	85.06	100.69	127.56
AD	Bay Area AQMD	Annual	2024	339.97	392.77	461.30	587.83	73.80	85.17	100.75	127.71
AD	Bay Area AQMD	Annual	2025	339.96	392.89	461.29	588.00	73.82	85.27	100.80	127.87
AD	Bay Area AQMD	Annual	2026	339.97	393.04	461.27	588.18	73.85	85.38	100.84	128.01
AD	Bay Area AQMD	Annual	2027	339.98	393.18	461.25	588.35	73.86	85.47	100.87	128.15
AD	Bay Area AQMD	Annual	2028	339.97	393.32	461.22	588.52	73.87	85.55	100.89	128.26
AD	Bay Area AQMD	Annual	2029	339.96	393.47	461.20	588.68	73.88	85.63	100.91	128.38
AD	Bay Area AQMD	Annual	2030	339.95	393.63	461.17	588.85	73.89	85.71	100.92	128.49
AD	Bay Area AQMD	Annual	2031	339.94	393.79	461.16	589.02	73.89	85.79	100.93	128.59
AD	Bay Area AQMD	Annual	2032	339.94	393.94	461.14	589.20	73.90	85.86	100.94	128.69
AD	Bay Area AQMD	Annual	2033	339.93	394.08	461.13	589.36	73.90	85.92	100.95	128.79

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Bay Area AQMD	Annual	2034	339.92	394.20	461.11	589.50	73.90	85.98	100.95	128.87
AD	Bay Area AQMD	Annual	2035	339.91	394.31	461.10	589.63	73.91	86.04	100.96	128.96
AD	Bay Area AQMD	Summer	2010	364.35	415.41	496.51	625.57	72.94	84.37	99.40	124.69
AD	Bay Area AQMD	Summer	2011	364.64	416.20	496.43	625.96	72.98	84.25	99.50	124.89
AD	Bay Area AQMD	Summer	2012	364.93	416.94	496.39	626.48	73.02	84.19	99.62	125.11
AD	Bay Area AQMD	Summer	2013	365.22	417.62	496.38	627.12	73.09	84.17	99.74	125.34
AD	Bay Area AQMD	Summer	2014	365.47	418.22	496.42	627.81	73.15	84.17	99.85	125.59
AD	Bay Area AQMD	Summer	2015	365.72	418.79	496.47	628.57	73.23	84.19	99.96	125.85
AD	Bay Area AQMD	Summer	2016	365.95	419.33	496.52	629.31	73.32	84.24	100.07	126.10
AD	Bay Area AQMD	Summer	2017	366.11	419.82	496.57	630.02	73.38	84.29	100.17	126.36
AD	Bay Area AQMD	Summer	2018	366.24	420.25	496.57	630.62	73.44	84.35	100.26	126.61
AD	Bay Area AQMD	Summer	2019	366.36	420.66	496.58	631.14	73.50	84.48	100.35	126.84
AD	Bay Area AQMD	Summer	2020	366.46	421.03	496.57	631.62	73.60	84.63	100.45	127.06
AD	Bay Area AQMD	Summer	2021	366.53	421.37	496.57	632.00	73.68	84.79	100.54	127.24
AD	Bay Area AQMD	Summer	2022	366.57	421.66	496.56	632.33	73.74	84.93	100.62	127.39
AD	Bay Area AQMD	Summer	2023	366.57	421.90	496.54	632.57	73.78	85.06	100.69	127.56
AD	Bay Area AQMD	Summer	2024	366.55	422.10	496.51	632.76	73.80	85.17	100.75	127.71
AD	Bay Area AQMD	Summer	2025	366.54	422.28	496.49	632.95	73.82	85.27	100.80	127.87
AD	Bay Area AQMD	Summer	2026	366.55	422.48	496.46	633.14	73.85	85.38	100.84	128.01
AD	Bay Area AQMD	Summer	2027	366.56	422.68	496.44	633.31	73.86	85.47	100.87	128.15
AD	Bay Area AQMD	Summer	2028	366.57	422.88	496.41	633.48	73.87	85.55	100.89	128.26
AD	Bay Area AQMD	Summer	2029	366.56	423.10	496.39	633.66	73.88	85.63	100.91	128.38
AD	Bay Area AQMD	Summer	2030	366.56	423.32	496.37	633.84	73.89	85.71	100.92	128.49
AD	Bay Area AQMD	Summer	2031	366.56	423.55	496.35	634.03	73.89	85.79	100.93	128.59
AD	Bay Area AQMD	Summer	2032	366.55	423.75	496.34	634.22	73.90	85.86	100.94	128.69
AD	Bay Area AQMD	Summer	2033	366.55	423.93	496.32	634.41	73.90	85.92	100.95	128.79
AD	Bay Area AQMD	Summer	2034	366.54	424.09	496.31	634.58	73.90	85.98	100.95	128.87
AD	Bay Area AQMD	Summer	2035	366.54	424.21	496.30	634.74	73.91	86.04	100.96	128.96
AD	Bay Area AQMD	Winter	2010	335.32	385.28	457.66	576.18	72.94	84.37	99.40	124.69
AD	Bay Area AQMD	Winter	2011	335.43	385.63	457.52	576.68	72.98	84.25	99.50	124.89
AD	Bay Area AQMD	Winter	2012	335.56	386.01	457.41	577.23	73.02	84.19	99.62	125.11
AD	Bay Area AQMD	Winter	2013	335.74	386.37	457.32	577.82	73.09	84.17	99.74	125.34
AD	Bay Area AQMD	Winter	2014	335.90	386.72	457.25	578.40	73.15	84.17	99.85	125.59
AD	Bay Area AQMD	Winter	2015	336.08	387.07	457.20	579.00	73.23	84.19	99.96	125.85
AD	Bay Area AQMD	Winter	2016	336.26	387.41	457.16	579.56	73.32	84.24	100.07	126.10
AD	Bay Area AQMD	Winter	2017	336.39	387.73	457.12	580.10	73.38	84.29	100.17	126.36
AD	Bay Area AQMD	Winter	2018	336.52	388.00	457.08	580.55	73.44	84.35	100.26	126.61
AD	Bay Area AQMD	Winter	2019	336.63	388.27	457.06	580.95	73.50	84.48	100.35	126.84
AD	Bay Area AQMD	Winter	2020	336.73	388.53	457.05	581.32	73.60	84.63	100.45	127.06
AD	Bay Area AQMD	Winter	2021	336.80	388.77	457.05	581.62	73.68	84.79	100.54	127.24
AD	Bay Area AQMD	Winter	2022	336.84	388.97	457.05	581.88	73.74	84.93	100.62	127.39
AD	Bay Area AQMD	Winter	2023	336.84	389.12	457.04	582.08	73.78	85.06	100.69	127.56
AD	Bay Area AQMD	Winter	2024	336.82	389.24	457.02	582.24	73.80	85.17	100.75	127.71
AD	Bay Area AQMD	Winter	2025	336.81	389.35	457.00	582.41	73.82	85.27	100.80	127.87
AD	Bay Area AQMD	Winter	2026	336.82	389.49	456.98	582.60	73.85	85.38	100.84	128.01
AD	Bay Area AQMD	Winter	2027	336.82	389.62	456.96	582.77	73.86	85.47	100.87	128.15
AD	Bay Area AQMD	Winter	2028	336.82	389.76	456.94	582.93	73.87	85.55	100.89	128.26
AD	Bay Area AQMD	Winter	2029	336.80	389.90	456.91	583.10	73.88	85.63	100.91	128.38
AD	Bay Area AQMD	Winter	2030	336.79	390.05	456.89	583.27	73.89	85.71	100.92	128.49
AD	Bay Area AQMD	Winter	2031	336.78	390.20	456.87	583.44	73.89	85.79	100.93	128.59
AD	Bay Area AQMD	Winter	2032	336.77	390.35	456.86	583.61	73.90	85.86	100.94	128.69
AD	Bay Area AQMD	Winter	2033	336.76	390.48	456.84	583.76	73.90	85.92	100.95	128.79
AD	Bay Area AQMD	Winter	2034	336.76	390.60	456.82	583.90	73.90	85.98	100.95	128.87
AD	Bay Area AQMD	Winter	2035	336.74	390.70	456.80	584.02	73.91	86.04	100.96	128.96

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Butte County APCD	Annual	2010	339.87	396.33	466.79	582.59	73.74	93.40	101.05	125.37
AD	Butte County APCD	Annual	2011	340.16	396.11	466.41	583.82	73.64	91.64	100.92	125.50
AD	Butte County APCD	Annual	2012	340.27	395.85	465.90	584.74	73.58	90.38	100.87	125.67
AD	Butte County APCD	Annual	2013	340.39	395.57	465.50	585.71	73.53	89.20	100.81	125.88
AD	Butte County APCD	Annual	2014	340.47	395.32	465.20	586.62	73.46	88.16	100.77	126.08
AD	Butte County APCD	Annual	2015	340.60	395.14	464.96	587.52	73.45	87.30	100.75	126.32
AD	Butte County APCD	Annual	2016	342.35	396.92	466.99	591.13	73.49	86.64	100.74	126.57
AD	Butte County APCD	Annual	2017	342.42	396.78	466.81	591.87	73.48	85.98	100.71	126.82
AD	Butte County APCD	Annual	2018	342.44	396.68	466.66	592.50	73.44	85.49	100.70	127.05
AD	Butte County APCD	Annual	2019	342.48	396.71	466.54	593.04	73.45	85.31	100.70	127.27
AD	Butte County APCD	Annual	2020	342.53	396.78	466.44	593.51	73.54	85.30	100.76	127.47
AD	Butte County APCD	Annual	2021	343.10	397.55	467.11	594.81	73.60	85.41	100.82	127.57
AD	Butte County APCD	Annual	2022	343.10	397.67	467.03	595.07	73.64	85.50	100.87	127.65
AD	Butte County APCD	Annual	2023	343.08	397.75	466.95	595.27	73.67	85.58	100.90	127.82
AD	Butte County APCD	Annual	2024	343.02	397.84	466.88	595.42	73.68	85.66	100.93	127.97
AD	Butte County APCD	Annual	2025	343.01	397.92	466.82	595.60	73.70	85.73	100.96	128.12
AD	Butte County APCD	Annual	2026	343.02	398.03	466.75	595.77	73.72	85.80	100.97	128.26
AD	Butte County APCD	Annual	2027	343.02	398.12	466.69	595.94	73.73	85.86	100.98	128.39
AD	Butte County APCD	Annual	2028	343.02	398.22	466.63	596.11	73.74	85.92	100.99	128.51
AD	Butte County APCD	Annual	2029	343.02	398.31	466.55	596.28	73.74	85.97	100.99	128.62
AD	Butte County APCD	Annual	2030	343.01	398.40	466.48	596.45	73.75	86.02	100.98	128.72
AD	Butte County APCD	Annual	2031	343.01	398.49	466.45	596.62	73.75	86.07	100.98	128.82
AD	Butte County APCD	Annual	2032	343.01	398.57	466.42	596.79	73.76	86.12	100.99	128.91
AD	Butte County APCD	Annual	2033	343.00	398.64	466.40	596.95	73.76	86.15	100.99	128.99
AD	Butte County APCD	Annual	2034	343.00	398.69	466.38	597.09	73.76	86.19	100.99	129.06
AD	Butte County APCD	Annual	2035	342.99	398.74	466.36	597.22	73.77	86.22	100.99	129.13
AD	Butte County APCD	Summer	2010	378.25	435.25	516.75	645.70	73.74	93.40	101.05	125.37
AD	Butte County APCD	Summer	2011	379.01	436.21	517.19	647.27	73.64	91.64	100.92	125.50
AD	Butte County APCD	Summer	2012	379.48	436.79	517.26	648.57	73.58	90.38	100.87	125.67
AD	Butte County APCD	Summer	2013	379.86	437.26	517.34	649.98	73.53	89.20	100.81	125.88
AD	Butte County APCD	Summer	2014	380.14	437.60	517.39	651.33	73.46	88.16	100.77	126.08
AD	Butte County APCD	Summer	2015	380.40	437.90	517.40	652.65	73.45	87.30	100.75	126.32
AD	Butte County APCD	Summer	2016	382.44	440.27	519.84	656.95	73.49	86.64	100.74	126.57
AD	Butte County APCD	Summer	2017	382.54	440.50	519.76	658.01	73.48	85.98	100.71	126.82
AD	Butte County APCD	Summer	2018	382.56	440.67	519.63	658.88	73.44	85.49	100.70	127.05
AD	Butte County APCD	Summer	2019	382.59	440.87	519.51	659.62	73.45	85.31	100.70	127.27
AD	Butte County APCD	Summer	2020	382.63	441.06	519.39	660.26	73.54	85.30	100.76	127.47
AD	Butte County APCD	Summer	2021	383.24	442.01	520.14	661.82	73.60	85.41	100.82	127.57
AD	Butte County APCD	Summer	2022	383.23	442.21	520.05	662.21	73.64	85.50	100.87	127.65
AD	Butte County APCD	Summer	2023	383.21	442.39	519.98	662.50	73.67	85.58	100.90	127.82
AD	Butte County APCD	Summer	2024	383.15	442.57	519.92	662.70	73.68	85.66	100.93	127.97
AD	Butte County APCD	Summer	2025	383.13	442.73	519.88	662.89	73.70	85.73	100.96	128.12
AD	Butte County APCD	Summer	2026	383.15	442.89	519.81	663.05	73.72	85.80	100.97	128.26
AD	Butte County APCD	Summer	2027	383.17	443.04	519.76	663.21	73.73	85.86	100.98	128.39
AD	Butte County APCD	Summer	2028	383.19	443.19	519.72	663.40	73.74	85.92	100.99	128.51
AD	Butte County APCD	Summer	2029	383.21	443.35	519.67	663.59	73.74	85.97	100.99	128.62
AD	Butte County APCD	Summer	2030	383.22	443.50	519.63	663.79	73.75	86.02	100.98	128.72
AD	Butte County APCD	Summer	2031	383.22	443.64	519.62	663.97	73.75	86.07	100.98	128.82
AD	Butte County APCD	Summer	2032	383.22	443.74	519.61	664.16	73.76	86.12	100.99	128.91
AD	Butte County APCD	Summer	2033	383.22	443.83	519.60	664.35	73.76	86.15	100.99	128.99
AD	Butte County APCD	Summer	2034	383.22	443.91	519.59	664.54	73.76	86.19	100.99	129.06
AD	Butte County APCD	Summer	2035	383.21	443.96	519.58	664.71	73.77	86.22	100.99	129.13
AD	Butte County APCD	Winter	2010	328.68	384.98	452.21	564.18	73.74	93.40	101.05	125.37
AD	Butte County APCD	Winter	2011	328.82	384.41	451.61	565.32	73.64	91.64	100.92	125.50

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Butte County APCD	Winter	2012	328.84	383.90	450.92	566.13	73.58	90.38	100.87	125.67
AD	Butte County APCD	Winter	2013	328.87	383.41	450.39	566.96	73.53	89.20	100.81	125.88
AD	Butte County APCD	Winter	2014	328.90	382.99	449.98	567.75	73.46	88.16	100.77	126.08
AD	Butte County APCD	Winter	2015	328.99	382.67	449.66	568.52	73.45	87.30	100.75	126.32
AD	Butte County APCD	Winter	2016	330.67	384.27	451.57	571.94	73.49	86.64	100.74	126.57
AD	Butte County APCD	Winter	2017	330.72	384.03	451.37	572.58	73.48	85.98	100.71	126.82
AD	Butte County APCD	Winter	2018	330.74	383.86	451.21	573.14	73.44	85.49	100.70	127.05
AD	Butte County APCD	Winter	2019	330.78	383.84	451.09	573.62	73.45	85.31	100.70	127.27
AD	Butte County APCD	Winter	2020	330.84	383.86	450.99	574.04	73.54	85.30	100.76	127.47
AD	Butte County APCD	Winter	2021	331.40	384.59	451.65	575.26	73.60	85.41	100.82	127.57
AD	Butte County APCD	Winter	2022	331.39	384.68	451.56	575.49	73.64	85.50	100.87	127.65
AD	Butte County APCD	Winter	2023	331.38	384.73	451.48	575.67	73.67	85.58	100.90	127.82
AD	Butte County APCD	Winter	2024	331.32	384.80	451.41	575.80	73.68	85.66	100.93	127.97
AD	Butte County APCD	Winter	2025	331.30	384.86	451.35	575.97	73.70	85.73	100.96	128.12
AD	Butte County APCD	Winter	2026	331.31	384.94	451.28	576.14	73.72	85.80	100.97	128.26
AD	Butte County APCD	Winter	2027	331.31	385.02	451.21	576.32	73.73	85.86	100.98	128.39
AD	Butte County APCD	Winter	2028	331.31	385.10	451.14	576.48	73.74	85.92	100.99	128.51
AD	Butte County APCD	Winter	2029	331.30	385.18	451.06	576.65	73.74	85.97	100.99	128.62
AD	Butte County APCD	Winter	2030	331.28	385.25	450.98	576.81	73.75	86.02	100.98	128.72
AD	Butte County APCD	Winter	2031	331.28	385.33	450.94	576.98	73.75	86.07	100.98	128.82
AD	Butte County APCD	Winter	2032	331.28	385.40	450.91	577.14	73.76	86.12	100.99	128.91
AD	Butte County APCD	Winter	2033	331.27	385.45	450.88	577.29	73.76	86.15	100.99	128.99
AD	Butte County APCD	Winter	2034	331.27	385.51	450.86	577.42	73.76	86.19	100.99	129.06
AD	Butte County APCD	Winter	2035	331.26	385.55	450.84	577.54	73.77	86.22	100.99	129.13
AD	Calaveras County APCD	Annual	2010	339.15	393.21	464.59	580.79	74.52	89.63	101.49	124.52
AD	Calaveras County APCD	Annual	2011	339.17	393.31	464.13	581.44	74.31	88.76	101.30	124.68
AD	Calaveras County APCD	Annual	2012	339.22	393.39	463.78	582.21	74.10	88.01	101.21	124.87
AD	Calaveras County APCD	Annual	2013	339.30	393.43	463.49	583.06	73.93	87.36	101.13	125.10
AD	Calaveras County APCD	Annual	2014	339.36	393.46	463.27	583.88	73.74	86.82	101.00	125.34
AD	Calaveras County APCD	Annual	2015	339.48	393.52	463.10	584.75	73.70	86.38	100.93	125.59
AD	Calaveras County APCD	Annual	2016	339.59	393.59	462.96	585.57	73.69	86.07	100.88	125.88
AD	Calaveras County APCD	Annual	2017	339.64	393.63	462.83	586.35	73.61	85.70	100.81	126.15
AD	Calaveras County APCD	Annual	2018	339.66	393.65	462.73	587.01	73.51	85.38	100.75	126.42
AD	Calaveras County APCD	Annual	2019	339.69	393.73	462.65	587.57	73.48	85.28	100.71	126.69
AD	Calaveras County APCD	Annual	2020	339.72	393.81	462.58	588.07	73.55	85.28	100.76	126.92
AD	Calaveras County APCD	Annual	2021	339.70	393.86	462.51	588.43	73.59	85.33	100.81	127.08
AD	Calaveras County APCD	Annual	2022	339.67	393.90	462.43	588.75	73.61	85.38	100.85	127.26
AD	Calaveras County APCD	Annual	2023	339.61	393.93	462.36	588.97	73.61	85.43	100.87	127.44
AD	Calaveras County APCD	Annual	2024	339.52	393.92	462.29	589.14	73.58	85.45	100.89	127.61
AD	Calaveras County APCD	Annual	2025	339.50	393.98	462.24	589.30	73.59	85.52	100.92	127.77
AD	Calaveras County APCD	Annual	2026	339.51	394.11	462.19	589.48	73.61	85.62	100.94	127.93
AD	Calaveras County APCD	Annual	2027	339.51	394.23	462.13	589.67	73.62	85.70	100.96	128.08
AD	Calaveras County APCD	Annual	2028	339.51	394.36	462.10	589.86	73.63	85.78	100.97	128.21
AD	Calaveras County APCD	Annual	2029	339.50	394.48	462.05	590.05	73.64	85.86	100.97	128.34
AD	Calaveras County APCD	Annual	2030	339.49	394.60	462.00	590.25	73.64	85.93	100.97	128.46
AD	Calaveras County APCD	Annual	2031	339.49	394.71	461.98	590.48	73.65	86.00	100.98	128.58
AD	Calaveras County APCD	Annual	2032	339.49	394.82	461.96	590.71	73.65	86.06	100.98	128.70
AD	Calaveras County APCD	Annual	2033	339.49	394.90	461.94	590.91	73.65	86.12	100.98	128.81
AD	Calaveras County APCD	Annual	2034	339.48	394.98	461.92	591.10	73.66	86.17	100.99	128.90
AD	Calaveras County APCD	Annual	2035	339.48	395.05	461.91	591.26	73.66	86.21	100.99	128.99
AD	Calaveras County APCD	Summer	2010	371.79	425.53	507.37	633.67	74.52	89.63	101.49	124.52
AD	Calaveras County APCD	Summer	2011	372.10	426.67	507.24	634.43	74.31	88.76	101.30	124.68
AD	Calaveras County APCD	Summer	2012	372.38	427.56	507.15	635.42	74.10	88.01	101.21	124.87
AD	Calaveras County APCD	Summer	2013	372.63	428.25	507.10	636.56	73.93	87.36	101.13	125.10

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Calaveras County APCD	Summer	2014	372.82	428.79	507.12	637.70	73.74	86.82	101.00	125.34
AD	Calaveras County APCD	Summer	2015	373.03	429.26	507.15	638.94	73.70	86.38	100.93	125.59
AD	Calaveras County APCD	Summer	2016	373.20	429.64	507.18	640.12	73.69	86.07	100.88	125.88
AD	Calaveras County APCD	Summer	2017	373.29	429.96	507.18	641.21	73.61	85.70	100.81	126.15
AD	Calaveras County APCD	Summer	2018	373.31	430.20	507.15	642.13	73.51	85.38	100.75	126.42
AD	Calaveras County APCD	Summer	2019	373.34	430.44	507.12	642.91	73.48	85.28	100.71	126.69
AD	Calaveras County APCD	Summer	2020	373.36	430.67	507.07	643.60	73.55	85.28	100.76	126.92
AD	Calaveras County APCD	Summer	2021	373.33	430.84	507.00	644.13	73.59	85.33	100.81	127.08
AD	Calaveras County APCD	Summer	2022	373.30	431.01	506.94	644.57	73.61	85.38	100.85	127.26
AD	Calaveras County APCD	Summer	2023	373.24	431.15	506.88	644.89	73.61	85.43	100.87	127.44
AD	Calaveras County APCD	Summer	2024	373.18	431.27	506.81	645.12	73.58	85.45	100.89	127.61
AD	Calaveras County APCD	Summer	2025	373.16	431.40	506.76	645.32	73.59	85.52	100.92	127.77
AD	Calaveras County APCD	Summer	2026	373.18	431.61	506.71	645.52	73.61	85.62	100.94	127.93
AD	Calaveras County APCD	Summer	2027	373.19	431.81	506.66	645.72	73.62	85.70	100.96	128.08
AD	Calaveras County APCD	Summer	2028	373.20	432.01	506.63	645.94	73.63	85.78	100.97	128.21
AD	Calaveras County APCD	Summer	2029	373.21	432.20	506.60	646.17	73.64	85.86	100.97	128.34
AD	Calaveras County APCD	Summer	2030	373.22	432.39	506.57	646.41	73.64	85.93	100.97	128.46
AD	Calaveras County APCD	Summer	2031	373.22	432.56	506.56	646.71	73.65	86.00	100.98	128.58
AD	Calaveras County APCD	Summer	2032	373.21	432.71	506.56	646.99	73.65	86.06	100.98	128.70
AD	Calaveras County APCD	Summer	2033	373.21	432.83	506.55	647.26	73.65	86.12	100.98	128.81
AD	Calaveras County APCD	Summer	2034	373.20	432.93	506.54	647.51	73.66	86.17	100.99	128.90
AD	Calaveras County APCD	Summer	2035	373.19	433.00	506.53	647.73	73.66	86.21	100.99	128.99
AD	Calaveras County APCD	Winter	2010	329.78	383.93	452.30	565.59	74.52	89.63	101.49	124.52
AD	Calaveras County APCD	Winter	2011	329.72	383.73	451.75	566.21	74.31	88.76	101.30	124.68
AD	Calaveras County APCD	Winter	2012	329.69	383.57	451.31	566.92	74.10	88.01	101.21	124.87
AD	Calaveras County APCD	Winter	2013	329.72	383.42	450.96	567.68	73.93	87.36	101.13	125.10
AD	Calaveras County APCD	Winter	2014	329.75	383.31	450.67	568.42	73.74	86.82	101.00	125.34
AD	Calaveras County APCD	Winter	2015	329.84	383.25	450.44	569.19	73.70	86.38	100.93	125.59
AD	Calaveras County APCD	Winter	2016	329.93	383.24	450.25	569.90	73.69	86.07	100.88	125.88
AD	Calaveras County APCD	Winter	2017	329.98	383.20	450.09	570.59	73.61	85.70	100.81	126.15
AD	Calaveras County APCD	Winter	2018	329.99	383.15	449.97	571.17	73.51	85.38	100.75	126.42
AD	Calaveras County APCD	Winter	2019	330.02	383.18	449.87	571.67	73.48	85.28	100.71	126.69
AD	Calaveras County APCD	Winter	2020	330.05	383.22	449.80	572.12	73.55	85.28	100.76	126.92
AD	Calaveras County APCD	Winter	2021	330.04	383.24	449.72	572.43	73.59	85.33	100.81	127.08
AD	Calaveras County APCD	Winter	2022	330.01	383.24	449.64	572.72	73.61	85.38	100.85	127.26
AD	Calaveras County APCD	Winter	2023	329.94	383.24	449.56	572.90	73.61	85.43	100.87	127.44
AD	Calaveras County APCD	Winter	2024	329.85	383.19	449.49	573.05	73.58	85.45	100.89	127.61
AD	Calaveras County APCD	Winter	2025	329.83	383.23	449.45	573.20	73.59	85.52	100.92	127.77
AD	Calaveras County APCD	Winter	2026	329.84	383.34	449.40	573.38	73.61	85.62	100.94	127.93
AD	Calaveras County APCD	Winter	2027	329.84	383.44	449.34	573.56	73.62	85.70	100.96	128.08
AD	Calaveras County APCD	Winter	2028	329.83	383.54	449.30	573.75	73.63	85.78	100.97	128.21
AD	Calaveras County APCD	Winter	2029	329.82	383.64	449.25	573.93	73.64	85.86	100.97	128.34
AD	Calaveras County APCD	Winter	2030	329.81	383.74	449.19	574.11	73.64	85.93	100.97	128.46
AD	Calaveras County APCD	Winter	2031	329.80	383.84	449.17	574.32	73.65	86.00	100.98	128.58
AD	Calaveras County APCD	Winter	2032	329.80	383.93	449.14	574.54	73.65	86.06	100.98	128.70
AD	Calaveras County APCD	Winter	2033	329.80	384.01	449.12	574.73	73.65	86.12	100.98	128.81
AD	Calaveras County APCD	Winter	2034	329.80	384.08	449.11	574.89	73.66	86.17	100.99	128.90
AD	Calaveras County APCD	Winter	2035	329.79	384.14	449.09	575.04	73.66	86.21	100.99	128.99
AD	Colusa County APCD	Annual	2010	336.15	393.71	462.59	577.05	73.02	94.44	100.85	124.61
AD	Colusa County APCD	Annual	2011	336.30	393.20	461.94	577.64	73.01	92.76	100.79	124.78
AD	Colusa County APCD	Annual	2012	336.46	392.86	461.43	578.32	73.01	91.49	100.76	124.99
AD	Colusa County APCD	Annual	2013	336.61	392.53	461.04	579.07	73.01	90.33	100.78	125.24
AD	Colusa County APCD	Annual	2014	336.76	392.14	460.74	579.85	73.01	89.10	100.78	125.48
AD	Colusa County APCD	Annual	2015	336.94	391.90	460.48	580.66	73.07	88.20	100.70	125.75

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Colusa County APCD	Annual	2016	337.08	391.55	460.28	581.44	73.11	87.13	100.69	126.03
AD	Colusa County APCD	Annual	2017	337.18	391.40	460.11	582.19	73.11	86.50	100.69	126.31
AD	Colusa County APCD	Annual	2018	337.27	391.20	459.97	582.84	73.14	85.83	100.67	126.58
AD	Colusa County APCD	Annual	2019	337.32	391.11	459.85	583.42	73.14	85.43	100.69	126.82
AD	Colusa County APCD	Annual	2020	337.37	391.06	459.75	583.92	73.23	85.29	100.77	127.05
AD	Colusa County APCD	Annual	2021	337.43	391.13	459.66	584.31	73.30	85.37	100.83	127.21
AD	Colusa County APCD	Annual	2022	337.40	391.19	459.57	584.63	73.33	85.43	100.88	127.34
AD	Colusa County APCD	Annual	2023	337.39	391.29	459.49	584.89	73.36	85.52	100.91	127.52
AD	Colusa County APCD	Annual	2024	337.37	391.34	459.41	585.10	73.37	85.59	100.94	127.69
AD	Colusa County APCD	Annual	2025	337.36	391.40	459.36	585.31	73.39	85.65	100.97	127.86
AD	Colusa County APCD	Annual	2026	337.37	391.51	459.27	585.53	73.41	85.73	100.99	128.02
AD	Colusa County APCD	Annual	2027	337.38	391.61	459.21	585.75	73.42	85.79	101.00	128.16
AD	Colusa County APCD	Annual	2028	337.39	391.73	459.15	585.97	73.43	85.86	101.01	128.30
AD	Colusa County APCD	Annual	2029	337.40	391.84	459.07	586.18	73.44	85.92	101.01	128.42
AD	Colusa County APCD	Annual	2030	337.38	391.95	458.99	586.40	73.44	85.97	101.00	128.54
AD	Colusa County APCD	Annual	2031	337.38	392.05	458.95	586.61	73.45	86.03	101.00	128.66
AD	Colusa County APCD	Annual	2032	337.38	392.15	458.92	586.83	73.45	86.08	101.00	128.77
AD	Colusa County APCD	Annual	2033	337.38	392.24	458.89	587.03	73.46	86.13	101.01	128.87
AD	Colusa County APCD	Annual	2034	337.37	392.31	458.85	587.21	73.46	86.17	101.01	128.96
AD	Colusa County APCD	Annual	2035	337.36	392.37	458.83	587.37	73.47	86.21	101.01	129.05
AD	Colusa County APCD	Summer	2010	369.11	427.03	505.43	632.25	73.02	94.44	100.85	124.61
AD	Colusa County APCD	Summer	2011	369.53	427.36	505.34	632.77	73.01	92.76	100.79	124.78
AD	Colusa County APCD	Summer	2012	369.90	427.67	505.27	633.46	73.01	91.49	100.76	124.99
AD	Colusa County APCD	Summer	2013	370.21	427.88	505.20	634.32	73.01	90.33	100.78	125.24
AD	Colusa County APCD	Summer	2014	370.47	427.99	505.17	635.26	73.01	89.10	100.78	125.48
AD	Colusa County APCD	Summer	2015	370.74	428.12	505.15	636.30	73.07	88.20	100.70	125.75
AD	Colusa County APCD	Summer	2016	370.94	428.19	505.10	637.33	73.11	87.13	100.69	126.03
AD	Colusa County APCD	Summer	2017	371.07	428.29	505.00	638.32	73.11	86.50	100.69	126.31
AD	Colusa County APCD	Summer	2018	371.17	428.34	504.89	639.18	73.14	85.83	100.67	126.58
AD	Colusa County APCD	Summer	2019	371.22	428.46	504.77	639.93	73.14	85.43	100.69	126.82
AD	Colusa County APCD	Summer	2020	371.26	428.58	504.65	640.57	73.23	85.29	100.77	127.05
AD	Colusa County APCD	Summer	2021	371.31	428.73	504.55	641.07	73.30	85.37	100.83	127.21
AD	Colusa County APCD	Summer	2022	371.28	428.87	504.46	641.49	73.33	85.43	100.88	127.34
AD	Colusa County APCD	Summer	2023	371.27	429.02	504.39	641.81	73.36	85.52	100.91	127.52
AD	Colusa County APCD	Summer	2024	371.27	429.15	504.32	642.06	73.37	85.59	100.94	127.69
AD	Colusa County APCD	Summer	2025	371.27	429.27	504.27	642.28	73.39	85.65	100.97	127.86
AD	Colusa County APCD	Summer	2026	371.29	429.45	504.21	642.53	73.41	85.73	100.99	128.02
AD	Colusa County APCD	Summer	2027	371.32	429.59	504.17	642.78	73.42	85.79	101.00	128.16
AD	Colusa County APCD	Summer	2028	371.34	429.79	504.14	643.02	73.43	85.86	101.01	128.30
AD	Colusa County APCD	Summer	2029	371.35	429.96	504.09	643.27	73.44	85.92	101.01	128.42
AD	Colusa County APCD	Summer	2030	371.36	430.13	504.04	643.51	73.44	85.97	101.00	128.54
AD	Colusa County APCD	Summer	2031	371.36	430.29	504.05	643.74	73.45	86.03	101.00	128.66
AD	Colusa County APCD	Summer	2032	371.36	430.43	504.04	643.98	73.45	86.08	101.00	128.77
AD	Colusa County APCD	Summer	2033	371.36	430.55	504.04	644.21	73.46	86.13	101.01	128.87
AD	Colusa County APCD	Summer	2034	371.36	430.64	504.02	644.42	73.46	86.17	101.01	128.96
AD	Colusa County APCD	Summer	2035	371.35	430.71	504.00	644.62	73.47	86.21	101.01	129.05
AD	Colusa County APCD	Winter	2010	325.06	382.50	448.17	558.47	73.02	94.44	100.85	124.61
AD	Colusa County APCD	Winter	2011	325.11	381.70	447.33	559.09	73.01	92.76	100.79	124.78
AD	Colusa County APCD	Winter	2012	325.20	381.15	446.68	559.76	73.01	91.49	100.76	124.99
AD	Colusa County APCD	Winter	2013	325.30	380.64	446.18	560.48	73.01	90.33	100.78	125.24
AD	Colusa County APCD	Winter	2014	325.41	380.08	445.78	561.20	73.01	89.10	100.78	125.48
AD	Colusa County APCD	Winter	2015	325.57	379.70	445.45	561.93	73.07	88.20	100.70	125.75
AD	Colusa County APCD	Winter	2016	325.69	379.22	445.20	562.63	73.11	87.13	100.69	126.03
AD	Colusa County APCD	Winter	2017	325.77	378.98	445.00	563.29	73.11	86.50	100.69	126.31

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Colusa County APCD	Winter	2018	325.86	378.69	444.85	563.88	73.14	85.83	100.67	126.58
AD	Colusa County APCD	Winter	2019	325.91	378.54	444.73	564.40	73.14	85.43	100.69	126.82
AD	Colusa County APCD	Winter	2020	325.96	378.43	444.64	564.86	73.23	85.29	100.77	127.05
AD	Colusa County APCD	Winter	2021	326.03	378.48	444.56	565.20	73.30	85.37	100.83	127.21
AD	Colusa County APCD	Winter	2022	326.00	378.50	444.46	565.49	73.33	85.43	100.88	127.34
AD	Colusa County APCD	Winter	2023	325.99	378.59	444.38	565.73	73.36	85.52	100.91	127.52
AD	Colusa County APCD	Winter	2024	325.96	378.62	444.30	565.93	73.37	85.59	100.94	127.69
AD	Colusa County APCD	Winter	2025	325.94	378.65	444.24	566.14	73.39	85.65	100.97	127.86
AD	Colusa County APCD	Winter	2026	325.95	378.74	444.15	566.35	73.41	85.73	100.99	128.02
AD	Colusa County APCD	Winter	2027	325.96	378.83	444.08	566.56	73.42	85.79	101.00	128.16
AD	Colusa County APCD	Winter	2028	325.96	378.92	444.01	566.77	73.43	85.86	101.01	128.30
AD	Colusa County APCD	Winter	2029	325.97	379.01	443.92	566.97	73.44	85.92	101.01	128.42
AD	Colusa County APCD	Winter	2030	325.95	379.10	443.83	567.18	73.44	85.97	101.00	128.54
AD	Colusa County APCD	Winter	2031	325.95	379.18	443.78	567.38	73.45	86.03	101.00	128.66
AD	Colusa County APCD	Winter	2032	325.95	379.27	443.73	567.59	73.45	86.08	101.00	128.77
AD	Colusa County APCD	Winter	2033	325.94	379.34	443.70	567.78	73.46	86.13	101.01	128.87
AD	Colusa County APCD	Winter	2034	325.93	379.41	443.65	567.95	73.46	86.17	101.01	128.96
AD	Colusa County APCD	Winter	2035	325.92	379.46	443.62	568.10	73.47	86.21	101.01	129.05
AD	El Dorado County APCD	Annual	2010	344.06	399.91	474.51	595.67	73.80	87.93	100.07	125.05
AD	El Dorado County APCD	Annual	2011	344.37	400.11	474.18	596.23	73.69	87.21	100.08	125.19
AD	El Dorado County APCD	Annual	2012	344.66	400.37	473.92	596.88	73.60	86.69	100.14	125.37
AD	El Dorado County APCD	Annual	2013	344.92	400.60	473.73	597.60	73.52	86.25	100.18	125.58
AD	El Dorado County APCD	Annual	2014	345.14	400.81	473.57	598.32	73.42	85.86	100.22	125.79
AD	El Dorado County APCD	Annual	2015	345.36	401.02	473.47	599.08	73.39	85.52	100.26	126.03
AD	El Dorado County APCD	Annual	2016	345.56	401.22	473.39	599.80	73.42	85.23	100.32	126.28
AD	El Dorado County APCD	Annual	2017	345.72	401.40	473.32	600.49	73.43	84.98	100.35	126.52
AD	El Dorado County APCD	Annual	2018	345.84	401.56	473.26	601.09	73.41	84.79	100.39	126.76
AD	El Dorado County APCD	Annual	2019	342.63	398.23	469.09	596.26	73.42	84.81	100.46	126.97
AD	El Dorado County APCD	Annual	2020	342.72	398.46	469.09	596.75	73.51	84.90	100.55	127.17
AD	El Dorado County APCD	Annual	2021	342.78	398.68	469.12	597.13	73.59	85.03	100.63	127.30
AD	El Dorado County APCD	Annual	2022	342.81	398.88	469.15	597.45	73.64	85.16	100.70	127.41
AD	El Dorado County APCD	Annual	2023	342.82	399.03	469.17	597.71	73.67	85.26	100.75	127.57
AD	El Dorado County APCD	Annual	2024	342.83	399.18	469.16	597.94	73.69	85.36	100.80	127.71
AD	El Dorado County APCD	Annual	2025	342.83	399.32	469.18	598.18	73.71	85.45	100.84	127.86
AD	El Dorado County APCD	Annual	2026	342.86	399.50	469.17	598.40	73.73	85.55	100.88	128.01
AD	El Dorado County APCD	Annual	2027	342.87	399.67	469.18	598.61	73.74	85.63	100.90	128.14
AD	El Dorado County APCD	Annual	2028	342.89	399.84	469.18	598.84	73.76	85.71	100.92	128.26
AD	El Dorado County APCD	Annual	2029	342.90	400.02	469.17	599.06	73.76	85.79	100.93	128.37
AD	El Dorado County APCD	Annual	2030	342.92	400.19	469.17	599.30	73.77	85.86	100.94	128.48
AD	El Dorado County APCD	Annual	2031	342.94	400.37	469.18	599.52	73.77	85.94	100.95	128.59
AD	El Dorado County APCD	Annual	2032	342.96	400.53	469.19	599.74	73.78	86.00	100.95	128.70
AD	El Dorado County APCD	Annual	2033	342.97	400.67	469.20	599.95	73.78	86.06	100.96	128.79
AD	El Dorado County APCD	Annual	2034	342.98	400.81	469.22	600.14	73.78	86.12	100.97	128.88
AD	El Dorado County APCD	Annual	2035	342.99	400.92	469.23	600.31	73.79	86.17	100.97	128.97
AD	El Dorado County APCD	Summer	2010	374.54	427.96	510.75	641.98	73.80	87.93	100.07	125.05
AD	El Dorado County APCD	Summer	2011	374.93	428.86	510.63	642.58	73.69	87.21	100.08	125.19
AD	El Dorado County APCD	Summer	2012	375.31	429.65	510.55	643.32	73.60	86.69	100.14	125.37
AD	El Dorado County APCD	Summer	2013	375.65	430.31	510.52	644.16	73.52	86.25	100.18	125.58
AD	El Dorado County APCD	Summer	2014	375.94	430.86	510.54	645.06	73.42	85.86	100.22	125.79
AD	El Dorado County APCD	Summer	2015	376.22	431.35	510.57	646.01	73.39	85.52	100.26	126.03
AD	El Dorado County APCD	Summer	2016	376.46	431.78	510.61	646.90	73.42	85.23	100.32	126.28
AD	El Dorado County APCD	Summer	2017	376.65	432.17	510.63	647.77	73.43	84.98	100.35	126.52
AD	El Dorado County APCD	Summer	2018	376.77	432.48	510.62	648.50	73.41	84.79	100.39	126.76
AD	El Dorado County APCD	Summer	2019	373.21	428.93	506.01	643.20	73.42	84.81	100.46	126.97

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	El Dorado County APCD	Summer	2020	373.27	429.23	505.95	643.70	73.51	84.90	100.55	127.17
AD	El Dorado County APCD	Summer	2021	373.33	429.49	505.85	644.00	73.59	85.03	100.63	127.30
AD	El Dorado County APCD	Summer	2022	373.37	429.73	505.76	644.26	73.64	85.16	100.70	127.41
AD	El Dorado County APCD	Summer	2023	373.40	429.92	505.67	644.45	73.67	85.26	100.75	127.57
AD	El Dorado County APCD	Summer	2024	373.39	430.06	505.63	644.57	73.69	85.36	100.80	127.71
AD	El Dorado County APCD	Summer	2025	373.41	430.22	505.59	644.69	73.71	85.45	100.84	127.86
AD	El Dorado County APCD	Summer	2026	373.41	430.40	505.56	644.85	73.73	85.55	100.88	128.01
AD	El Dorado County APCD	Summer	2027	373.41	430.57	505.53	645.01	73.74	85.63	100.90	128.14
AD	El Dorado County APCD	Summer	2028	373.41	430.76	505.51	645.18	73.76	85.71	100.92	128.26
AD	El Dorado County APCD	Summer	2029	373.41	430.95	505.48	645.36	73.76	85.79	100.93	128.37
AD	El Dorado County APCD	Summer	2030	373.42	431.14	505.45	645.55	73.77	85.86	100.94	128.48
AD	El Dorado County APCD	Summer	2031	373.41	431.34	505.42	645.79	73.77	85.94	100.95	128.59
AD	El Dorado County APCD	Summer	2032	373.40	431.50	505.39	646.04	73.78	86.00	100.95	128.70
AD	El Dorado County APCD	Summer	2033	373.40	431.64	505.36	646.26	73.78	86.06	100.96	128.79
AD	El Dorado County APCD	Summer	2034	373.40	431.76	505.33	646.48	73.78	86.12	100.97	128.88
AD	El Dorado County APCD	Summer	2035	373.39	431.86	505.30	646.67	73.79	86.17	100.97	128.97
AD	El Dorado County APCD	Winter	2010	336.47	392.87	465.40	584.06	73.80	87.93	100.07	125.05
AD	El Dorado County APCD	Winter	2011	336.76	392.90	465.02	584.60	73.69	87.21	100.08	125.19
AD	El Dorado County APCD	Winter	2012	337.03	393.02	464.72	585.24	73.60	86.69	100.14	125.37
AD	El Dorado County APCD	Winter	2013	337.27	393.15	464.49	585.93	73.52	86.25	100.18	125.58
AD	El Dorado County APCD	Winter	2014	337.47	393.27	464.28	586.60	73.42	85.86	100.22	125.79
AD	El Dorado County APCD	Winter	2015	337.68	393.40	464.14	587.31	73.39	85.52	100.26	126.03
AD	El Dorado County APCD	Winter	2016	337.87	393.55	464.04	587.99	73.42	85.23	100.32	126.28
AD	El Dorado County APCD	Winter	2017	338.02	393.68	463.94	588.63	73.43	84.98	100.35	126.52
AD	El Dorado County APCD	Winter	2018	338.13	393.80	463.87	589.19	73.41	84.79	100.39	126.76
AD	El Dorado County APCD	Winter	2019	335.01	390.52	459.80	584.48	73.42	84.81	100.46	126.97
AD	El Dorado County APCD	Winter	2020	335.11	390.72	459.82	584.96	73.51	84.90	100.55	127.17
AD	El Dorado County APCD	Winter	2021	335.16	390.94	459.88	585.35	73.59	85.03	100.63	127.30
AD	El Dorado County APCD	Winter	2022	335.19	391.13	459.93	585.69	73.64	85.16	100.70	127.41
AD	El Dorado County APCD	Winter	2023	335.21	391.27	459.97	585.96	73.67	85.26	100.75	127.57
AD	El Dorado County APCD	Winter	2024	335.21	391.42	459.98	586.21	73.69	85.36	100.80	127.71
AD	El Dorado County APCD	Winter	2025	335.22	391.55	460.00	586.49	73.71	85.45	100.84	127.86
AD	El Dorado County APCD	Winter	2026	335.25	391.72	460.01	586.71	73.73	85.55	100.88	128.01
AD	El Dorado County APCD	Winter	2027	335.27	391.89	460.02	586.94	73.74	85.63	100.90	128.14
AD	El Dorado County APCD	Winter	2028	335.28	392.06	460.03	587.17	73.76	85.71	100.92	128.26
AD	El Dorado County APCD	Winter	2029	335.30	392.23	460.02	587.41	73.76	85.79	100.93	128.37
AD	El Dorado County APCD	Winter	2030	335.32	392.40	460.03	587.66	73.77	85.86	100.94	128.48
AD	El Dorado County APCD	Winter	2031	335.34	392.57	460.04	587.87	73.77	85.94	100.95	128.59
AD	El Dorado County APCD	Winter	2032	335.37	392.73	460.07	588.09	73.78	86.00	100.95	128.70
AD	El Dorado County APCD	Winter	2033	335.39	392.87	460.09	588.29	73.78	86.06	100.96	128.79
AD	El Dorado County APCD	Winter	2034	335.40	393.01	460.11	588.48	73.78	86.12	100.97	128.88
AD	El Dorado County APCD	Winter	2035	335.42	393.13	460.13	588.64	73.79	86.17	100.97	128.97
AD	Feather River AQMD	Annual	2010	325.72	381.57	447.59	558.28	73.45	93.72	100.52	124.69
AD	Feather River AQMD	Annual	2011	325.89	381.23	447.09	559.03	73.45	92.05	100.47	124.90
AD	Feather River AQMD	Annual	2012	326.09	381.01	446.71	559.86	73.48	90.72	100.48	125.14
AD	Feather River AQMD	Annual	2013	326.28	380.77	446.42	560.75	73.50	89.47	100.49	125.41
AD	Feather River AQMD	Annual	2014	326.43	380.65	446.20	561.58	73.50	88.61	100.49	125.69
AD	Feather River AQMD	Annual	2015	326.61	380.45	446.03	562.43	73.55	87.57	100.52	125.97
AD	Feather River AQMD	Annual	2016	326.77	380.34	445.89	563.22	73.60	86.86	100.54	126.26
AD	Feather River AQMD	Annual	2017	326.89	380.23	445.76	563.96	73.64	86.15	100.56	126.55
AD	Feather River AQMD	Annual	2018	326.97	380.11	445.66	564.59	73.65	85.54	100.60	126.82
AD	Feather River AQMD	Annual	2019	325.22	377.77	443.02	562.17	73.67	85.33	100.64	127.05
AD	Feather River AQMD	Annual	2020	325.28	377.78	442.94	562.61	73.76	85.29	100.71	127.27
AD	Feather River AQMD	Annual	2021	325.33	377.89	442.88	562.95	73.83	85.40	100.78	127.43

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Feather River AQMD	Annual	2022	325.35	377.98	442.82	563.23	73.87	85.48	100.83	127.56
AD	Feather River AQMD	Annual	2023	325.35	378.04	442.76	563.45	73.90	85.56	100.87	127.73
AD	Feather River AQMD	Annual	2024	325.30	378.13	442.73	563.63	73.92	85.63	100.91	127.89
AD	Feather River AQMD	Annual	2025	325.29	378.23	442.70	563.82	73.94	85.70	100.93	128.04
AD	Feather River AQMD	Annual	2026	325.30	378.30	442.64	563.98	73.96	85.77	100.95	128.18
AD	Feather River AQMD	Annual	2027	325.32	378.37	442.59	564.14	73.97	85.82	100.97	128.30
AD	Feather River AQMD	Annual	2028	325.33	378.44	442.55	564.31	73.98	85.87	100.98	128.42
AD	Feather River AQMD	Annual	2029	325.33	378.52	442.50	564.48	73.99	85.92	100.98	128.53
AD	Feather River AQMD	Annual	2030	325.33	378.59	442.45	564.66	73.99	85.97	100.97	128.64
AD	Feather River AQMD	Annual	2031	325.34	378.67	442.43	564.81	73.99	86.01	100.98	128.74
AD	Feather River AQMD	Annual	2032	325.35	378.75	442.40	564.96	74.00	86.06	100.98	128.83
AD	Feather River AQMD	Annual	2033	325.36	378.81	442.38	565.10	74.00	86.09	100.99	128.92
AD	Feather River AQMD	Annual	2034	325.36	378.88	442.36	565.23	74.01	86.13	100.99	129.00
AD	Feather River AQMD	Annual	2035	325.37	378.92	442.34	565.35	74.01	86.16	100.99	129.08
AD	Feather River AQMD	Summer	2010	361.70	419.04	494.41	617.34	73.45	93.72	100.52	124.69
AD	Feather River AQMD	Summer	2011	362.18	419.54	494.52	618.21	73.45	92.05	100.47	124.90
AD	Feather River AQMD	Summer	2012	362.62	419.99	494.59	619.26	73.48	90.72	100.48	125.14
AD	Feather River AQMD	Summer	2013	363.00	420.31	494.65	620.44	73.50	89.47	100.49	125.41
AD	Feather River AQMD	Summer	2014	363.29	420.57	494.71	621.58	73.50	88.61	100.49	125.69
AD	Feather River AQMD	Summer	2015	363.57	420.79	494.73	622.75	73.55	87.57	100.52	125.97
AD	Feather River AQMD	Summer	2016	363.79	420.94	494.73	623.88	73.60	86.86	100.54	126.26
AD	Feather River AQMD	Summer	2017	363.94	421.09	494.67	624.89	73.64	86.15	100.56	126.55
AD	Feather River AQMD	Summer	2018	364.03	421.16	494.57	625.74	73.65	85.54	100.60	126.82
AD	Feather River AQMD	Summer	2019	362.06	418.63	491.62	623.14	73.67	85.33	100.64	127.05
AD	Feather River AQMD	Summer	2020	362.10	418.69	491.50	623.69	73.76	85.29	100.71	127.27
AD	Feather River AQMD	Summer	2021	362.12	418.84	491.40	624.12	73.83	85.40	100.78	127.43
AD	Feather River AQMD	Summer	2022	362.12	418.98	491.31	624.47	73.87	85.48	100.83	127.56
AD	Feather River AQMD	Summer	2023	362.11	419.10	491.25	624.74	73.90	85.56	100.87	127.73
AD	Feather River AQMD	Summer	2024	362.07	419.25	491.20	624.93	73.92	85.63	100.91	127.89
AD	Feather River AQMD	Summer	2025	362.06	419.39	491.18	625.12	73.94	85.70	100.93	128.04
AD	Feather River AQMD	Summer	2026	362.09	419.49	491.11	625.25	73.96	85.77	100.95	128.18
AD	Feather River AQMD	Summer	2027	362.12	419.57	491.08	625.41	73.97	85.82	100.97	128.30
AD	Feather River AQMD	Summer	2028	362.15	419.68	491.05	625.58	73.98	85.87	100.98	128.42
AD	Feather River AQMD	Summer	2029	362.17	419.79	491.02	625.77	73.99	85.92	100.98	128.53
AD	Feather River AQMD	Summer	2030	362.19	419.91	491.00	625.97	73.99	85.97	100.97	128.64
AD	Feather River AQMD	Summer	2031	362.20	420.01	491.01	626.14	73.99	86.01	100.98	128.74
AD	Feather River AQMD	Summer	2032	362.21	420.10	491.01	626.33	74.00	86.06	100.98	128.83
AD	Feather River AQMD	Summer	2033	362.22	420.19	491.01	626.51	74.00	86.09	100.99	128.92
AD	Feather River AQMD	Summer	2034	362.22	420.27	491.00	626.69	74.01	86.13	100.99	129.00
AD	Feather River AQMD	Summer	2035	362.23	420.33	490.99	626.85	74.01	86.16	100.99	129.08
AD	Feather River AQMD	Winter	2010	315.77	371.26	434.66	541.87	73.45	93.72	100.52	124.69
AD	Feather River AQMD	Winter	2011	315.85	370.69	433.99	542.58	73.45	92.05	100.47	124.90
AD	Feather River AQMD	Winter	2012	315.98	370.29	433.49	543.36	73.48	90.72	100.48	125.14
AD	Feather River AQMD	Winter	2013	316.12	369.90	433.11	544.17	73.50	89.47	100.49	125.41
AD	Feather River AQMD	Winter	2014	316.24	369.68	432.81	544.92	73.50	88.61	100.49	125.69
AD	Feather River AQMD	Winter	2015	316.38	369.37	432.59	545.67	73.55	87.57	100.52	125.97
AD	Feather River AQMD	Winter	2016	316.52	369.19	432.41	546.38	73.60	86.86	100.54	126.26
AD	Feather River AQMD	Winter	2017	316.64	369.01	432.27	547.04	73.64	86.15	100.56	126.55
AD	Feather River AQMD	Winter	2018	316.72	368.83	432.16	547.62	73.65	85.54	100.60	126.82
AD	Feather River AQMD	Winter	2019	315.03	366.54	429.60	545.24	73.67	85.33	100.64	127.05
AD	Feather River AQMD	Winter	2020	315.10	366.54	429.54	545.66	73.76	85.29	100.71	127.27
AD	Feather River AQMD	Winter	2021	315.16	366.64	429.48	545.97	73.83	85.40	100.78	127.43
AD	Feather River AQMD	Winter	2022	315.18	366.71	429.43	546.23	73.87	85.48	100.83	127.56
AD	Feather River AQMD	Winter	2023	315.18	366.76	429.38	546.44	73.90	85.56	100.87	127.73

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Feather River AQMD	Winter	2024	315.13	366.83	429.35	546.62	73.92	85.63	100.91	127.89
AD	Feather River AQMD	Winter	2025	315.11	366.92	429.32	546.81	73.94	85.70	100.93	128.04
AD	Feather River AQMD	Winter	2026	315.13	366.98	429.26	546.98	73.96	85.77	100.95	128.18
AD	Feather River AQMD	Winter	2027	315.14	367.04	429.21	547.14	73.97	85.82	100.97	128.30
AD	Feather River AQMD	Winter	2028	315.14	367.11	429.17	547.32	73.98	85.87	100.98	128.42
AD	Feather River AQMD	Winter	2029	315.14	367.17	429.11	547.49	73.99	85.92	100.98	128.53
AD	Feather River AQMD	Winter	2030	315.14	367.24	429.06	547.66	73.99	85.97	100.97	128.64
AD	Feather River AQMD	Winter	2031	315.15	367.31	429.02	547.79	73.99	86.01	100.98	128.74
AD	Feather River AQMD	Winter	2032	315.16	367.38	428.99	547.93	74.00	86.06	100.98	128.83
AD	Feather River AQMD	Winter	2033	315.16	367.45	428.96	548.06	74.00	86.09	100.99	128.92
AD	Feather River AQMD	Winter	2034	315.17	367.50	428.94	548.17	74.01	86.13	100.99	129.00
AD	Feather River AQMD	Winter	2035	315.18	367.55	428.92	548.27	74.01	86.16	100.99	129.08
AD	Glenn County APCD	Annual	2010	347.61	407.24	479.18	597.47	73.80	101.05	102.36	125.05
AD	Glenn County APCD	Annual	2011	347.94	406.83	478.46	597.84	73.70	98.07	102.06	125.06
AD	Glenn County APCD	Annual	2012	348.25	406.57	477.93	598.43	73.59	95.83	101.82	125.13
AD	Glenn County APCD	Annual	2013	348.56	406.34	477.52	599.20	73.54	93.69	101.62	125.27
AD	Glenn County APCD	Annual	2014	348.81	406.16	477.20	600.00	73.43	91.83	101.37	125.43
AD	Glenn County APCD	Annual	2015	349.05	406.03	476.95	600.89	73.38	90.19	101.22	125.64
AD	Glenn County APCD	Annual	2016	349.27	405.92	476.74	601.81	73.41	88.68	101.09	125.88
AD	Glenn County APCD	Annual	2017	349.44	405.85	476.57	602.68	73.41	87.43	101.01	126.13
AD	Glenn County APCD	Annual	2018	349.58	405.77	476.41	603.43	73.43	86.26	100.91	126.38
AD	Glenn County APCD	Annual	2019	349.68	405.76	476.29	604.10	73.46	85.63	100.80	126.62
AD	Glenn County APCD	Annual	2020	349.77	405.79	476.19	604.70	73.56	85.43	100.85	126.85
AD	Glenn County APCD	Annual	2021	349.82	405.88	476.10	605.14	73.62	85.50	100.90	126.97
AD	Glenn County APCD	Annual	2022	349.86	405.97	476.01	605.47	73.68	85.55	100.94	127.04
AD	Glenn County APCD	Annual	2023	349.88	406.04	475.94	605.72	73.71	85.61	100.98	127.23
AD	Glenn County APCD	Annual	2024	349.89	406.11	475.87	605.91	73.71	85.66	101.00	127.41
AD	Glenn County APCD	Annual	2025	349.89	406.19	475.82	606.12	73.72	85.74	101.02	127.59
AD	Glenn County APCD	Annual	2026	349.91	406.27	475.76	606.32	73.75	85.81	101.03	127.77
AD	Glenn County APCD	Annual	2027	349.93	406.34	475.71	606.53	73.76	85.87	101.03	127.93
AD	Glenn County APCD	Annual	2028	349.94	406.42	475.66	606.74	73.77	85.93	101.03	128.07
AD	Glenn County APCD	Annual	2029	349.94	406.49	475.61	606.94	73.78	85.99	101.02	128.21
AD	Glenn County APCD	Annual	2030	349.94	406.57	475.56	607.16	73.78	86.04	101.01	128.34
AD	Glenn County APCD	Annual	2031	349.94	406.64	475.55	607.42	73.79	86.10	101.01	128.47
AD	Glenn County APCD	Annual	2032	349.94	406.69	475.53	607.68	73.79	86.15	101.01	128.60
AD	Glenn County APCD	Annual	2033	349.94	406.75	475.52	607.92	73.80	86.19	101.01	128.71
AD	Glenn County APCD	Annual	2034	349.94	406.79	475.50	608.14	73.80	86.23	101.01	128.82
AD	Glenn County APCD	Annual	2035	349.93	406.82	475.49	608.33	73.81	86.26	101.01	128.92
AD	Glenn County APCD	Summer	2010	384.83	445.81	527.20	657.56	73.80	101.05	102.36	125.05
AD	Glenn County APCD	Summer	2011	385.51	446.50	527.25	657.84	73.70	98.07	102.06	125.06
AD	Glenn County APCD	Summer	2012	386.08	446.98	527.28	658.52	73.59	95.83	101.82	125.13
AD	Glenn County APCD	Summer	2013	386.56	447.34	527.28	659.58	73.54	93.69	101.62	125.27
AD	Glenn County APCD	Summer	2014	386.94	447.60	527.29	660.69	73.43	91.83	101.37	125.43
AD	Glenn County APCD	Summer	2015	387.27	447.83	527.25	661.99	73.38	90.19	101.22	125.64
AD	Glenn County APCD	Summer	2016	387.55	448.01	527.19	663.37	73.41	88.68	101.09	125.88
AD	Glenn County APCD	Summer	2017	387.74	448.13	527.06	664.65	73.41	87.43	101.01	126.13
AD	Glenn County APCD	Summer	2018	387.86	448.22	526.91	665.76	73.43	86.26	100.91	126.38
AD	Glenn County APCD	Summer	2019	387.96	448.30	526.79	666.74	73.46	85.63	100.80	126.62
AD	Glenn County APCD	Summer	2020	388.02	448.37	526.65	667.59	73.56	85.43	100.85	126.85
AD	Glenn County APCD	Summer	2021	388.06	448.51	526.53	668.25	73.62	85.50	100.90	126.97
AD	Glenn County APCD	Summer	2022	388.09	448.64	526.43	668.76	73.68	85.55	100.94	127.04
AD	Glenn County APCD	Summer	2023	388.10	448.75	526.35	669.12	73.71	85.61	100.98	127.23
AD	Glenn County APCD	Summer	2024	388.12	448.88	526.29	669.37	73.71	85.66	101.00	127.41
AD	Glenn County APCD	Summer	2025	388.13	449.00	526.24	669.61	73.72	85.74	101.02	127.59

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Glenn County APCD	Summer	2026	388.17	449.13	526.19	669.78	73.75	85.81	101.03	127.77
AD	Glenn County APCD	Summer	2027	388.21	449.21	526.15	669.97	73.76	85.87	101.03	127.93
AD	Glenn County APCD	Summer	2028	388.24	449.33	526.12	670.17	73.77	85.93	101.03	128.07
AD	Glenn County APCD	Summer	2029	388.26	449.45	526.10	670.39	73.78	85.99	101.02	128.21
AD	Glenn County APCD	Summer	2030	388.28	449.57	526.08	670.64	73.78	86.04	101.01	128.34
AD	Glenn County APCD	Summer	2031	388.27	449.67	526.12	670.94	73.79	86.10	101.01	128.47
AD	Glenn County APCD	Summer	2032	388.27	449.74	526.13	671.26	73.79	86.15	101.01	128.60
AD	Glenn County APCD	Summer	2033	388.26	449.81	526.14	671.55	73.80	86.19	101.01	128.71
AD	Glenn County APCD	Summer	2034	388.25	449.85	526.14	671.85	73.80	86.23	101.01	128.82
AD	Glenn County APCD	Summer	2035	388.24	449.87	526.13	672.11	73.81	86.26	101.01	128.92
AD	Glenn County APCD	Winter	2010	335.44	394.64	463.49	577.83	73.80	101.05	102.36	125.05
AD	Glenn County APCD	Winter	2011	335.66	393.87	462.51	578.23	73.70	98.07	102.06	125.06
AD	Glenn County APCD	Winter	2012	335.89	393.37	461.80	578.79	73.59	95.83	101.82	125.13
AD	Glenn County APCD	Winter	2013	336.14	392.94	461.25	579.47	73.54	93.69	101.62	125.27
AD	Glenn County APCD	Winter	2014	336.35	392.62	460.83	580.17	73.43	91.83	101.37	125.43
AD	Glenn County APCD	Winter	2015	336.56	392.37	460.51	580.92	73.38	90.19	101.22	125.64
AD	Glenn County APCD	Winter	2016	336.76	392.17	460.25	581.69	73.41	88.68	101.09	125.88
AD	Glenn County APCD	Winter	2017	336.93	392.03	460.06	582.43	73.41	87.43	101.01	126.13
AD	Glenn County APCD	Winter	2018	337.06	391.89	459.91	583.06	73.43	86.26	100.91	126.38
AD	Glenn County APCD	Winter	2019	337.18	391.86	459.79	583.63	73.46	85.63	100.80	126.62
AD	Glenn County APCD	Winter	2020	337.27	391.87	459.70	584.15	73.56	85.43	100.85	126.85
AD	Glenn County APCD	Winter	2021	337.33	391.95	459.61	584.51	73.62	85.50	100.90	126.97
AD	Glenn County APCD	Winter	2022	337.37	392.02	459.54	584.78	73.68	85.55	100.94	127.04
AD	Glenn County APCD	Winter	2023	337.39	392.08	459.47	585.00	73.71	85.61	100.98	127.23
AD	Glenn County APCD	Winter	2024	337.39	392.13	459.40	585.17	73.71	85.66	101.00	127.41
AD	Glenn County APCD	Winter	2025	337.39	392.20	459.34	585.37	73.72	85.74	101.02	127.59
AD	Glenn County APCD	Winter	2026	337.41	392.27	459.27	585.58	73.75	85.81	101.03	127.77
AD	Glenn County APCD	Winter	2027	337.42	392.32	459.22	585.80	73.76	85.87	101.03	127.93
AD	Glenn County APCD	Winter	2028	337.42	392.39	459.16	586.00	73.77	85.93	101.03	128.07
AD	Glenn County APCD	Winter	2029	337.42	392.46	459.10	586.21	73.78	85.99	101.02	128.21
AD	Glenn County APCD	Winter	2030	337.42	392.52	459.05	586.42	73.78	86.04	101.01	128.34
AD	Glenn County APCD	Winter	2031	337.42	392.58	459.02	586.66	73.79	86.10	101.01	128.47
AD	Glenn County APCD	Winter	2032	337.42	392.63	459.00	586.91	73.79	86.15	101.01	128.60
AD	Glenn County APCD	Winter	2033	337.41	392.67	458.97	587.13	73.80	86.19	101.01	128.71
AD	Glenn County APCD	Winter	2034	337.41	392.71	458.95	587.32	73.80	86.23	101.01	128.82
AD	Glenn County APCD	Winter	2035	337.41	392.75	458.94	587.49	73.81	86.26	101.01	128.92
AD	Great Basin UAPCD	Annual	2010	351.71	410.12	479.62	598.88	74.54	91.99	101.41	124.88
AD	Great Basin UAPCD	Annual	2011	351.58	409.65	479.10	599.56	74.30	90.81	101.24	125.01
AD	Great Basin UAPCD	Annual	2012	351.55	409.23	478.69	600.33	74.12	89.78	101.13	125.19
AD	Great Basin UAPCD	Annual	2013	351.50	408.84	478.36	601.12	73.86	88.90	101.03	125.40
AD	Great Basin UAPCD	Annual	2014	351.45	408.49	478.12	601.90	73.59	88.09	100.88	125.62
AD	Great Basin UAPCD	Annual	2015	351.50	408.21	477.92	602.74	73.49	87.37	100.88	125.86
AD	Great Basin UAPCD	Annual	2016	351.62	407.99	477.76	603.56	73.49	86.82	100.85	126.11
AD	Great Basin UAPCD	Annual	2017	351.64	407.78	477.63	604.31	73.40	86.29	100.83	126.37
AD	Great Basin UAPCD	Annual	2018	351.66	407.60	477.52	604.96	73.33	85.85	100.80	126.61
AD	Great Basin UAPCD	Annual	2019	351.69	407.52	477.42	605.53	73.29	85.59	100.75	126.84
AD	Great Basin UAPCD	Annual	2020	351.72	407.45	477.34	606.03	73.36	85.50	100.79	127.06
AD	Great Basin UAPCD	Annual	2021	351.66	407.35	477.26	606.36	73.36	85.50	100.84	127.21
AD	Great Basin UAPCD	Annual	2022	351.57	407.28	477.17	606.67	73.35	85.52	100.88	127.36
AD	Great Basin UAPCD	Annual	2023	351.48	407.18	477.10	606.89	73.33	85.53	100.90	127.53
AD	Great Basin UAPCD	Annual	2024	351.41	407.09	477.03	607.04	73.32	85.55	100.92	127.69
AD	Great Basin UAPCD	Annual	2025	351.37	407.16	477.00	607.21	73.31	85.62	100.95	127.84
AD	Great Basin UAPCD	Annual	2026	351.39	407.29	476.94	607.42	73.33	85.71	100.97	127.99
AD	Great Basin UAPCD	Annual	2027	351.40	407.43	476.89	607.63	73.34	85.79	100.99	128.14

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Great Basin UAPCD	Annual	2028	351.40	407.56	476.84	607.84	73.35	85.87	101.00	128.27
AD	Great Basin UAPCD	Annual	2029	351.39	407.69	476.77	608.06	73.36	85.94	101.00	128.39
AD	Great Basin UAPCD	Annual	2030	351.38	407.82	476.71	608.27	73.36	86.00	101.00	128.51
AD	Great Basin UAPCD	Annual	2031	351.38	407.96	476.68	608.50	73.36	86.07	101.01	128.63
AD	Great Basin UAPCD	Annual	2032	351.38	408.09	476.65	608.73	73.37	86.13	101.01	128.74
AD	Great Basin UAPCD	Annual	2033	351.38	408.21	476.62	608.94	73.37	86.18	101.01	128.84
AD	Great Basin UAPCD	Annual	2034	351.37	408.32	476.60	609.12	73.38	86.23	101.02	128.94
AD	Great Basin UAPCD	Annual	2035	351.37	408.41	476.58	609.28	73.38	86.28	101.02	129.02
AD	Great Basin UAPCD	Summer	2010	368.80	426.31	499.33	622.32	74.54	91.99	101.41	124.88
AD	Great Basin UAPCD	Summer	2011	368.81	426.47	498.98	623.07	74.30	90.81	101.24	125.01
AD	Great Basin UAPCD	Summer	2012	368.86	426.56	498.74	623.95	74.12	89.78	101.13	125.19
AD	Great Basin UAPCD	Summer	2013	368.89	426.59	498.57	624.87	73.86	88.90	101.03	125.40
AD	Great Basin UAPCD	Summer	2014	368.92	426.59	498.50	625.78	73.59	88.09	100.88	125.62
AD	Great Basin UAPCD	Summer	2015	369.01	426.63	498.39	626.79	73.49	87.37	100.88	125.86
AD	Great Basin UAPCD	Summer	2016	369.15	426.65	498.34	627.79	73.49	86.82	100.85	126.11
AD	Great Basin UAPCD	Summer	2017	369.19	426.65	498.29	628.71	73.40	86.29	100.83	126.37
AD	Great Basin UAPCD	Summer	2018	369.21	426.63	498.22	629.47	73.33	85.85	100.80	126.61
AD	Great Basin UAPCD	Summer	2019	369.25	426.71	498.16	630.15	73.29	85.59	100.75	126.84
AD	Great Basin UAPCD	Summer	2020	369.30	426.76	498.11	630.75	73.36	85.50	100.79	127.06
AD	Great Basin UAPCD	Summer	2021	369.22	426.73	498.07	631.17	73.36	85.50	100.84	127.21
AD	Great Basin UAPCD	Summer	2022	369.14	426.72	498.03	631.56	73.35	85.52	100.88	127.36
AD	Great Basin UAPCD	Summer	2023	369.04	426.67	498.01	631.85	73.33	85.53	100.90	127.53
AD	Great Basin UAPCD	Summer	2024	368.98	426.64	498.01	632.03	73.32	85.55	100.92	127.69
AD	Great Basin UAPCD	Summer	2025	368.96	426.73	498.02	632.24	73.31	85.62	100.95	127.84
AD	Great Basin UAPCD	Summer	2026	368.99	426.89	497.97	632.46	73.33	85.71	100.97	127.99
AD	Great Basin UAPCD	Summer	2027	369.03	427.08	497.94	632.69	73.34	85.79	100.99	128.14
AD	Great Basin UAPCD	Summer	2028	369.05	427.25	497.90	632.94	73.35	85.87	101.00	128.27
AD	Great Basin UAPCD	Summer	2029	369.06	427.42	497.85	633.19	73.36	85.94	101.00	128.39
AD	Great Basin UAPCD	Summer	2030	369.07	427.57	497.80	633.43	73.36	86.00	101.00	128.51
AD	Great Basin UAPCD	Summer	2031	369.06	427.77	497.77	633.69	73.36	86.07	101.01	128.63
AD	Great Basin UAPCD	Summer	2032	369.06	427.93	497.74	633.93	73.37	86.13	101.01	128.74
AD	Great Basin UAPCD	Summer	2033	369.06	428.08	497.72	634.18	73.37	86.18	101.01	128.84
AD	Great Basin UAPCD	Summer	2034	369.05	428.21	497.70	634.38	73.38	86.23	101.02	128.94
AD	Great Basin UAPCD	Summer	2035	369.04	428.32	497.68	634.56	73.38	86.28	101.02	129.02
AD	Great Basin UAPCD	Winter	2010	367.72	425.30	498.12	620.89	74.54	91.99	101.41	124.88
AD	Great Basin UAPCD	Winter	2011	367.73	425.41	497.76	621.64	74.30	90.81	101.24	125.01
AD	Great Basin UAPCD	Winter	2012	367.77	425.48	497.51	622.51	74.12	89.78	101.13	125.19
AD	Great Basin UAPCD	Winter	2013	367.80	425.47	497.33	623.43	73.86	88.90	101.03	125.40
AD	Great Basin UAPCD	Winter	2014	367.82	425.45	497.25	624.33	73.59	88.09	100.88	125.62
AD	Great Basin UAPCD	Winter	2015	367.92	425.48	497.13	625.32	73.49	87.37	100.88	125.86
AD	Great Basin UAPCD	Winter	2016	368.05	425.48	497.08	626.32	73.49	86.82	100.85	126.11
AD	Great Basin UAPCD	Winter	2017	368.09	425.46	497.03	627.23	73.40	86.29	100.83	126.37
AD	Great Basin UAPCD	Winter	2018	368.11	425.44	496.95	627.98	73.33	85.85	100.80	126.61
AD	Great Basin UAPCD	Winter	2019	368.14	425.50	496.89	628.66	73.29	85.59	100.75	126.84
AD	Great Basin UAPCD	Winter	2020	368.19	425.55	496.84	629.25	73.36	85.50	100.79	127.06
AD	Great Basin UAPCD	Winter	2021	368.12	425.51	496.80	629.66	73.36	85.50	100.84	127.21
AD	Great Basin UAPCD	Winter	2022	368.04	425.50	496.75	630.05	73.35	85.52	100.88	127.36
AD	Great Basin UAPCD	Winter	2023	367.94	425.45	496.73	630.33	73.33	85.53	100.90	127.53
AD	Great Basin UAPCD	Winter	2024	367.88	425.41	496.72	630.51	73.32	85.55	100.92	127.69
AD	Great Basin UAPCD	Winter	2025	367.85	425.50	496.73	630.71	73.31	85.62	100.95	127.84
AD	Great Basin UAPCD	Winter	2026	367.89	425.66	496.68	630.94	73.33	85.71	100.97	127.99
AD	Great Basin UAPCD	Winter	2027	367.93	425.85	496.65	631.16	73.34	85.79	100.99	128.14
AD	Great Basin UAPCD	Winter	2028	367.95	426.02	496.61	631.41	73.35	85.87	101.00	128.27
AD	Great Basin UAPCD	Winter	2029	367.95	426.19	496.56	631.66	73.36	85.94	101.00	128.39

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Great Basin UAPCD	Winter	2030	367.96	426.33	496.51	631.90	73.36	86.00	101.00	128.51
AD	Great Basin UAPCD	Winter	2031	367.95	426.53	496.47	632.15	73.36	86.07	101.01	128.63
AD	Great Basin UAPCD	Winter	2032	367.95	426.69	496.45	632.40	73.37	86.13	101.01	128.74
AD	Great Basin UAPCD	Winter	2033	367.95	426.84	496.42	632.64	73.37	86.18	101.01	128.84
AD	Great Basin UAPCD	Winter	2034	367.94	426.96	496.41	632.84	73.38	86.23	101.02	128.94
AD	Great Basin UAPCD	Winter	2035	367.94	427.07	496.38	633.02	73.38	86.28	101.02	129.02
AD	Imperial County APCD	Annual	2010	333.06	382.51	456.21	575.78	72.99	86.06	100.65	125.48
AD	Imperial County APCD	Annual	2011	332.74	382.65	455.12	575.21	73.04	85.73	100.60	125.71
AD	Imperial County APCD	Annual	2012	333.03	383.36	454.93	575.79	73.14	85.50	100.60	125.97
AD	Imperial County APCD	Annual	2013	331.75	382.30	452.68	573.90	73.23	85.37	100.58	126.29
AD	Imperial County APCD	Annual	2014	331.98	382.91	452.61	574.66	73.31	85.29	100.59	126.61
AD	Imperial County APCD	Annual	2015	327.26	377.77	445.90	566.93	73.39	85.24	100.62	126.91
AD	Imperial County APCD	Annual	2016	327.36	378.16	445.86	567.56	73.41	85.18	100.65	127.20
AD	Imperial County APCD	Annual	2017	327.39	378.50	445.81	568.11	73.41	85.15	100.65	127.47
AD	Imperial County APCD	Annual	2018	327.40	378.76	445.76	568.55	73.39	85.16	100.65	127.71
AD	Imperial County APCD	Annual	2019	327.23	378.80	445.47	568.62	73.39	85.24	100.69	127.93
AD	Imperial County APCD	Annual	2020	327.21	379.01	445.41	568.92	73.41	85.34	100.76	128.13
AD	Imperial County APCD	Annual	2021	327.15	379.11	445.34	569.08	73.42	85.44	100.80	128.28
AD	Imperial County APCD	Annual	2022	327.03	379.19	445.26	569.20	73.39	85.52	100.84	128.40
AD	Imperial County APCD	Annual	2023	326.91	379.26	445.18	569.30	73.35	85.60	100.87	128.53
AD	Imperial County APCD	Annual	2024	329.56	382.51	448.87	574.16	73.32	85.66	100.89	128.63
AD	Imperial County APCD	Annual	2025	329.46	382.58	448.83	574.22	73.28	85.73	100.92	128.73
AD	Imperial County APCD	Annual	2026	329.42	382.67	448.77	574.27	73.26	85.80	100.94	128.82
AD	Imperial County APCD	Annual	2027	329.39	382.76	448.73	574.32	73.24	85.86	100.95	128.90
AD	Imperial County APCD	Annual	2028	329.37	382.86	448.71	574.39	73.23	85.92	100.96	128.97
AD	Imperial County APCD	Annual	2029	329.36	382.96	448.68	574.47	73.21	85.97	100.96	129.04
AD	Imperial County APCD	Annual	2030	329.34	383.07	448.66	574.55	73.20	86.02	100.97	129.10
AD	Imperial County APCD	Annual	2031	329.66	383.57	449.13	575.24	73.19	86.07	100.97	129.15
AD	Imperial County APCD	Annual	2032	329.64	383.67	449.12	575.31	73.18	86.11	100.97	129.21
AD	Imperial County APCD	Annual	2033	329.63	383.75	449.11	575.38	73.18	86.15	100.98	129.26
AD	Imperial County APCD	Annual	2034	329.63	383.82	449.11	575.45	73.18	86.19	100.98	129.30
AD	Imperial County APCD	Annual	2035	329.62	383.88	449.10	575.52	73.18	86.22	100.98	129.34
AD	Imperial County APCD	Summer	2010	341.49	391.06	467.38	590.08	72.99	86.06	100.65	125.48
AD	Imperial County APCD	Summer	2011	341.29	391.47	466.40	589.55	73.04	85.73	100.60	125.71
AD	Imperial County APCD	Summer	2012	341.64	392.37	466.28	590.14	73.14	85.50	100.60	125.97
AD	Imperial County APCD	Summer	2013	340.37	391.46	464.05	588.24	73.23	85.37	100.58	126.29
AD	Imperial County APCD	Summer	2014	340.64	392.20	464.05	589.07	73.31	85.29	100.59	126.61
AD	Imperial County APCD	Summer	2015	335.82	387.05	457.23	581.20	73.39	85.24	100.62	126.91
AD	Imperial County APCD	Summer	2016	335.93	387.53	457.23	581.90	73.41	85.18	100.65	127.20
AD	Imperial County APCD	Summer	2017	335.98	387.93	457.21	582.52	73.41	85.15	100.65	127.47
AD	Imperial County APCD	Summer	2018	335.99	388.23	457.17	583.00	73.39	85.16	100.65	127.71
AD	Imperial County APCD	Summer	2019	335.83	388.32	456.89	583.10	73.39	85.24	100.69	127.93
AD	Imperial County APCD	Summer	2020	335.80	388.55	456.83	583.42	73.41	85.34	100.76	128.13
AD	Imperial County APCD	Summer	2021	335.69	388.62	456.70	583.51	73.42	85.44	100.80	128.28
AD	Imperial County APCD	Summer	2022	335.56	388.70	456.60	583.62	73.39	85.52	100.84	128.40
AD	Imperial County APCD	Summer	2023	335.42	388.78	456.51	583.70	73.35	85.60	100.87	128.53
AD	Imperial County APCD	Summer	2024	338.10	392.07	460.23	588.61	73.32	85.66	100.89	128.63
AD	Imperial County APCD	Summer	2025	338.00	392.15	460.18	588.66	73.28	85.73	100.92	128.73
AD	Imperial County APCD	Summer	2026	337.95	392.24	460.11	588.69	73.26	85.80	100.94	128.82
AD	Imperial County APCD	Summer	2027	337.92	392.33	460.07	588.73	73.24	85.86	100.95	128.90
AD	Imperial County APCD	Summer	2028	337.91	392.44	460.04	588.80	73.23	85.92	100.96	128.97
AD	Imperial County APCD	Summer	2029	337.90	392.56	460.02	588.88	73.21	85.97	100.96	129.04
AD	Imperial County APCD	Summer	2030	337.89	392.68	460.00	588.96	73.20	86.02	100.97	129.10
AD	Imperial County APCD	Summer	2031	338.20	393.18	460.46	589.62	73.19	86.07	100.97	129.15

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Imperial County APCD	Summer	2032	338.17	393.28	460.45	589.69	73.18	86.11	100.97	129.21
AD	Imperial County APCD	Summer	2033	338.16	393.37	460.44	589.76	73.18	86.15	100.98	129.26
AD	Imperial County APCD	Summer	2034	338.16	393.45	460.44	589.84	73.18	86.19	100.98	129.30
AD	Imperial County APCD	Summer	2035	338.15	393.51	460.44	589.91	73.18	86.22	100.98	129.34
AD	Imperial County APCD	Winter	2010	314.45	363.62	431.53	544.19	72.99	86.06	100.65	125.48
AD	Imperial County APCD	Winter	2011	313.97	363.27	430.33	543.72	73.04	85.73	100.60	125.71
AD	Imperial County APCD	Winter	2012	314.13	363.55	430.01	544.27	73.14	85.50	100.60	125.97
AD	Imperial County APCD	Winter	2013	312.79	362.16	427.68	542.37	73.23	85.37	100.58	126.29
AD	Imperial County APCD	Winter	2014	312.93	362.45	427.46	542.97	73.31	85.29	100.59	126.61
AD	Imperial County APCD	Winter	2015	308.44	357.38	421.00	535.54	73.39	85.24	100.62	126.91
AD	Imperial County APCD	Winter	2016	308.50	357.58	420.87	536.02	73.41	85.18	100.65	127.20
AD	Imperial County APCD	Winter	2017	308.52	357.77	420.75	536.45	73.41	85.15	100.65	127.47
AD	Imperial County APCD	Winter	2018	308.53	357.93	420.67	536.81	73.39	85.16	100.65	127.71
AD	Imperial County APCD	Winter	2019	308.38	357.91	420.39	536.83	73.39	85.24	100.69	127.93
AD	Imperial County APCD	Winter	2020	308.36	358.06	420.34	537.09	73.41	85.34	100.76	128.13
AD	Imperial County APCD	Winter	2021	308.33	358.16	420.31	537.29	73.42	85.44	100.80	128.28
AD	Imperial County APCD	Winter	2022	308.24	358.22	420.27	537.43	73.39	85.52	100.84	128.40
AD	Imperial County APCD	Winter	2023	308.13	358.28	420.22	537.54	73.35	85.60	100.87	128.53
AD	Imperial County APCD	Winter	2024	310.65	361.33	423.72	542.17	73.32	85.66	100.89	128.63
AD	Imperial County APCD	Winter	2025	310.55	361.39	423.70	542.25	73.28	85.73	100.92	128.73
AD	Imperial County APCD	Winter	2026	310.52	361.47	423.66	542.33	73.26	85.80	100.94	128.82
AD	Imperial County APCD	Winter	2027	310.48	361.55	423.63	542.41	73.24	85.86	100.95	128.90
AD	Imperial County APCD	Winter	2028	310.46	361.64	423.61	542.49	73.23	85.92	100.96	128.97
AD	Imperial County APCD	Winter	2029	310.44	361.71	423.57	542.57	73.21	85.97	100.96	129.04
AD	Imperial County APCD	Winter	2030	310.42	361.79	423.54	542.64	73.20	86.02	100.97	129.10
AD	Imperial County APCD	Winter	2031	310.73	362.26	423.98	543.31	73.19	86.07	100.97	129.15
AD	Imperial County APCD	Winter	2032	310.71	362.33	423.97	543.39	73.18	86.11	100.97	129.21
AD	Imperial County APCD	Winter	2033	310.71	362.40	423.97	543.46	73.18	86.15	100.98	129.26
AD	Imperial County APCD	Winter	2034	310.70	362.46	423.96	543.52	73.18	86.19	100.98	129.30
AD	Imperial County APCD	Winter	2035	310.70	362.51	423.95	543.58	73.18	86.22	100.98	129.34
AD	Kern County APCD	Annual	2010	336.08	392.10	460.74	577.53	74.06	93.66	100.99	125.79
AD	Kern County APCD	Annual	2011	336.60	392.15	460.74	578.88	73.94	91.90	100.87	125.91
AD	Kern County APCD	Annual	2012	336.72	391.78	460.32	579.53	73.83	90.38	100.77	126.04
AD	Kern County APCD	Annual	2013	336.85	391.46	460.00	580.23	73.76	89.06	100.75	126.20
AD	Kern County APCD	Annual	2014	336.97	391.23	459.75	580.93	73.68	88.03	100.72	126.38
AD	Kern County APCD	Annual	2015	337.07	391.05	459.55	581.63	73.61	87.19	100.70	126.58
AD	Kern County APCD	Annual	2016	337.08	390.85	459.24	582.18	73.59	86.61	100.72	126.80
AD	Kern County APCD	Annual	2017	337.18	390.73	459.10	582.87	73.57	85.95	100.70	127.03
AD	Kern County APCD	Annual	2018	337.24	390.67	458.98	583.45	73.54	85.51	100.67	127.24
AD	Kern County APCD	Annual	2019	337.31	390.73	458.89	583.95	73.55	85.38	100.69	127.44
AD	Kern County APCD	Annual	2020	337.37	390.79	458.81	584.40	73.62	85.36	100.74	127.63
AD	Kern County APCD	Annual	2021	338.50	392.19	460.25	586.62	73.68	85.47	100.80	127.74
AD	Kern County APCD	Annual	2022	338.52	392.29	460.18	586.87	73.72	85.56	100.85	127.82
AD	Kern County APCD	Annual	2023	338.51	392.38	460.12	587.07	73.75	85.64	100.89	127.98
AD	Kern County APCD	Annual	2024	338.48	392.46	460.06	587.20	73.76	85.71	100.92	128.12
AD	Kern County APCD	Annual	2025	338.48	392.53	460.01	587.35	73.78	85.78	100.95	128.26
AD	Kern County APCD	Annual	2026	338.50	392.63	459.97	587.56	73.79	85.84	100.97	128.40
AD	Kern County APCD	Annual	2027	338.52	392.72	459.92	587.75	73.81	85.90	100.98	128.53
AD	Kern County APCD	Annual	2028	338.53	392.80	459.88	587.93	73.82	85.95	100.99	128.65
AD	Kern County APCD	Annual	2029	338.53	392.88	459.83	588.10	73.82	86.00	100.99	128.75
AD	Kern County APCD	Annual	2030	338.52	392.95	459.78	588.27	73.82	86.04	100.98	128.85
AD	Kern County APCD	Annual	2031	338.52	393.02	459.75	588.42	73.83	86.08	100.99	128.94
AD	Kern County APCD	Annual	2032	338.52	393.08	459.73	588.57	73.83	86.12	100.99	129.02
AD	Kern County APCD	Annual	2033	338.52	393.13	459.71	588.70	73.84	86.16	100.99	129.09

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Kern County APCD	Annual	2034	338.52	393.17	459.69	588.81	73.84	86.19	101.00	129.16
AD	Kern County APCD	Annual	2035	338.52	393.20	459.67	588.91	73.84	86.21	101.00	129.22
AD	Kern County APCD	Summer	2010	370.45	428.06	505.41	634.10	74.06	93.66	100.99	125.79
AD	Kern County APCD	Summer	2011	371.25	428.88	505.98	635.59	73.94	91.90	100.87	125.91
AD	Kern County APCD	Summer	2012	371.53	429.08	505.93	636.35	73.83	90.38	100.77	126.04
AD	Kern County APCD	Summer	2013	371.80	429.22	505.88	637.24	73.76	89.06	100.75	126.20
AD	Kern County APCD	Summer	2014	372.02	429.32	505.86	638.18	73.68	88.03	100.72	126.38
AD	Kern County APCD	Summer	2015	372.21	429.42	505.83	639.13	73.61	87.19	100.70	126.58
AD	Kern County APCD	Summer	2016	372.30	429.42	505.66	640.02	73.59	86.61	100.72	126.80
AD	Kern County APCD	Summer	2017	372.46	429.55	505.63	641.01	73.57	85.95	100.70	127.03
AD	Kern County APCD	Summer	2018	372.55	429.66	505.57	641.83	73.54	85.51	100.67	127.24
AD	Kern County APCD	Summer	2019	372.63	429.83	505.50	642.53	73.55	85.38	100.69	127.44
AD	Kern County APCD	Summer	2020	372.70	430.00	505.43	643.14	73.62	85.36	100.74	127.63
AD	Kern County APCD	Summer	2021	373.95	431.58	507.02	645.71	73.68	85.47	100.80	127.74
AD	Kern County APCD	Summer	2022	373.96	431.73	506.96	646.06	73.72	85.56	100.85	127.82
AD	Kern County APCD	Summer	2023	373.95	431.88	506.89	646.33	73.75	85.64	100.89	127.98
AD	Kern County APCD	Summer	2024	373.93	431.99	506.83	646.50	73.76	85.71	100.92	128.12
AD	Kern County APCD	Summer	2025	373.93	432.11	506.78	646.66	73.78	85.78	100.95	128.26
AD	Kern County APCD	Summer	2026	373.97	432.28	506.79	646.94	73.79	85.84	100.97	128.40
AD	Kern County APCD	Summer	2027	374.00	432.43	506.79	647.19	73.81	85.90	100.98	128.53
AD	Kern County APCD	Summer	2028	374.02	432.56	506.79	647.41	73.82	85.95	100.99	128.65
AD	Kern County APCD	Summer	2029	374.04	432.69	506.77	647.62	73.82	86.00	100.99	128.75
AD	Kern County APCD	Summer	2030	374.04	432.80	506.75	647.82	73.82	86.04	100.98	128.85
AD	Kern County APCD	Summer	2031	374.04	432.90	506.73	647.98	73.83	86.08	100.99	128.94
AD	Kern County APCD	Summer	2032	374.04	432.98	506.71	648.14	73.83	86.12	100.99	129.02
AD	Kern County APCD	Summer	2033	374.04	433.05	506.68	648.28	73.84	86.16	100.99	129.09
AD	Kern County APCD	Summer	2034	374.04	433.09	506.66	648.41	73.84	86.19	101.00	129.16
AD	Kern County APCD	Summer	2035	374.03	433.12	506.63	648.53	73.84	86.21	101.00	129.22
AD	Kern County APCD	Winter	2010	325.30	380.82	446.72	559.78	74.06	93.66	100.99	125.79
AD	Kern County APCD	Winter	2011	325.73	380.63	446.54	561.09	73.94	91.90	100.87	125.91
AD	Kern County APCD	Winter	2012	325.80	380.08	446.01	561.70	73.83	90.38	100.77	126.04
AD	Kern County APCD	Winter	2013	325.89	379.61	445.61	562.35	73.76	89.06	100.75	126.20
AD	Kern County APCD	Winter	2014	325.97	379.28	445.29	562.97	73.68	88.03	100.72	126.38
AD	Kern County APCD	Winter	2015	326.05	379.02	445.03	563.59	73.61	87.19	100.70	126.58
AD	Kern County APCD	Winter	2016	326.03	378.75	444.68	564.04	73.59	86.61	100.72	126.80
AD	Kern County APCD	Winter	2017	326.12	378.55	444.51	564.64	73.57	85.95	100.70	127.03
AD	Kern County APCD	Winter	2018	326.17	378.44	444.37	565.14	73.54	85.51	100.67	127.24
AD	Kern County APCD	Winter	2019	326.23	378.47	444.27	565.58	73.55	85.38	100.69	127.44
AD	Kern County APCD	Winter	2020	326.29	378.49	444.19	565.97	73.62	85.36	100.74	127.63
AD	Kern County APCD	Winter	2021	327.38	379.84	445.58	568.09	73.68	85.47	100.80	127.74
AD	Kern County APCD	Winter	2022	327.40	379.92	445.51	568.30	73.72	85.56	100.85	127.82
AD	Kern County APCD	Winter	2023	327.39	379.99	445.45	568.48	73.75	85.64	100.89	127.98
AD	Kern County APCD	Winter	2024	327.36	380.05	445.39	568.60	73.76	85.71	100.92	128.12
AD	Kern County APCD	Winter	2025	327.36	380.12	445.34	568.75	73.78	85.78	100.95	128.26
AD	Kern County APCD	Winter	2026	327.38	380.19	445.29	568.94	73.79	85.84	100.97	128.40
AD	Kern County APCD	Winter	2027	327.39	380.27	445.22	569.11	73.81	85.90	100.98	128.53
AD	Kern County APCD	Winter	2028	327.39	380.33	445.17	569.28	73.82	85.95	100.99	128.65
AD	Kern County APCD	Winter	2029	327.39	380.39	445.11	569.43	73.82	86.00	100.99	128.75
AD	Kern County APCD	Winter	2030	327.38	380.45	445.05	569.59	73.82	86.04	100.98	128.85
AD	Kern County APCD	Winter	2031	327.38	380.51	445.02	569.73	73.83	86.08	100.99	128.94
AD	Kern County APCD	Winter	2032	327.38	380.56	445.00	569.88	73.83	86.12	100.99	129.02
AD	Kern County APCD	Winter	2033	327.38	380.61	444.98	570.01	73.84	86.16	100.99	129.09
AD	Kern County APCD	Winter	2034	327.38	380.65	444.96	570.12	73.84	86.19	101.00	129.16
AD	Kern County APCD	Winter	2035	327.38	380.68	444.94	570.22	73.84	86.21	101.00	129.22

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Lake County APCD	Annual	2010	342.07	393.50	467.77	584.22	74.77	89.34	101.91	124.46
AD	Lake County APCD	Annual	2011	342.02	394.05	467.30	584.79	74.52	88.47	101.71	124.54
AD	Lake County APCD	Annual	2012	342.06	394.51	466.93	585.54	74.36	87.81	101.56	124.69
AD	Lake County APCD	Annual	2013	342.12	394.89	466.63	586.41	74.20	87.25	101.40	124.90
AD	Lake County APCD	Annual	2014	342.14	395.21	466.41	587.25	73.98	86.77	101.22	125.12
AD	Lake County APCD	Annual	2015	342.23	395.51	466.24	588.17	73.90	86.33	101.09	125.37
AD	Lake County APCD	Annual	2016	342.33	395.78	466.10	589.06	73.88	85.99	101.00	125.66
AD	Lake County APCD	Annual	2017	342.36	396.00	465.97	589.89	73.79	85.60	100.88	125.95
AD	Lake County APCD	Annual	2018	342.39	396.17	465.87	590.62	73.73	85.27	100.83	126.22
AD	Lake County APCD	Annual	2019	342.41	396.35	465.79	591.26	73.69	85.13	100.79	126.48
AD	Lake County APCD	Annual	2020	342.44	396.52	465.72	591.82	73.77	85.14	100.79	126.73
AD	Lake County APCD	Annual	2021	342.39	396.64	465.65	592.21	73.79	85.21	100.84	126.90
AD	Lake County APCD	Annual	2022	342.31	396.75	465.57	592.55	73.78	85.27	100.85	127.07
AD	Lake County APCD	Annual	2023	342.19	396.83	465.51	592.77	73.76	85.32	100.87	127.26
AD	Lake County APCD	Annual	2024	342.07	396.89	465.44	592.97	73.71	85.36	100.88	127.45
AD	Lake County APCD	Annual	2025	342.01	396.99	465.40	593.14	73.71	85.45	100.91	127.61
AD	Lake County APCD	Annual	2026	342.02	397.10	465.36	593.32	73.73	85.55	100.93	127.78
AD	Lake County APCD	Annual	2027	342.03	397.21	465.31	593.53	73.74	85.64	100.94	127.94
AD	Lake County APCD	Annual	2028	342.03	397.32	465.27	593.73	73.75	85.72	100.95	128.09
AD	Lake County APCD	Annual	2029	342.02	397.43	465.24	593.93	73.75	85.80	100.96	128.22
AD	Lake County APCD	Annual	2030	342.00	397.54	465.21	594.14	73.75	85.88	100.95	128.35
AD	Lake County APCD	Annual	2031	342.00	397.66	465.19	594.38	73.76	85.96	100.95	128.48
AD	Lake County APCD	Annual	2032	341.99	397.76	465.18	594.62	73.76	86.03	100.96	128.61
AD	Lake County APCD	Annual	2033	341.99	397.84	465.18	594.84	73.77	86.09	100.96	128.72
AD	Lake County APCD	Annual	2034	341.98	397.92	465.17	595.03	73.77	86.15	100.97	128.82
AD	Lake County APCD	Annual	2035	341.97	397.97	465.16	595.21	73.78	86.20	100.97	128.92
AD	Lake County APCD	Summer	2010	365.54	417.38	498.77	621.97	74.77	89.34	101.91	124.46
AD	Lake County APCD	Summer	2011	365.78	418.72	498.60	622.61	74.52	88.47	101.71	124.54
AD	Lake County APCD	Summer	2012	366.03	419.77	498.49	623.54	74.36	87.81	101.56	124.69
AD	Lake County APCD	Summer	2013	366.25	420.60	498.41	624.68	74.20	87.25	101.40	124.90
AD	Lake County APCD	Summer	2014	366.39	421.26	498.37	625.78	73.98	86.77	101.22	125.12
AD	Lake County APCD	Summer	2015	366.55	421.85	498.36	627.02	73.90	86.33	101.09	125.37
AD	Lake County APCD	Summer	2016	366.69	422.33	498.33	628.23	73.88	85.99	101.00	125.66
AD	Lake County APCD	Summer	2017	366.75	422.72	498.28	629.33	73.79	85.60	100.88	125.95
AD	Lake County APCD	Summer	2018	366.77	423.03	498.21	630.31	73.73	85.27	100.83	126.22
AD	Lake County APCD	Summer	2019	366.79	423.31	498.14	631.16	73.69	85.13	100.79	126.48
AD	Lake County APCD	Summer	2020	366.81	423.55	498.08	631.89	73.77	85.14	100.79	126.73
AD	Lake County APCD	Summer	2021	366.76	423.74	498.00	632.43	73.79	85.21	100.84	126.90
AD	Lake County APCD	Summer	2022	366.67	423.91	497.93	632.88	73.78	85.27	100.85	127.07
AD	Lake County APCD	Summer	2023	366.57	424.04	497.87	633.19	73.76	85.32	100.87	127.26
AD	Lake County APCD	Summer	2024	366.46	424.16	497.81	633.47	73.71	85.36	100.88	127.45
AD	Lake County APCD	Summer	2025	366.41	424.28	497.76	633.69	73.71	85.45	100.91	127.61
AD	Lake County APCD	Summer	2026	366.43	424.42	497.70	633.89	73.73	85.55	100.93	127.78
AD	Lake County APCD	Summer	2027	366.46	424.56	497.65	634.10	73.74	85.64	100.94	127.94
AD	Lake County APCD	Summer	2028	366.47	424.70	497.62	634.32	73.75	85.72	100.95	128.09
AD	Lake County APCD	Summer	2029	366.48	424.86	497.59	634.55	73.75	85.80	100.96	128.22
AD	Lake County APCD	Summer	2030	366.48	425.00	497.56	634.80	73.75	85.88	100.95	128.35
AD	Lake County APCD	Summer	2031	366.48	425.18	497.58	635.06	73.76	85.96	100.95	128.48
AD	Lake County APCD	Summer	2032	366.47	425.33	497.59	635.34	73.76	86.03	100.96	128.61
AD	Lake County APCD	Summer	2033	366.46	425.44	497.60	635.60	73.77	86.09	100.96	128.72
AD	Lake County APCD	Summer	2034	366.45	425.54	497.60	635.84	73.77	86.15	100.97	128.82
AD	Lake County APCD	Summer	2035	366.44	425.60	497.60	636.06	73.78	86.20	100.97	128.92
AD	Lake County APCD	Winter	2010	355.28	406.94	485.21	605.47	74.77	89.34	101.91	124.46
AD	Lake County APCD	Winter	2011	355.39	407.93	484.91	606.07	74.52	88.47	101.71	124.54

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Lake County APCD	Winter	2012	355.55	408.73	484.69	606.93	74.36	87.81	101.56	124.69
AD	Lake County APCD	Winter	2013	355.70	409.36	484.52	607.95	74.20	87.25	101.40	124.90
AD	Lake County APCD	Winter	2014	355.79	409.87	484.39	608.93	73.98	86.77	101.22	125.12
AD	Lake County APCD	Winter	2015	355.91	410.33	484.31	610.03	73.90	86.33	101.09	125.37
AD	Lake County APCD	Winter	2016	356.04	410.72	484.24	611.10	73.88	85.99	101.00	125.66
AD	Lake County APCD	Winter	2017	356.08	411.04	484.15	612.08	73.79	85.60	100.88	125.95
AD	Lake County APCD	Winter	2018	356.11	411.29	484.07	612.96	73.73	85.27	100.83	126.22
AD	Lake County APCD	Winter	2019	356.13	411.52	484.00	613.71	73.69	85.13	100.79	126.48
AD	Lake County APCD	Winter	2020	356.15	411.73	483.93	614.36	73.77	85.14	100.79	126.73
AD	Lake County APCD	Winter	2021	356.11	411.89	483.85	614.84	73.79	85.21	100.84	126.90
AD	Lake County APCD	Winter	2022	356.02	412.03	483.78	615.25	73.78	85.27	100.85	127.07
AD	Lake County APCD	Winter	2023	355.91	412.15	483.72	615.52	73.76	85.32	100.87	127.26
AD	Lake County APCD	Winter	2024	355.79	412.24	483.66	615.76	73.71	85.36	100.88	127.45
AD	Lake County APCD	Winter	2025	355.74	412.35	483.61	615.96	73.71	85.45	100.91	127.61
AD	Lake County APCD	Winter	2026	355.76	412.47	483.56	616.15	73.73	85.55	100.93	127.78
AD	Lake County APCD	Winter	2027	355.78	412.60	483.51	616.36	73.74	85.64	100.94	127.94
AD	Lake County APCD	Winter	2028	355.78	412.73	483.47	616.58	73.75	85.72	100.95	128.09
AD	Lake County APCD	Winter	2029	355.78	412.87	483.44	616.79	73.75	85.80	100.96	128.22
AD	Lake County APCD	Winter	2030	355.78	412.99	483.41	617.02	73.75	85.88	100.95	128.35
AD	Lake County APCD	Winter	2031	355.77	413.15	483.42	617.27	73.76	85.96	100.95	128.48
AD	Lake County APCD	Winter	2032	355.77	413.27	483.42	617.53	73.76	86.03	100.96	128.61
AD	Lake County APCD	Winter	2033	355.76	413.37	483.42	617.77	73.77	86.09	100.96	128.72
AD	Lake County APCD	Winter	2034	355.75	413.46	483.42	618.00	73.77	86.15	100.97	128.82
AD	Lake County APCD	Winter	2035	355.74	413.52	483.42	618.20	73.78	86.20	100.97	128.92
AD	Lassen County APCD	Annual	2010	366.63	428.55	501.21	626.78	75.03	93.49	101.72	124.85
AD	Lassen County APCD	Annual	2011	366.52	427.89	500.66	627.52	74.78	92.04	101.44	124.99
AD	Lassen County APCD	Annual	2012	366.51	427.37	500.23	628.37	74.62	90.87	101.30	125.17
AD	Lassen County APCD	Annual	2013	366.45	426.93	499.88	629.27	74.35	89.90	101.18	125.38
AD	Lassen County APCD	Annual	2014	366.47	426.50	499.61	630.13	74.18	88.91	101.02	125.60
AD	Lassen County APCD	Annual	2015	366.54	426.15	499.39	631.03	74.11	88.06	100.90	125.84
AD	Lassen County APCD	Annual	2016	366.63	425.82	499.23	631.85	74.09	87.24	100.87	126.11
AD	Lassen County APCD	Annual	2017	366.62	425.58	499.09	632.62	73.95	86.60	100.80	126.37
AD	Lassen County APCD	Annual	2018	366.60	425.38	498.97	633.29	73.84	86.10	100.79	126.62
AD	Lassen County APCD	Annual	2019	366.62	425.22	498.88	633.88	73.81	85.71	100.76	126.84
AD	Lassen County APCD	Annual	2020	366.64	425.15	498.80	634.35	73.88	85.60	100.80	127.07
AD	Lassen County APCD	Annual	2021	366.58	425.05	498.73	634.71	73.90	85.58	100.85	127.25
AD	Lassen County APCD	Annual	2022	366.46	424.97	498.64	635.00	73.88	85.58	100.88	127.38
AD	Lassen County APCD	Annual	2023	366.37	424.91	498.56	635.19	73.88	85.59	100.91	127.55
AD	Lassen County APCD	Annual	2024	366.23	424.85	498.49	635.34	73.85	85.60	100.93	127.70
AD	Lassen County APCD	Annual	2025	366.17	424.91	498.44	635.47	73.85	85.67	100.96	127.84
AD	Lassen County APCD	Annual	2026	366.19	425.03	498.40	635.65	73.87	85.75	100.99	127.99
AD	Lassen County APCD	Annual	2027	366.19	425.15	498.34	635.84	73.88	85.83	101.00	128.13
AD	Lassen County APCD	Annual	2028	366.19	425.28	498.29	636.04	73.89	85.91	101.01	128.26
AD	Lassen County APCD	Annual	2029	366.17	425.41	498.23	636.23	73.89	85.98	101.01	128.38
AD	Lassen County APCD	Annual	2030	366.16	425.52	498.17	636.41	73.89	86.04	101.01	128.49
AD	Lassen County APCD	Annual	2031	366.15	425.65	498.14	636.65	73.90	86.10	101.01	128.61
AD	Lassen County APCD	Annual	2032	366.15	425.76	498.12	636.90	73.90	86.16	101.01	128.73
AD	Lassen County APCD	Annual	2033	366.15	425.86	498.09	637.12	73.91	86.22	101.02	128.83
AD	Lassen County APCD	Annual	2034	366.14	425.94	498.07	637.31	73.91	86.26	101.02	128.92
AD	Lassen County APCD	Annual	2035	366.13	426.00	498.05	637.48	73.92	86.30	101.02	129.01
AD	Lassen County APCD	Summer	2010	385.95	446.82	526.65	657.83	75.03	93.49	101.72	124.85
AD	Lassen County APCD	Summer	2011	386.07	446.99	526.29	658.69	74.78	92.04	101.44	124.99
AD	Lassen County APCD	Summer	2012	386.23	447.10	526.01	659.72	74.62	90.87	101.30	125.17
AD	Lassen County APCD	Summer	2013	386.31	447.13	525.80	660.84	74.35	89.90	101.18	125.38

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Lassen County APCD	Summer	2014	386.41	447.10	525.66	661.92	74.18	88.91	101.02	125.60
AD	Lassen County APCD	Summer	2015	386.54	447.07	525.57	663.05	74.11	88.06	100.90	125.84
AD	Lassen County APCD	Summer	2016	386.67	447.02	525.50	664.09	74.09	87.24	100.87	126.11
AD	Lassen County APCD	Summer	2017	386.67	446.98	525.44	665.06	73.95	86.60	100.80	126.37
AD	Lassen County APCD	Summer	2018	386.66	446.94	525.37	665.90	73.84	86.10	100.79	126.62
AD	Lassen County APCD	Summer	2019	386.67	446.92	525.31	666.64	73.81	85.71	100.76	126.84
AD	Lassen County APCD	Summer	2020	386.68	446.95	525.25	667.23	73.88	85.60	100.80	127.07
AD	Lassen County APCD	Summer	2021	386.62	446.96	525.18	667.70	73.90	85.58	100.85	127.25
AD	Lassen County APCD	Summer	2022	386.49	446.97	525.10	668.07	73.88	85.58	100.88	127.38
AD	Lassen County APCD	Summer	2023	386.41	446.99	525.03	668.33	73.88	85.59	100.91	127.55
AD	Lassen County APCD	Summer	2024	386.28	447.01	524.97	668.54	73.85	85.60	100.93	127.70
AD	Lassen County APCD	Summer	2025	386.22	447.11	524.92	668.73	73.85	85.67	100.96	127.84
AD	Lassen County APCD	Summer	2026	386.24	447.28	524.88	668.93	73.87	85.75	100.99	127.99
AD	Lassen County APCD	Summer	2027	386.26	447.44	524.83	669.14	73.88	85.83	101.00	128.13
AD	Lassen County APCD	Summer	2028	386.27	447.61	524.79	669.37	73.89	85.91	101.01	128.26
AD	Lassen County APCD	Summer	2029	386.27	447.79	524.74	669.59	73.89	85.98	101.01	128.38
AD	Lassen County APCD	Summer	2030	386.26	447.96	524.69	669.81	73.89	86.04	101.01	128.49
AD	Lassen County APCD	Summer	2031	386.26	448.12	524.66	670.10	73.90	86.10	101.01	128.61
AD	Lassen County APCD	Summer	2032	386.26	448.27	524.64	670.38	73.90	86.16	101.01	128.73
AD	Lassen County APCD	Summer	2033	386.25	448.40	524.62	670.64	73.91	86.22	101.02	128.83
AD	Lassen County APCD	Summer	2034	386.25	448.50	524.60	670.87	73.91	86.26	101.02	128.92
AD	Lassen County APCD	Summer	2035	386.24	448.57	524.58	671.07	73.92	86.30	101.02	129.01
AD	Lassen County APCD	Winter	2010	359.88	422.17	492.33	615.94	75.03	93.49	101.72	124.85
AD	Lassen County APCD	Winter	2011	359.69	421.22	491.71	616.64	74.78	92.04	101.44	124.99
AD	Lassen County APCD	Winter	2012	359.63	420.48	491.23	617.43	74.62	90.87	101.30	125.17
AD	Lassen County APCD	Winter	2013	359.52	419.89	490.84	618.25	74.35	89.90	101.18	125.38
AD	Lassen County APCD	Winter	2014	359.51	419.32	490.52	619.04	74.18	88.91	101.02	125.60
AD	Lassen County APCD	Winter	2015	359.57	418.85	490.26	619.85	74.11	88.06	100.90	125.84
AD	Lassen County APCD	Winter	2016	359.64	418.43	490.06	620.60	74.09	87.24	100.87	126.11
AD	Lassen County APCD	Winter	2017	359.62	418.11	489.89	621.30	73.95	86.60	100.80	126.37
AD	Lassen County APCD	Winter	2018	359.60	417.85	489.77	621.91	73.84	86.10	100.79	126.62
AD	Lassen County APCD	Winter	2019	359.62	417.65	489.66	622.44	73.81	85.71	100.76	126.84
AD	Lassen County APCD	Winter	2020	359.65	417.54	489.58	622.88	73.88	85.60	100.80	127.07
AD	Lassen County APCD	Winter	2021	359.59	417.41	489.50	623.21	73.90	85.58	100.85	127.25
AD	Lassen County APCD	Winter	2022	359.47	417.29	489.40	623.46	73.88	85.58	100.88	127.38
AD	Lassen County APCD	Winter	2023	359.38	417.21	489.33	623.63	73.88	85.59	100.91	127.55
AD	Lassen County APCD	Winter	2024	359.24	417.11	489.25	623.75	73.85	85.60	100.93	127.70
AD	Lassen County APCD	Winter	2025	359.18	417.16	489.20	623.86	73.85	85.67	100.96	127.84
AD	Lassen County APCD	Winter	2026	359.19	417.27	489.16	624.04	73.87	85.75	100.99	127.99
AD	Lassen County APCD	Winter	2027	359.18	417.38	489.10	624.22	73.88	85.83	101.00	128.13
AD	Lassen County APCD	Winter	2028	359.18	417.49	489.05	624.41	73.89	85.91	101.01	128.26
AD	Lassen County APCD	Winter	2029	359.16	417.59	488.98	624.59	73.89	85.98	101.01	128.38
AD	Lassen County APCD	Winter	2030	359.14	417.70	488.92	624.75	73.89	86.04	101.01	128.49
AD	Lassen County APCD	Winter	2031	359.14	417.80	488.89	624.98	73.90	86.10	101.01	128.61
AD	Lassen County APCD	Winter	2032	359.14	417.90	488.86	625.22	73.90	86.16	101.01	128.73
AD	Lassen County APCD	Winter	2033	359.13	417.99	488.84	625.43	73.91	86.22	101.02	128.83
AD	Lassen County APCD	Winter	2034	359.13	418.06	488.82	625.61	73.91	86.26	101.02	128.92
AD	Lassen County APCD	Winter	2035	359.12	418.13	488.80	625.76	73.92	86.30	101.02	129.01
AD	Mariposa County APCD	Annual	2010	354.50	410.51	485.83	607.63	74.37	89.51	102.09	125.68
AD	Mariposa County APCD	Annual	2011	354.40	410.55	485.11	608.19	74.22	88.77	101.86	125.71
AD	Mariposa County APCD	Annual	2012	354.31	410.56	484.54	608.86	74.03	88.15	101.71	125.79
AD	Mariposa County APCD	Annual	2013	354.36	410.52	484.09	609.60	73.97	87.50	101.57	125.92
AD	Mariposa County APCD	Annual	2014	354.33	410.46	483.72	610.33	73.82	86.87	101.30	126.07
AD	Mariposa County APCD	Annual	2015	354.43	410.47	483.42	611.09	73.83	86.45	101.16	126.26

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Mariposa County APCD	Annual	2016	354.48	410.49	483.19	611.81	73.80	86.11	101.08	126.48
AD	Mariposa County APCD	Annual	2017	354.51	410.47	483.00	612.49	73.77	85.68	101.00	126.70
AD	Mariposa County APCD	Annual	2018	354.51	410.48	482.83	613.06	73.71	85.43	100.90	126.90
AD	Mariposa County APCD	Annual	2019	354.47	410.55	482.70	613.53	73.61	85.35	100.87	127.11
AD	Mariposa County APCD	Annual	2020	354.41	410.60	482.59	613.96	73.65	85.32	100.89	127.30
AD	Mariposa County APCD	Annual	2021	354.35	410.60	482.48	614.20	73.67	85.35	100.93	127.34
AD	Mariposa County APCD	Annual	2022	354.26	410.63	482.35	614.40	73.67	85.40	100.94	127.39
AD	Mariposa County APCD	Annual	2023	354.08	410.62	482.24	614.56	73.64	85.42	100.94	127.56
AD	Mariposa County APCD	Annual	2024	353.92	410.60	482.16	614.67	73.60	85.46	100.96	127.71
AD	Mariposa County APCD	Annual	2025	353.86	410.66	482.10	614.79	73.60	85.52	100.99	127.87
AD	Mariposa County APCD	Annual	2026	353.86	410.81	482.03	614.95	73.62	85.62	101.00	128.02
AD	Mariposa County APCD	Annual	2027	353.86	410.93	481.97	615.12	73.63	85.71	101.01	128.16
AD	Mariposa County APCD	Annual	2028	353.85	411.06	481.91	615.29	73.64	85.79	101.02	128.29
AD	Mariposa County APCD	Annual	2029	353.83	411.19	481.84	615.47	73.64	85.87	101.02	128.41
AD	Mariposa County APCD	Annual	2030	353.81	411.31	481.77	615.62	73.64	85.94	101.01	128.52
AD	Mariposa County APCD	Annual	2031	353.81	411.44	481.74	615.85	73.65	86.01	101.01	128.65
AD	Mariposa County APCD	Annual	2032	353.80	411.54	481.71	616.07	73.65	86.08	101.02	128.76
AD	Mariposa County APCD	Annual	2033	353.80	411.63	481.68	616.27	73.66	86.13	101.02	128.86
AD	Mariposa County APCD	Annual	2034	353.79	411.70	481.65	616.45	73.66	86.19	101.02	128.96
AD	Mariposa County APCD	Annual	2035	353.78	411.77	481.63	616.61	73.67	86.23	101.02	129.05
AD	Mariposa County APCD	Summer	2010	383.75	439.08	524.10	654.73	74.37	89.51	102.09	125.68
AD	Mariposa County APCD	Summer	2011	383.98	440.10	523.79	655.48	74.22	88.77	101.86	125.71
AD	Mariposa County APCD	Summer	2012	384.14	440.90	523.54	656.41	74.03	88.15	101.71	125.79
AD	Mariposa County APCD	Summer	2013	384.37	441.53	523.38	657.50	73.97	87.50	101.57	125.92
AD	Mariposa County APCD	Summer	2014	384.48	442.00	523.29	658.57	73.82	86.87	101.30	126.07
AD	Mariposa County APCD	Summer	2015	384.66	442.44	523.21	659.71	73.83	86.45	101.16	126.26
AD	Mariposa County APCD	Summer	2016	384.77	442.80	523.13	660.80	73.80	86.11	101.08	126.48
AD	Mariposa County APCD	Summer	2017	384.83	443.08	523.05	661.80	73.77	85.68	101.00	126.70
AD	Mariposa County APCD	Summer	2018	384.83	443.32	522.95	662.65	73.71	85.43	100.90	126.90
AD	Mariposa County APCD	Summer	2019	384.80	443.56	522.85	663.34	73.61	85.35	100.87	127.11
AD	Mariposa County APCD	Summer	2020	384.74	443.78	522.76	663.97	73.65	85.32	100.89	127.30
AD	Mariposa County APCD	Summer	2021	384.68	443.93	522.65	664.40	73.67	85.35	100.93	127.34
AD	Mariposa County APCD	Summer	2022	384.58	444.09	522.56	664.75	73.67	85.40	100.94	127.39
AD	Mariposa County APCD	Summer	2023	384.42	444.21	522.47	665.02	73.64	85.42	100.94	127.56
AD	Mariposa County APCD	Summer	2024	384.29	444.31	522.40	665.20	73.60	85.46	100.96	127.71
AD	Mariposa County APCD	Summer	2025	384.24	444.44	522.34	665.37	73.60	85.52	100.99	127.87
AD	Mariposa County APCD	Summer	2026	384.25	444.68	522.29	665.56	73.62	85.62	101.00	128.02
AD	Mariposa County APCD	Summer	2027	384.26	444.88	522.24	665.76	73.63	85.71	101.01	128.16
AD	Mariposa County APCD	Summer	2028	384.26	445.08	522.20	665.98	73.64	85.79	101.02	128.29
AD	Mariposa County APCD	Summer	2029	384.26	445.29	522.15	666.20	73.64	85.87	101.02	128.41
AD	Mariposa County APCD	Summer	2030	384.25	445.48	522.11	666.42	73.64	85.94	101.01	128.52
AD	Mariposa County APCD	Summer	2031	384.25	445.67	522.08	666.71	73.65	86.01	101.01	128.65
AD	Mariposa County APCD	Summer	2032	384.25	445.81	522.06	667.00	73.65	86.08	101.02	128.76
AD	Mariposa County APCD	Summer	2033	384.25	445.93	522.04	667.26	73.66	86.13	101.02	128.86
AD	Mariposa County APCD	Summer	2034	384.24	446.03	522.02	667.49	73.66	86.19	101.02	128.96
AD	Mariposa County APCD	Summer	2035	384.23	446.10	521.99	667.70	73.67	86.23	101.02	129.05
AD	Mariposa County APCD	Winter	2010	347.30	403.48	476.41	596.03	74.37	89.51	102.09	125.68
AD	Mariposa County APCD	Winter	2011	347.12	403.27	475.59	596.55	74.22	88.77	101.86	125.71
AD	Mariposa County APCD	Winter	2012	346.97	403.10	474.94	597.15	74.03	88.15	101.71	125.79
AD	Mariposa County APCD	Winter	2013	346.97	402.89	474.42	597.81	73.97	87.50	101.57	125.92
AD	Mariposa County APCD	Winter	2014	346.91	402.69	473.97	598.45	73.82	86.87	101.30	126.07
AD	Mariposa County APCD	Winter	2015	346.99	402.60	473.63	599.12	73.83	86.45	101.16	126.26
AD	Mariposa County APCD	Winter	2016	347.02	402.54	473.35	599.75	73.80	86.11	101.08	126.48
AD	Mariposa County APCD	Winter	2017	347.05	402.44	473.14	600.35	73.77	85.68	101.00	126.70

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Mariposa County APCD	Winter	2018	347.05	402.40	472.95	600.86	73.71	85.43	100.90	126.90
AD	Mariposa County APCD	Winter	2019	347.00	402.43	472.82	601.27	73.61	85.35	100.87	127.11
AD	Mariposa County APCD	Winter	2020	346.95	402.43	472.71	601.65	73.65	85.32	100.89	127.30
AD	Mariposa County APCD	Winter	2021	346.89	402.39	472.58	601.84	73.67	85.35	100.93	127.34
AD	Mariposa County APCD	Winter	2022	346.79	402.39	472.45	602.00	73.67	85.40	100.94	127.39
AD	Mariposa County APCD	Winter	2023	346.62	402.35	472.34	602.13	73.64	85.42	100.94	127.56
AD	Mariposa County APCD	Winter	2024	346.44	402.31	472.26	602.23	73.60	85.46	100.96	127.71
AD	Mariposa County APCD	Winter	2025	346.39	402.35	472.20	602.34	73.60	85.52	100.99	127.87
AD	Mariposa County APCD	Winter	2026	346.39	402.47	472.12	602.49	73.62	85.62	101.00	128.02
AD	Mariposa County APCD	Winter	2027	346.37	402.58	472.05	602.65	73.63	85.71	101.01	128.16
AD	Mariposa County APCD	Winter	2028	346.37	402.69	472.00	602.81	73.64	85.79	101.02	128.29
AD	Mariposa County APCD	Winter	2029	346.35	402.80	471.92	602.98	73.64	85.87	101.02	128.41
AD	Mariposa County APCD	Winter	2030	346.32	402.90	471.85	603.12	73.64	85.94	101.01	128.52
AD	Mariposa County APCD	Winter	2031	346.31	403.01	471.81	603.33	73.65	86.01	101.01	128.65
AD	Mariposa County APCD	Winter	2032	346.31	403.10	471.78	603.54	73.65	86.08	101.02	128.76
AD	Mariposa County APCD	Winter	2033	346.30	403.18	471.75	603.72	73.66	86.13	101.02	128.86
AD	Mariposa County APCD	Winter	2034	346.29	403.25	471.72	603.89	73.66	86.19	101.02	128.96
AD	Mariposa County APCD	Winter	2035	346.28	403.31	471.70	604.03	73.67	86.23	101.02	129.05
AD	Mendocino County APCD	Annual	2010	328.61	379.07	451.10	562.37	72.79	86.74	100.94	123.79
AD	Mendocino County APCD	Annual	2011	328.64	379.33	450.55	563.04	72.74	86.20	100.83	123.99
AD	Mendocino County APCD	Annual	2012	328.71	379.62	450.13	563.82	72.71	85.88	100.79	124.25
AD	Mendocino County APCD	Annual	2013	328.81	379.86	449.78	564.69	72.69	85.57	100.77	124.53
AD	Mendocino County APCD	Annual	2014	328.91	380.10	449.50	565.53	72.66	85.38	100.70	124.83
AD	Mendocino County APCD	Annual	2015	329.05	380.33	449.28	566.42	72.71	85.22	100.68	125.15
AD	Mendocino County APCD	Annual	2016	329.20	380.54	449.10	567.26	72.78	85.05	100.67	125.47
AD	Mendocino County APCD	Annual	2017	329.29	380.71	448.96	568.05	72.79	84.90	100.65	125.80
AD	Mendocino County APCD	Annual	2018	329.36	380.86	448.84	568.75	72.80	84.79	100.64	126.10
AD	Mendocino County APCD	Annual	2019	329.41	381.04	448.75	569.35	72.81	84.81	100.66	126.39
AD	Mendocino County APCD	Annual	2020	329.46	381.20	448.68	569.87	72.90	84.89	100.71	126.66
AD	Mendocino County APCD	Annual	2021	329.47	381.32	448.60	570.28	72.95	85.00	100.77	126.88
AD	Mendocino County APCD	Annual	2022	329.44	381.41	448.52	570.63	72.98	85.10	100.81	127.08
AD	Mendocino County APCD	Annual	2023	329.37	381.48	448.45	570.90	72.99	85.18	100.85	127.29
AD	Mendocino County APCD	Annual	2024	329.30	381.52	448.37	571.09	72.98	85.26	100.87	127.48
AD	Mendocino County APCD	Annual	2025	329.26	381.61	448.33	571.27	72.99	85.36	100.90	127.65
AD	Mendocino County APCD	Annual	2026	329.27	381.77	448.27	571.47	73.01	85.47	100.93	127.81
AD	Mendocino County APCD	Annual	2027	329.27	381.91	448.22	571.68	73.03	85.57	100.94	127.97
AD	Mendocino County APCD	Annual	2028	329.27	382.05	448.17	571.89	73.03	85.66	100.96	128.11
AD	Mendocino County APCD	Annual	2029	329.25	382.19	448.10	572.09	73.04	85.75	100.95	128.24
AD	Mendocino County APCD	Annual	2030	329.24	382.33	448.03	572.30	73.04	85.83	100.95	128.37
AD	Mendocino County APCD	Annual	2031	329.23	382.47	448.00	572.53	73.05	85.91	100.96	128.50
AD	Mendocino County APCD	Annual	2032	329.23	382.60	447.97	572.77	73.06	85.98	100.96	128.62
AD	Mendocino County APCD	Annual	2033	329.22	382.71	447.95	572.98	73.06	86.05	100.96	128.73
AD	Mendocino County APCD	Annual	2034	329.22	382.81	447.93	573.17	73.07	86.11	100.97	128.83
AD	Mendocino County APCD	Annual	2035	329.21	382.89	447.91	573.33	73.07	86.16	100.97	128.93
AD	Mendocino County APCD	Summer	2010	335.50	385.93	460.22	573.75	72.79	86.74	100.94	123.79
AD	Mendocino County APCD	Summer	2011	335.60	386.40	459.76	574.44	72.74	86.20	100.83	123.99
AD	Mendocino County APCD	Summer	2012	335.73	386.85	459.39	575.26	72.71	85.88	100.79	124.25
AD	Mendocino County APCD	Summer	2013	335.88	387.22	459.11	576.18	72.69	85.57	100.77	124.53
AD	Mendocino County APCD	Summer	2014	336.01	387.57	458.87	577.08	72.66	85.38	100.70	124.83
AD	Mendocino County APCD	Summer	2015	336.17	387.90	458.70	578.04	72.71	85.22	100.68	125.15
AD	Mendocino County APCD	Summer	2016	336.34	388.18	458.56	578.96	72.78	85.05	100.67	125.47
AD	Mendocino County APCD	Summer	2017	336.43	388.42	458.43	579.82	72.79	84.90	100.65	125.80
AD	Mendocino County APCD	Summer	2018	336.49	388.62	458.33	580.57	72.80	84.79	100.64	126.10
AD	Mendocino County APCD	Summer	2019	336.54	388.83	458.25	581.22	72.81	84.81	100.66	126.39

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Mendocino County APCD	Summer	2020	336.59	389.03	458.18	581.78	72.90	84.89	100.71	126.66
AD	Mendocino County APCD	Summer	2021	336.60	389.18	458.11	582.21	72.95	85.00	100.77	126.88
AD	Mendocino County APCD	Summer	2022	336.57	389.31	458.03	582.59	72.98	85.10	100.81	127.08
AD	Mendocino County APCD	Summer	2023	336.50	389.40	457.96	582.88	72.99	85.18	100.85	127.29
AD	Mendocino County APCD	Summer	2024	336.43	389.46	457.89	583.08	72.98	85.26	100.87	127.48
AD	Mendocino County APCD	Summer	2025	336.39	389.57	457.85	583.26	72.99	85.36	100.90	127.65
AD	Mendocino County APCD	Summer	2026	336.40	389.75	457.79	583.47	73.01	85.47	100.93	127.81
AD	Mendocino County APCD	Summer	2027	336.41	389.91	457.74	583.68	73.03	85.57	100.94	127.97
AD	Mendocino County APCD	Summer	2028	336.41	390.07	457.70	583.89	73.03	85.66	100.96	128.11
AD	Mendocino County APCD	Summer	2029	336.40	390.24	457.63	584.11	73.04	85.75	100.95	128.24
AD	Mendocino County APCD	Summer	2030	336.39	390.39	457.57	584.32	73.04	85.83	100.95	128.37
AD	Mendocino County APCD	Summer	2031	336.39	390.55	457.53	584.57	73.05	85.91	100.96	128.50
AD	Mendocino County APCD	Summer	2032	336.38	390.69	457.51	584.82	73.06	85.98	100.96	128.62
AD	Mendocino County APCD	Summer	2033	336.38	390.81	457.48	585.05	73.06	86.05	100.96	128.73
AD	Mendocino County APCD	Summer	2034	336.37	390.92	457.46	585.25	73.07	86.11	100.97	128.83
AD	Mendocino County APCD	Summer	2035	336.36	391.01	457.44	585.42	73.07	86.16	100.97	128.93
AD	Mendocino County APCD	Winter	2010	325.36	375.84	446.80	556.99	72.79	86.74	100.94	123.79
AD	Mendocino County APCD	Winter	2011	325.35	375.99	446.21	557.66	72.74	86.20	100.83	123.99
AD	Mendocino County APCD	Winter	2012	325.39	376.21	445.75	558.43	72.71	85.88	100.79	124.25
AD	Mendocino County APCD	Winter	2013	325.47	376.38	445.38	559.27	72.69	85.57	100.77	124.53
AD	Mendocino County APCD	Winter	2014	325.56	376.57	445.08	560.08	72.66	85.38	100.70	124.83
AD	Mendocino County APCD	Winter	2015	325.69	376.77	444.84	560.93	72.71	85.22	100.68	125.15
AD	Mendocino County APCD	Winter	2016	325.84	376.93	444.64	561.74	72.78	85.05	100.67	125.47
AD	Mendocino County APCD	Winter	2017	325.92	377.08	444.49	562.50	72.79	84.90	100.65	125.80
AD	Mendocino County APCD	Winter	2018	325.99	377.20	444.36	563.17	72.80	84.79	100.64	126.10
AD	Mendocino County APCD	Winter	2019	326.04	377.36	444.27	563.75	72.81	84.81	100.66	126.39
AD	Mendocino County APCD	Winter	2020	326.10	377.51	444.20	564.26	72.90	84.89	100.71	126.66
AD	Mendocino County APCD	Winter	2021	326.10	377.61	444.12	564.65	72.95	85.00	100.77	126.88
AD	Mendocino County APCD	Winter	2022	326.08	377.69	444.04	564.99	72.98	85.10	100.81	127.08
AD	Mendocino County APCD	Winter	2023	326.01	377.75	443.96	565.25	72.99	85.18	100.85	127.29
AD	Mendocino County APCD	Winter	2024	325.93	377.77	443.88	565.44	72.98	85.26	100.87	127.48
AD	Mendocino County APCD	Winter	2025	325.89	377.86	443.83	565.61	72.99	85.36	100.90	127.65
AD	Mendocino County APCD	Winter	2026	325.90	378.00	443.78	565.81	73.01	85.47	100.93	127.81
AD	Mendocino County APCD	Winter	2027	325.90	378.13	443.72	566.01	73.03	85.57	100.94	127.97
AD	Mendocino County APCD	Winter	2028	325.90	378.27	443.68	566.22	73.03	85.66	100.96	128.11
AD	Mendocino County APCD	Winter	2029	325.88	378.40	443.60	566.42	73.04	85.75	100.95	128.24
AD	Mendocino County APCD	Winter	2030	325.86	378.53	443.54	566.62	73.04	85.83	100.95	128.37
AD	Mendocino County APCD	Winter	2031	325.86	378.66	443.50	566.86	73.05	85.91	100.96	128.50
AD	Mendocino County APCD	Winter	2032	325.85	378.78	443.47	567.09	73.06	85.98	100.96	128.62
AD	Mendocino County APCD	Winter	2033	325.85	378.89	443.45	567.29	73.06	86.05	100.96	128.73
AD	Mendocino County APCD	Winter	2034	325.84	378.99	443.43	567.47	73.07	86.11	100.97	128.83
AD	Mendocino County APCD	Winter	2035	325.83	379.07	443.41	567.63	73.07	86.16	100.97	128.93
AD	Modoc County APCD	Annual	2010	408.79	488.59	560.53	697.57	74.87	100.48	102.62	125.01
AD	Modoc County APCD	Annual	2011	408.63	485.64	559.72	698.46	74.72	97.48	102.30	125.08
AD	Modoc County APCD	Annual	2012	408.43	483.59	559.09	699.50	74.39	95.30	102.13	125.22
AD	Modoc County APCD	Annual	2013	408.39	482.13	558.57	700.69	74.23	93.74	101.93	125.38
AD	Modoc County APCD	Annual	2014	408.30	480.62	558.13	701.74	73.97	91.96	101.58	125.59
AD	Modoc County APCD	Annual	2015	408.25	479.23	557.81	702.85	73.76	90.19	101.45	125.82
AD	Modoc County APCD	Annual	2016	408.36	478.26	557.54	703.92	73.79	88.96	101.31	126.08
AD	Modoc County APCD	Annual	2017	408.32	477.36	557.31	704.96	73.64	87.77	101.05	126.34
AD	Modoc County APCD	Annual	2018	408.22	476.76	557.13	705.82	73.43	87.03	100.91	126.59
AD	Modoc County APCD	Annual	2019	408.20	476.34	556.98	706.60	73.35	86.56	100.78	126.79
AD	Modoc County APCD	Annual	2020	408.15	475.96	556.87	707.25	73.39	86.27	100.81	127.00
AD	Modoc County APCD	Annual	2021	408.10	475.54	556.77	707.69	73.42	86.13	100.87	127.13

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Modoc County APCD	Annual	2022	408.00	475.17	556.62	708.03	73.42	86.00	100.88	127.20
AD	Modoc County APCD	Annual	2023	407.93	474.79	556.52	708.27	73.44	85.87	100.91	127.38
AD	Modoc County APCD	Annual	2024	407.79	474.58	556.39	708.49	73.41	85.82	100.92	127.55
AD	Modoc County APCD	Annual	2025	407.72	474.59	556.34	708.71	73.41	85.87	100.96	127.72
AD	Modoc County APCD	Annual	2026	407.73	474.69	556.26	709.00	73.43	85.94	100.98	127.90
AD	Modoc County APCD	Annual	2027	407.73	474.80	556.20	709.30	73.44	86.00	100.99	128.07
AD	Modoc County APCD	Annual	2028	407.71	474.90	556.15	709.60	73.44	86.06	101.01	128.22
AD	Modoc County APCD	Annual	2029	407.70	475.01	556.08	709.88	73.45	86.12	101.01	128.36
AD	Modoc County APCD	Annual	2030	407.68	475.10	556.00	710.15	73.45	86.17	101.01	128.50
AD	Modoc County APCD	Annual	2031	407.69	475.22	555.95	710.46	73.45	86.22	101.01	128.63
AD	Modoc County APCD	Annual	2032	407.68	475.32	555.91	710.77	73.46	86.27	101.01	128.76
AD	Modoc County APCD	Annual	2033	407.68	475.40	555.88	711.04	73.47	86.31	101.01	128.87
AD	Modoc County APCD	Annual	2034	407.67	475.47	555.85	711.29	73.47	86.35	101.01	128.97
AD	Modoc County APCD	Annual	2035	407.66	475.53	555.81	711.49	73.48	86.38	101.02	129.07
AD	Modoc County APCD	Summer	2010	425.39	503.36	582.23	724.10	74.87	100.48	102.62	125.01
AD	Modoc County APCD	Summer	2011	425.44	501.48	581.68	725.15	74.72	97.48	102.30	125.08
AD	Modoc County APCD	Summer	2012	425.41	500.15	581.24	726.37	74.39	95.30	102.13	125.22
AD	Modoc County APCD	Summer	2013	425.50	499.17	580.90	727.80	74.23	93.74	101.93	125.38
AD	Modoc County APCD	Summer	2014	425.50	498.13	580.66	729.05	73.97	91.96	101.58	125.59
AD	Modoc County APCD	Summer	2015	425.50	497.14	580.45	730.41	73.76	90.19	101.45	125.82
AD	Modoc County APCD	Summer	2016	425.64	496.45	580.30	731.70	73.79	88.96	101.31	126.08
AD	Modoc County APCD	Summer	2017	425.62	495.80	580.16	732.94	73.64	87.77	101.05	126.34
AD	Modoc County APCD	Summer	2018	425.52	495.35	580.02	733.96	73.43	87.03	100.91	126.59
AD	Modoc County APCD	Summer	2019	425.50	495.06	579.91	734.91	73.35	86.56	100.78	126.79
AD	Modoc County APCD	Summer	2020	425.44	494.80	579.80	735.68	73.39	86.27	100.81	127.00
AD	Modoc County APCD	Summer	2021	425.39	494.51	579.70	736.23	73.42	86.13	100.87	127.13
AD	Modoc County APCD	Summer	2022	425.28	494.26	579.57	736.66	73.42	86.00	100.88	127.20
AD	Modoc County APCD	Summer	2023	425.21	493.99	579.47	736.98	73.44	85.87	100.91	127.38
AD	Modoc County APCD	Summer	2024	425.08	493.85	579.37	737.26	73.41	85.82	100.92	127.55
AD	Modoc County APCD	Summer	2025	425.02	493.90	579.31	737.53	73.41	85.87	100.96	127.72
AD	Modoc County APCD	Summer	2026	425.03	494.03	579.22	737.87	73.43	85.94	100.98	127.90
AD	Modoc County APCD	Summer	2027	425.04	494.17	579.16	738.21	73.44	86.00	100.99	128.07
AD	Modoc County APCD	Summer	2028	425.05	494.30	579.11	738.56	73.44	86.06	101.01	128.22
AD	Modoc County APCD	Summer	2029	425.05	494.46	579.05	738.88	73.45	86.12	101.01	128.36
AD	Modoc County APCD	Summer	2030	425.04	494.57	578.98	739.20	73.45	86.17	101.01	128.50
AD	Modoc County APCD	Summer	2031	425.05	494.75	578.95	739.54	73.45	86.22	101.01	128.63
AD	Modoc County APCD	Summer	2032	425.05	494.88	578.93	739.88	73.46	86.27	101.01	128.76
AD	Modoc County APCD	Summer	2033	425.05	494.99	578.91	740.18	73.47	86.31	101.01	128.87
AD	Modoc County APCD	Summer	2034	425.04	495.08	578.89	740.44	73.47	86.35	101.01	128.97
AD	Modoc County APCD	Summer	2035	425.03	495.14	578.86	740.68	73.48	86.38	101.02	129.07
AD	Modoc County APCD	Winter	2010	403.43	483.82	553.52	689.00	74.87	100.48	102.62	125.01
AD	Modoc County APCD	Winter	2011	403.20	480.53	552.63	689.84	74.72	97.48	102.30	125.08
AD	Modoc County APCD	Winter	2012	402.94	478.25	551.93	690.82	74.39	95.30	102.13	125.22
AD	Modoc County APCD	Winter	2013	402.86	476.62	551.35	691.93	74.23	93.74	101.93	125.38
AD	Modoc County APCD	Winter	2014	402.75	474.97	550.86	692.91	73.97	91.96	101.58	125.59
AD	Modoc County APCD	Winter	2015	402.67	473.44	550.49	693.96	73.76	90.19	101.45	125.82
AD	Modoc County APCD	Winter	2016	402.78	472.38	550.19	694.95	73.79	88.96	101.31	126.08
AD	Modoc County APCD	Winter	2017	402.74	471.40	549.93	695.92	73.64	87.77	101.05	126.34
AD	Modoc County APCD	Winter	2018	402.64	470.75	549.73	696.72	73.43	87.03	100.91	126.59
AD	Modoc County APCD	Winter	2019	402.61	470.29	549.57	697.46	73.35	86.56	100.78	126.79
AD	Modoc County APCD	Winter	2020	402.56	469.87	549.46	698.07	73.39	86.27	100.81	127.00
AD	Modoc County APCD	Winter	2021	402.52	469.41	549.36	698.48	73.42	86.13	100.87	127.13
AD	Modoc County APCD	Winter	2022	402.41	469.01	549.21	698.78	73.42	86.00	100.88	127.20
AD	Modoc County APCD	Winter	2023	402.35	468.59	549.10	699.00	73.44	85.87	100.91	127.38

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Modoc County APCD	Winter	2024	402.21	468.35	548.97	699.20	73.41	85.82	100.92	127.55
AD	Modoc County APCD	Winter	2025	402.14	468.36	548.91	699.40	73.41	85.87	100.96	127.72
AD	Modoc County APCD	Winter	2026	402.14	468.45	548.84	699.67	73.43	85.94	100.98	127.90
AD	Modoc County APCD	Winter	2027	402.13	468.54	548.78	699.96	73.44	86.00	100.99	128.07
AD	Modoc County APCD	Winter	2028	402.11	468.63	548.73	700.25	73.44	86.06	101.01	128.22
AD	Modoc County APCD	Winter	2029	402.10	468.72	548.66	700.50	73.45	86.12	101.01	128.36
AD	Modoc County APCD	Winter	2030	402.08	468.81	548.57	700.77	73.45	86.17	101.01	128.50
AD	Modoc County APCD	Winter	2031	402.08	468.91	548.52	701.07	73.45	86.22	101.01	128.63
AD	Modoc County APCD	Winter	2032	402.08	469.00	548.47	701.37	73.46	86.27	101.01	128.76
AD	Modoc County APCD	Winter	2033	402.07	469.08	548.44	701.63	73.47	86.31	101.01	128.87
AD	Modoc County APCD	Winter	2034	402.06	469.14	548.40	701.87	73.47	86.35	101.01	128.97
AD	Modoc County APCD	Winter	2035	402.05	469.20	548.37	702.06	73.48	86.38	101.02	129.07
AD	Mojave Desert AQMD	Annual	2010	343.05	394.06	468.76	591.38	73.41	85.48	100.04	125.17
AD	Mojave Desert AQMD	Annual	2011	342.29	393.63	467.24	590.34	73.41	85.20	100.07	125.44
AD	Mojave Desert AQMD	Annual	2012	342.53	394.30	467.14	591.14	73.44	85.03	100.14	125.71
AD	Mojave Desert AQMD	Annual	2013	341.38	393.17	465.19	589.42	73.47	84.92	100.21	125.99
AD	Mojave Desert AQMD	Annual	2014	341.59	393.65	465.17	590.21	73.49	84.81	100.26	126.27
AD	Mojave Desert AQMD	Annual	2015	338.75	390.36	460.98	585.50	73.53	84.76	100.32	126.55
AD	Mojave Desert AQMD	Annual	2016	338.93	390.74	460.98	586.19	73.58	84.74	100.39	126.82
AD	Mojave Desert AQMD	Annual	2017	339.08	391.08	460.98	586.83	73.61	84.71	100.44	127.08
AD	Mojave Desert AQMD	Annual	2018	339.19	391.37	460.98	587.37	73.63	84.72	100.49	127.32
AD	Mojave Desert AQMD	Annual	2019	338.63	390.87	460.03	586.67	73.67	84.83	100.55	127.55
AD	Mojave Desert AQMD	Annual	2020	338.73	391.16	460.03	587.11	73.75	84.98	100.63	127.76
AD	Mojave Desert AQMD	Annual	2021	338.49	390.98	459.55	586.82	73.81	85.14	100.70	127.93
AD	Mojave Desert AQMD	Annual	2022	338.53	391.22	459.56	587.12	73.85	85.27	100.76	128.07
AD	Mojave Desert AQMD	Annual	2023	338.54	391.42	459.56	587.36	73.88	85.39	100.81	128.23
AD	Mojave Desert AQMD	Annual	2024	340.10	393.08	461.41	589.95	73.90	85.50	100.85	128.37
AD	Mojave Desert AQMD	Annual	2025	340.11	393.24	461.42	590.15	73.91	85.59	100.89	128.50
AD	Mojave Desert AQMD	Annual	2026	340.14	393.40	461.41	590.33	73.93	85.68	100.92	128.62
AD	Mojave Desert AQMD	Annual	2027	340.16	393.55	461.40	590.50	73.94	85.76	100.94	128.72
AD	Mojave Desert AQMD	Annual	2028	340.18	393.70	461.40	590.67	73.95	85.84	100.95	128.82
AD	Mojave Desert AQMD	Annual	2029	340.20	393.85	461.40	590.84	73.96	85.91	100.96	128.90
AD	Mojave Desert AQMD	Annual	2030	340.22	393.99	461.40	591.00	73.96	85.97	100.97	128.98
AD	Mojave Desert AQMD	Annual	2031	342.78	396.53	464.37	595.11	73.96	86.03	100.98	129.06
AD	Mojave Desert AQMD	Annual	2032	342.80	396.66	464.38	595.29	73.97	86.09	100.98	129.13
AD	Mojave Desert AQMD	Annual	2033	342.81	396.77	464.39	595.46	73.97	86.13	100.99	129.19
AD	Mojave Desert AQMD	Annual	2034	342.83	396.88	464.41	595.62	73.97	86.18	100.99	129.24
AD	Mojave Desert AQMD	Annual	2035	342.85	396.97	464.43	595.76	73.98	86.22	101.00	129.29
AD	Mojave Desert AQMD	Summer	2010	368.41	420.54	502.82	633.92	73.41	85.48	100.04	125.17
AD	Mojave Desert AQMD	Summer	2011	367.55	420.78	501.45	632.76	73.41	85.20	100.07	125.44
AD	Mojave Desert AQMD	Summer	2012	367.74	422.01	501.49	633.58	73.44	85.03	100.14	125.71
AD	Mojave Desert AQMD	Summer	2013	366.36	420.99	499.44	631.63	73.47	84.92	100.21	125.99
AD	Mojave Desert AQMD	Summer	2014	366.44	421.63	499.44	632.39	73.49	84.81	100.26	126.27
AD	Mojave Desert AQMD	Summer	2015	363.25	418.10	494.94	627.28	73.53	84.76	100.32	126.55
AD	Mojave Desert AQMD	Summer	2016	363.37	418.49	494.93	627.96	73.58	84.74	100.39	126.82
AD	Mojave Desert AQMD	Summer	2017	363.42	418.82	494.89	628.59	73.61	84.71	100.44	127.08
AD	Mojave Desert AQMD	Summer	2018	363.43	419.07	494.81	629.09	73.63	84.72	100.49	127.32
AD	Mojave Desert AQMD	Summer	2019	362.72	418.47	493.69	628.25	73.67	84.83	100.55	127.55
AD	Mojave Desert AQMD	Summer	2020	362.73	418.73	493.60	628.67	73.75	84.98	100.63	127.76
AD	Mojave Desert AQMD	Summer	2021	362.41	418.50	492.93	628.23	73.81	85.14	100.70	127.93
AD	Mojave Desert AQMD	Summer	2022	362.41	418.75	492.84	628.48	73.85	85.27	100.76	128.07
AD	Mojave Desert AQMD	Summer	2023	362.38	418.95	492.74	628.63	73.88	85.39	100.81	128.23
AD	Mojave Desert AQMD	Summer	2024	363.89	420.61	494.47	631.12	73.90	85.50	100.85	128.37
AD	Mojave Desert AQMD	Summer	2025	363.86	420.78	494.42	631.25	73.91	85.59	100.89	128.50

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Mojave Desert AQMD	Summer	2026	363.86	420.97	494.37	631.36	73.93	85.68	100.92	128.62
AD	Mojave Desert AQMD	Summer	2027	363.84	421.14	494.32	631.45	73.94	85.76	100.94	128.72
AD	Mojave Desert AQMD	Summer	2028	363.82	421.29	494.28	631.55	73.95	85.84	100.95	128.82
AD	Mojave Desert AQMD	Summer	2029	363.80	421.45	494.24	631.64	73.96	85.91	100.96	128.90
AD	Mojave Desert AQMD	Summer	2030	363.78	421.60	494.20	631.73	73.96	85.97	100.97	128.98
AD	Mojave Desert AQMD	Summer	2031	366.32	424.18	497.16	635.80	73.96	86.03	100.98	129.06
AD	Mojave Desert AQMD	Summer	2032	366.30	424.34	497.16	635.94	73.97	86.09	100.98	129.13
AD	Mojave Desert AQMD	Summer	2033	366.29	424.48	497.16	636.07	73.97	86.13	100.99	129.19
AD	Mojave Desert AQMD	Summer	2034	366.28	424.59	497.16	636.19	73.97	86.18	100.99	129.24
AD	Mojave Desert AQMD	Summer	2035	366.27	424.67	497.16	636.30	73.98	86.22	101.00	129.29
AD	Mojave Desert AQMD	Winter	2010	329.23	380.23	450.90	569.02	73.41	85.48	100.04	125.17
AD	Mojave Desert AQMD	Winter	2011	328.43	379.61	449.39	568.04	73.41	85.20	100.07	125.44
AD	Mojave Desert AQMD	Winter	2012	328.62	380.12	449.23	568.81	73.44	85.03	100.14	125.71
AD	Mojave Desert AQMD	Winter	2013	327.45	378.91	447.29	567.12	73.47	84.92	100.21	125.99
AD	Mojave Desert AQMD	Winter	2014	327.61	379.28	447.21	567.85	73.49	84.81	100.26	126.27
AD	Mojave Desert AQMD	Winter	2015	324.84	376.02	443.12	563.25	73.53	84.76	100.32	126.55
AD	Mojave Desert AQMD	Winter	2016	324.99	376.34	443.08	563.87	73.58	84.74	100.39	126.82
AD	Mojave Desert AQMD	Winter	2017	325.11	376.62	443.04	564.46	73.61	84.71	100.44	127.08
AD	Mojave Desert AQMD	Winter	2018	325.20	376.87	443.02	564.96	73.63	84.72	100.49	127.32
AD	Mojave Desert AQMD	Winter	2019	324.64	376.36	442.08	564.24	73.67	84.83	100.55	127.55
AD	Mojave Desert AQMD	Winter	2020	324.71	376.61	442.06	564.63	73.75	84.98	100.63	127.76
AD	Mojave Desert AQMD	Winter	2021	324.46	376.36	441.55	564.27	73.81	85.14	100.70	127.93
AD	Mojave Desert AQMD	Winter	2022	324.48	376.54	441.52	564.49	73.85	85.27	100.76	128.07
AD	Mojave Desert AQMD	Winter	2023	324.48	376.68	441.50	564.66	73.88	85.39	100.81	128.23
AD	Mojave Desert AQMD	Winter	2024	325.93	378.21	443.20	567.06	73.90	85.50	100.85	128.37
AD	Mojave Desert AQMD	Winter	2025	325.94	378.32	443.20	567.22	73.91	85.59	100.89	128.50
AD	Mojave Desert AQMD	Winter	2026	325.96	378.44	443.18	567.37	73.93	85.68	100.92	128.62
AD	Mojave Desert AQMD	Winter	2027	325.97	378.56	443.16	567.51	73.94	85.76	100.94	128.72
AD	Mojave Desert AQMD	Winter	2028	325.99	378.68	443.15	567.64	73.95	85.84	100.95	128.82
AD	Mojave Desert AQMD	Winter	2029	325.99	378.79	443.13	567.78	73.96	85.91	100.96	128.90
AD	Mojave Desert AQMD	Winter	2030	326.00	378.91	443.12	567.91	73.96	85.97	100.97	128.98
AD	Mojave Desert AQMD	Winter	2031	328.38	381.24	445.87	571.70	73.96	86.03	100.98	129.06
AD	Mojave Desert AQMD	Winter	2032	328.39	381.34	445.87	571.84	73.97	86.09	100.98	129.13
AD	Mojave Desert AQMD	Winter	2033	328.40	381.43	445.87	571.96	73.97	86.13	100.99	129.19
AD	Mojave Desert AQMD	Winter	2034	328.42	381.50	445.87	572.08	73.97	86.18	100.99	129.24
AD	Mojave Desert AQMD	Winter	2035	328.43	381.57	445.87	572.18	73.98	86.22	101.00	129.29
AD	Monterey Bay Unified APCD	Annual	2010	352.08	409.85	484.60	606.53	72.96	88.37	99.87	123.92
AD	Monterey Bay Unified APCD	Annual	2011	352.06	409.40	483.84	606.61	72.93	87.57	99.90	124.13
AD	Monterey Bay Unified APCD	Annual	2012	352.19	409.24	483.32	607.40	72.89	86.90	99.95	124.37
AD	Monterey Bay Unified APCD	Annual	2013	352.37	409.19	482.92	608.27	72.92	86.40	100.03	124.65
AD	Monterey Bay Unified APCD	Annual	2014	352.53	409.12	482.60	609.12	72.92	85.94	100.10	124.93
AD	Monterey Bay Unified APCD	Annual	2015	352.73	409.11	482.36	609.99	72.98	85.55	100.18	125.24
AD	Monterey Bay Unified APCD	Annual	2016	352.92	409.09	482.18	610.81	73.05	85.20	100.28	125.55
AD	Monterey Bay Unified APCD	Annual	2017	353.06	409.10	482.04	611.59	73.09	84.93	100.35	125.86
AD	Monterey Bay Unified APCD	Annual	2018	353.17	409.13	481.94	612.28	73.12	84.71	100.43	126.15
AD	Monterey Bay Unified APCD	Annual	2019	353.27	409.25	481.87	612.89	73.16	84.66	100.51	126.43
AD	Monterey Bay Unified APCD	Annual	2020	353.37	409.39	481.83	613.44	73.25	84.73	100.59	126.69
AD	Monterey Bay Unified APCD	Annual	2021	354.32	410.59	483.10	615.32	73.33	84.87	100.68	126.92
AD	Monterey Bay Unified APCD	Annual	2022	354.37	410.77	483.07	615.74	73.38	84.99	100.74	127.10
AD	Monterey Bay Unified APCD	Annual	2023	354.37	410.92	483.04	616.07	73.42	85.10	100.80	127.31
AD	Monterey Bay Unified APCD	Annual	2024	354.34	411.03	483.02	616.34	73.43	85.19	100.84	127.49
AD	Monterey Bay Unified APCD	Annual	2025	354.34	411.14	483.01	616.61	73.45	85.28	100.88	127.66
AD	Monterey Bay Unified APCD	Annual	2026	353.30	409.99	481.54	614.89	73.47	85.37	100.91	127.83
AD	Monterey Bay Unified APCD	Annual	2027	353.33	410.12	481.49	615.18	73.49	85.45	100.93	127.98

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Monterey Bay Unified APCD	Annual	2028	353.35	410.27	481.44	615.46	73.50	85.52	100.94	128.12
AD	Monterey Bay Unified APCD	Annual	2029	353.36	410.41	481.37	615.73	73.51	85.58	100.94	128.25
AD	Monterey Bay Unified APCD	Annual	2030	353.37	410.56	481.31	616.01	73.51	85.65	100.94	128.38
AD	Monterey Bay Unified APCD	Annual	2031	353.39	410.72	481.27	616.28	73.52	85.71	100.95	128.50
AD	Monterey Bay Unified APCD	Annual	2032	353.41	410.88	481.25	616.56	73.52	85.77	100.96	128.62
AD	Monterey Bay Unified APCD	Annual	2033	353.43	411.02	481.23	616.82	73.53	85.83	100.96	128.73
AD	Monterey Bay Unified APCD	Annual	2034	353.45	411.15	481.21	617.05	73.53	85.88	100.96	128.83
AD	Monterey Bay Unified APCD	Annual	2035	353.47	411.25	481.20	617.25	73.54	85.93	100.97	128.92
AD	Monterey Bay Unified APCD	Summer	2010	372.98	431.76	511.84	642.11	72.96	88.37	99.87	123.92
AD	Monterey Bay Unified APCD	Summer	2011	373.14	431.60	511.31	642.11	72.93	87.57	99.90	124.13
AD	Monterey Bay Unified APCD	Summer	2012	373.41	431.71	511.01	642.95	72.89	86.90	99.95	124.37
AD	Monterey Bay Unified APCD	Summer	2013	373.71	431.90	510.79	643.91	72.92	86.40	100.03	124.65
AD	Monterey Bay Unified APCD	Summer	2014	373.96	432.06	510.63	644.90	72.92	85.94	100.10	124.93
AD	Monterey Bay Unified APCD	Summer	2015	374.21	432.22	510.51	645.93	72.98	85.55	100.18	125.24
AD	Monterey Bay Unified APCD	Summer	2016	374.44	432.38	510.41	646.92	73.05	85.20	100.28	125.55
AD	Monterey Bay Unified APCD	Summer	2017	374.60	432.55	510.33	647.86	73.09	84.93	100.35	125.86
AD	Monterey Bay Unified APCD	Summer	2018	374.71	432.72	510.25	648.67	73.12	84.71	100.43	126.15
AD	Monterey Bay Unified APCD	Summer	2019	374.81	432.96	510.19	649.38	73.16	84.66	100.51	126.43
AD	Monterey Bay Unified APCD	Summer	2020	374.91	433.20	510.15	650.02	73.25	84.73	100.59	126.69
AD	Monterey Bay Unified APCD	Summer	2021	375.91	434.52	511.49	652.05	73.33	84.87	100.68	126.92
AD	Monterey Bay Unified APCD	Summer	2022	375.97	434.78	511.48	652.54	73.38	84.99	100.74	127.10
AD	Monterey Bay Unified APCD	Summer	2023	375.98	434.99	511.46	652.91	73.42	85.10	100.80	127.31
AD	Monterey Bay Unified APCD	Summer	2024	375.97	435.16	511.45	653.21	73.43	85.19	100.84	127.49
AD	Monterey Bay Unified APCD	Summer	2025	375.98	435.32	511.45	653.50	73.45	85.28	100.88	127.66
AD	Monterey Bay Unified APCD	Summer	2026	374.88	434.13	509.90	651.66	73.47	85.37	100.91	127.83
AD	Monterey Bay Unified APCD	Summer	2027	374.91	434.30	509.87	651.96	73.49	85.45	100.93	127.98
AD	Monterey Bay Unified APCD	Summer	2028	374.94	434.48	509.85	652.26	73.50	85.52	100.94	128.12
AD	Monterey Bay Unified APCD	Summer	2029	374.97	434.67	509.80	652.55	73.51	85.58	100.94	128.25
AD	Monterey Bay Unified APCD	Summer	2030	374.99	434.87	509.76	652.86	73.51	85.65	100.94	128.38
AD	Monterey Bay Unified APCD	Summer	2031	375.02	435.07	509.74	653.15	73.52	85.71	100.95	128.50
AD	Monterey Bay Unified APCD	Summer	2032	375.05	435.26	509.73	653.46	73.52	85.77	100.96	128.62
AD	Monterey Bay Unified APCD	Summer	2033	375.08	435.43	509.73	653.75	73.53	85.83	100.96	128.73
AD	Monterey Bay Unified APCD	Summer	2034	375.11	435.58	509.72	654.02	73.53	85.88	100.96	128.83
AD	Monterey Bay Unified APCD	Summer	2035	375.13	435.71	509.72	654.27	73.54	85.93	100.97	128.92
AD	Monterey Bay Unified APCD	Winter	2010	350.54	408.22	482.61	603.75	72.96	88.37	99.87	123.92
AD	Monterey Bay Unified APCD	Winter	2011	350.51	407.75	481.84	603.84	72.93	87.57	99.90	124.13
AD	Monterey Bay Unified APCD	Winter	2012	350.63	407.55	481.30	604.63	72.89	86.90	99.95	124.37
AD	Monterey Bay Unified APCD	Winter	2013	350.80	407.48	480.89	605.48	72.92	86.40	100.03	124.65
AD	Monterey Bay Unified APCD	Winter	2014	350.96	407.39	480.56	606.32	72.92	85.94	100.10	124.93
AD	Monterey Bay Unified APCD	Winter	2015	351.15	407.36	480.31	607.18	72.98	85.55	100.18	125.24
AD	Monterey Bay Unified APCD	Winter	2016	351.33	407.32	480.12	607.99	73.05	85.20	100.28	125.55
AD	Monterey Bay Unified APCD	Winter	2017	351.48	407.33	479.98	608.75	73.09	84.93	100.35	125.86
AD	Monterey Bay Unified APCD	Winter	2018	351.58	407.34	479.88	609.43	73.12	84.71	100.43	126.15
AD	Monterey Bay Unified APCD	Winter	2019	351.68	407.44	479.81	610.03	73.16	84.66	100.51	126.43
AD	Monterey Bay Unified APCD	Winter	2020	351.78	407.58	479.76	610.57	73.25	84.73	100.59	126.69
AD	Monterey Bay Unified APCD	Winter	2021	352.73	408.76	481.03	612.44	73.33	84.87	100.68	126.92
AD	Monterey Bay Unified APCD	Winter	2022	352.78	408.94	481.00	612.85	73.38	84.99	100.74	127.10
AD	Monterey Bay Unified APCD	Winter	2023	352.78	409.08	480.97	613.18	73.42	85.10	100.80	127.31
AD	Monterey Bay Unified APCD	Winter	2024	352.74	409.19	480.94	613.44	73.43	85.19	100.84	127.49
AD	Monterey Bay Unified APCD	Winter	2025	352.74	409.30	480.93	613.72	73.45	85.28	100.88	127.66
AD	Monterey Bay Unified APCD	Winter	2026	351.70	408.15	479.46	612.01	73.47	85.37	100.91	127.83
AD	Monterey Bay Unified APCD	Winter	2027	351.73	408.27	479.41	612.29	73.49	85.45	100.93	127.98
AD	Monterey Bay Unified APCD	Winter	2028	351.74	408.41	479.36	612.56	73.50	85.52	100.94	128.12
AD	Monterey Bay Unified APCD	Winter	2029	351.75	408.56	479.28	612.84	73.51	85.58	100.94	128.25

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Monterey Bay Unified APCD	Winter	2030	351.76	408.70	479.22	613.11	73.51	85.65	100.94	128.38
AD	Monterey Bay Unified APCD	Winter	2031	351.78	408.85	479.18	613.38	73.52	85.71	100.95	128.50
AD	Monterey Bay Unified APCD	Winter	2032	351.80	409.00	479.15	613.65	73.52	85.77	100.96	128.62
AD	Monterey Bay Unified APCD	Winter	2033	351.82	409.14	479.13	613.90	73.53	85.83	100.96	128.73
AD	Monterey Bay Unified APCD	Winter	2034	351.84	409.26	479.11	614.13	73.53	85.88	100.96	128.83
AD	Monterey Bay Unified APCD	Winter	2035	351.85	409.37	479.10	614.33	73.54	85.93	100.97	128.92
AD	North Coast Unified APCD	Annual	2010	338.11	392.75	467.85	585.18	73.17	86.39	100.59	124.05
AD	North Coast Unified APCD	Annual	2011	338.10	393.14	467.19	585.81	73.12	85.93	100.52	124.23
AD	North Coast Unified APCD	Annual	2012	338.14	393.49	466.64	586.54	73.06	85.62	100.52	124.47
AD	North Coast Unified APCD	Annual	2013	338.24	393.78	466.22	587.38	73.05	85.35	100.53	124.74
AD	North Coast Unified APCD	Annual	2014	338.28	394.01	465.87	588.19	73.01	85.13	100.52	125.01
AD	North Coast Unified APCD	Annual	2015	338.37	394.26	465.57	589.00	72.98	84.96	100.52	125.31
AD	North Coast Unified APCD	Annual	2016	338.50	394.52	465.35	589.80	73.04	84.88	100.56	125.63
AD	North Coast Unified APCD	Annual	2017	338.57	394.73	465.13	590.53	73.04	84.75	100.59	125.94
AD	North Coast Unified APCD	Annual	2018	338.64	394.93	464.97	591.16	73.06	84.68	100.60	126.24
AD	North Coast Unified APCD	Annual	2019	338.69	395.13	464.85	591.71	73.08	84.72	100.65	126.52
AD	North Coast Unified APCD	Annual	2020	338.73	395.31	464.72	592.18	73.17	84.80	100.71	126.78
AD	North Coast Unified APCD	Annual	2021	338.75	395.45	464.60	592.55	73.23	84.92	100.77	126.99
AD	North Coast Unified APCD	Annual	2022	338.73	395.55	464.48	592.85	73.27	85.02	100.82	127.17
AD	North Coast Unified APCD	Annual	2023	338.66	395.62	464.39	593.07	73.28	85.12	100.86	127.37
AD	North Coast Unified APCD	Annual	2024	338.54	395.69	464.32	593.28	73.28	85.20	100.89	127.56
AD	North Coast Unified APCD	Annual	2025	338.47	395.79	464.26	593.47	73.29	85.30	100.92	127.72
AD	North Coast Unified APCD	Annual	2026	338.49	395.93	464.14	593.62	73.31	85.41	100.94	127.88
AD	North Coast Unified APCD	Annual	2027	338.50	396.07	464.04	593.77	73.32	85.51	100.96	128.03
AD	North Coast Unified APCD	Annual	2028	338.50	396.22	463.93	593.95	73.33	85.61	100.97	128.17
AD	North Coast Unified APCD	Annual	2029	338.50	396.36	463.83	594.12	73.33	85.70	100.97	128.30
AD	North Coast Unified APCD	Annual	2030	338.48	396.49	463.70	594.29	73.34	85.78	100.96	128.43
AD	North Coast Unified APCD	Annual	2031	338.48	396.63	463.68	594.46	73.34	85.86	100.97	128.55
AD	North Coast Unified APCD	Annual	2032	338.47	396.74	463.65	594.63	73.35	85.94	100.97	128.67
AD	North Coast Unified APCD	Annual	2033	338.46	396.83	463.63	594.77	73.35	86.01	100.97	128.77
AD	North Coast Unified APCD	Annual	2034	338.45	396.90	463.60	594.89	73.36	86.07	100.98	128.87
AD	North Coast Unified APCD	Annual	2035	338.44	396.95	463.58	594.99	73.36	86.12	100.98	128.96
AD	North Coast Unified APCD	Summer	2010	339.07	393.94	469.47	587.35	73.17	86.39	100.59	124.05
AD	North Coast Unified APCD	Summer	2011	339.07	394.39	468.84	587.99	73.12	85.93	100.52	124.23
AD	North Coast Unified APCD	Summer	2012	339.11	394.78	468.30	588.72	73.06	85.62	100.52	124.47
AD	North Coast Unified APCD	Summer	2013	339.22	395.11	467.90	589.58	73.05	85.35	100.53	124.74
AD	North Coast Unified APCD	Summer	2014	339.27	395.37	467.56	590.40	73.01	85.13	100.52	125.01
AD	North Coast Unified APCD	Summer	2015	339.36	395.64	467.27	591.23	72.98	84.96	100.52	125.31
AD	North Coast Unified APCD	Summer	2016	339.49	395.92	467.05	592.05	73.04	84.88	100.56	125.63
AD	North Coast Unified APCD	Summer	2017	339.56	396.15	466.84	592.80	73.04	84.75	100.59	125.94
AD	North Coast Unified APCD	Summer	2018	339.62	396.36	466.67	593.44	73.06	84.68	100.60	126.24
AD	North Coast Unified APCD	Summer	2019	339.68	396.58	466.56	594.00	73.08	84.72	100.65	126.52
AD	North Coast Unified APCD	Summer	2020	339.72	396.76	466.42	594.47	73.17	84.80	100.71	126.78
AD	North Coast Unified APCD	Summer	2021	339.73	396.92	466.29	594.85	73.23	84.92	100.77	126.99
AD	North Coast Unified APCD	Summer	2022	339.71	397.02	466.18	595.16	73.27	85.02	100.82	127.17
AD	North Coast Unified APCD	Summer	2023	339.64	397.10	466.08	595.38	73.28	85.12	100.86	127.37
AD	North Coast Unified APCD	Summer	2024	339.52	397.18	466.01	595.60	73.28	85.20	100.89	127.56
AD	North Coast Unified APCD	Summer	2025	339.44	397.28	465.96	595.80	73.29	85.30	100.92	127.72
AD	North Coast Unified APCD	Summer	2026	339.46	397.42	465.83	595.95	73.31	85.41	100.94	127.88
AD	North Coast Unified APCD	Summer	2027	339.47	397.56	465.72	596.10	73.32	85.51	100.96	128.03
AD	North Coast Unified APCD	Summer	2028	339.48	397.72	465.61	596.27	73.33	85.61	100.97	128.17
AD	North Coast Unified APCD	Summer	2029	339.48	397.86	465.51	596.44	73.33	85.70	100.97	128.30
AD	North Coast Unified APCD	Summer	2030	339.46	397.99	465.38	596.62	73.34	85.78	100.96	128.43
AD	North Coast Unified APCD	Summer	2031	339.46	398.14	465.36	596.78	73.34	85.86	100.97	128.55

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	North Coast Unified APCD	Summer	2032	339.46	398.25	465.34	596.94	73.35	85.94	100.97	128.67
AD	North Coast Unified APCD	Summer	2033	339.45	398.34	465.31	597.08	73.35	86.01	100.97	128.77
AD	North Coast Unified APCD	Summer	2034	339.43	398.40	465.29	597.20	73.36	86.07	100.98	128.87
AD	North Coast Unified APCD	Summer	2035	339.42	398.44	465.27	597.30	73.36	86.12	100.98	128.96
AD	North Coast Unified APCD	Winter	2010	336.39	390.83	465.37	582.01	73.17	86.39	100.59	124.05
AD	North Coast Unified APCD	Winter	2011	336.36	391.14	464.68	582.63	73.12	85.93	100.52	124.23
AD	North Coast Unified APCD	Winter	2012	336.38	391.43	464.11	583.35	73.06	85.62	100.52	124.47
AD	North Coast Unified APCD	Winter	2013	336.47	391.68	463.67	584.16	73.05	85.35	100.53	124.74
AD	North Coast Unified APCD	Winter	2014	336.51	391.88	463.31	584.95	73.01	85.13	100.52	125.01
AD	North Coast Unified APCD	Winter	2015	336.59	392.10	463.00	585.74	72.98	84.96	100.52	125.31
AD	North Coast Unified APCD	Winter	2016	336.72	392.33	462.77	586.52	73.04	84.88	100.56	125.63
AD	North Coast Unified APCD	Winter	2017	336.79	392.52	462.55	587.24	73.04	84.75	100.59	125.94
AD	North Coast Unified APCD	Winter	2018	336.86	392.70	462.38	587.85	73.06	84.68	100.60	126.24
AD	North Coast Unified APCD	Winter	2019	336.92	392.89	462.26	588.38	73.08	84.72	100.65	126.52
AD	North Coast Unified APCD	Winter	2020	336.96	393.05	462.13	588.84	73.17	84.80	100.71	126.78
AD	North Coast Unified APCD	Winter	2021	336.98	393.18	462.02	589.20	73.23	84.92	100.77	126.99
AD	North Coast Unified APCD	Winter	2022	336.96	393.27	461.90	589.49	73.27	85.02	100.82	127.17
AD	North Coast Unified APCD	Winter	2023	336.89	393.33	461.80	589.70	73.28	85.12	100.86	127.37
AD	North Coast Unified APCD	Winter	2024	336.78	393.40	461.73	589.91	73.28	85.20	100.89	127.56
AD	North Coast Unified APCD	Winter	2025	336.70	393.50	461.68	590.09	73.29	85.30	100.92	127.72
AD	North Coast Unified APCD	Winter	2026	336.72	393.63	461.56	590.25	73.31	85.41	100.94	127.88
AD	North Coast Unified APCD	Winter	2027	336.73	393.76	461.46	590.40	73.32	85.51	100.96	128.03
AD	North Coast Unified APCD	Winter	2028	336.73	393.91	461.35	590.57	73.33	85.61	100.97	128.17
AD	North Coast Unified APCD	Winter	2029	336.72	394.04	461.25	590.75	73.33	85.70	100.97	128.30
AD	North Coast Unified APCD	Winter	2030	336.71	394.16	461.12	590.92	73.34	85.78	100.96	128.43
AD	North Coast Unified APCD	Winter	2031	336.71	394.30	461.10	591.08	73.34	85.86	100.97	128.55
AD	North Coast Unified APCD	Winter	2032	336.70	394.41	461.07	591.25	73.35	85.94	100.97	128.67
AD	North Coast Unified APCD	Winter	2033	336.69	394.50	461.05	591.39	73.35	86.01	100.97	128.77
AD	North Coast Unified APCD	Winter	2034	336.68	394.57	461.02	591.51	73.36	86.07	100.98	128.87
AD	North Coast Unified APCD	Winter	2035	336.67	394.61	461.00	591.61	73.36	86.12	100.98	128.96
AD	Northern Sierra AQMD	Annual	2010	335.85	403.50	460.60	582.46	73.83	93.66	100.49	125.24
AD	Northern Sierra AQMD	Annual	2011	335.79	403.58	459.90	583.10	73.66	92.12	100.45	125.33
AD	Northern Sierra AQMD	Annual	2012	335.78	403.52	459.38	583.85	73.51	90.81	100.45	125.45
AD	Northern Sierra AQMD	Annual	2013	335.79	403.50	459.02	584.66	73.39	89.69	100.44	125.61
AD	Northern Sierra AQMD	Annual	2014	335.77	403.42	458.71	585.44	73.23	88.70	100.46	125.78
AD	Northern Sierra AQMD	Annual	2015	335.82	403.39	458.48	586.29	73.16	87.84	100.50	125.98
AD	Northern Sierra AQMD	Annual	2016	335.92	403.32	458.32	587.09	73.17	87.09	100.56	126.21
AD	Northern Sierra AQMD	Annual	2017	335.94	403.29	458.20	587.82	73.12	86.34	100.55	126.44
AD	Northern Sierra AQMD	Annual	2018	335.96	403.18	458.11	588.47	73.08	85.76	100.59	126.67
AD	Northern Sierra AQMD	Annual	2019	335.99	403.23	458.04	589.02	73.07	85.48	100.62	126.89
AD	Northern Sierra AQMD	Annual	2020	336.03	403.26	457.98	589.50	73.16	85.41	100.69	127.10
AD	Northern Sierra AQMD	Annual	2021	336.06	403.35	457.94	589.83	73.23	85.46	100.76	127.22
AD	Northern Sierra AQMD	Annual	2022	336.04	403.43	457.90	590.06	73.28	85.51	100.82	127.27
AD	Northern Sierra AQMD	Annual	2023	336.00	403.49	457.85	590.24	73.30	85.55	100.87	127.44
AD	Northern Sierra AQMD	Annual	2024	335.93	403.48	457.82	590.43	73.31	85.58	100.90	127.60
AD	Northern Sierra AQMD	Annual	2025	335.92	403.43	457.78	590.66	73.33	85.65	100.93	127.77
AD	Northern Sierra AQMD	Annual	2026	335.94	403.53	457.74	590.88	73.35	85.73	100.96	127.93
AD	Northern Sierra AQMD	Annual	2027	335.96	403.60	457.69	591.11	73.37	85.80	100.97	128.07
AD	Northern Sierra AQMD	Annual	2028	335.97	403.70	457.66	591.34	73.38	85.86	100.98	128.21
AD	Northern Sierra AQMD	Annual	2029	335.98	403.82	457.62	591.59	73.38	85.92	100.98	128.33
AD	Northern Sierra AQMD	Annual	2030	335.97	403.91	457.56	591.83	73.39	85.98	100.97	128.46
AD	Northern Sierra AQMD	Annual	2031	335.99	404.07	457.55	592.03	73.40	86.03	100.98	128.58
AD	Northern Sierra AQMD	Annual	2032	336.00	404.19	457.53	592.24	73.40	86.08	100.98	128.69
AD	Northern Sierra AQMD	Annual	2033	336.01	404.33	457.52	592.41	73.41	86.13	100.98	128.80

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Northern Sierra AQMD	Annual	2034	336.01	404.45	457.50	592.56	73.41	86.17	100.99	128.89
AD	Northern Sierra AQMD	Annual	2035	336.01	404.53	457.50	592.68	73.42	86.21	100.99	128.98
AD	Northern Sierra AQMD	Summer	2010	359.56	428.44	492.24	621.66	73.83	93.66	100.49	125.24
AD	Northern Sierra AQMD	Summer	2011	359.74	429.15	491.87	622.40	73.66	92.12	100.45	125.33
AD	Northern Sierra AQMD	Summer	2012	359.93	429.60	491.60	623.31	73.51	90.81	100.45	125.45
AD	Northern Sierra AQMD	Summer	2013	360.10	429.97	491.44	624.34	73.39	89.69	100.44	125.61
AD	Northern Sierra AQMD	Summer	2014	360.21	430.21	491.29	625.36	73.23	88.70	100.46	125.78
AD	Northern Sierra AQMD	Summer	2015	360.36	430.46	491.19	626.49	73.16	87.84	100.50	125.98
AD	Northern Sierra AQMD	Summer	2016	360.51	430.61	491.11	627.56	73.17	87.09	100.56	126.21
AD	Northern Sierra AQMD	Summer	2017	360.57	430.78	491.05	628.52	73.12	86.34	100.55	126.44
AD	Northern Sierra AQMD	Summer	2018	360.60	430.82	490.96	629.37	73.08	85.76	100.59	126.67
AD	Northern Sierra AQMD	Summer	2019	360.63	430.98	490.90	630.09	73.07	85.48	100.62	126.89
AD	Northern Sierra AQMD	Summer	2020	360.67	431.10	490.84	630.70	73.16	85.41	100.69	127.10
AD	Northern Sierra AQMD	Summer	2021	360.69	431.25	490.78	631.15	73.23	85.46	100.76	127.22
AD	Northern Sierra AQMD	Summer	2022	360.67	431.39	490.74	631.50	73.28	85.51	100.82	127.27
AD	Northern Sierra AQMD	Summer	2023	360.63	431.52	490.69	631.75	73.30	85.55	100.87	127.44
AD	Northern Sierra AQMD	Summer	2024	360.56	431.57	490.66	632.00	73.31	85.58	100.90	127.60
AD	Northern Sierra AQMD	Summer	2025	360.55	431.55	490.62	632.26	73.33	85.65	100.93	127.77
AD	Northern Sierra AQMD	Summer	2026	360.58	431.69	490.59	632.48	73.35	85.73	100.96	127.93
AD	Northern Sierra AQMD	Summer	2027	360.60	431.79	490.57	632.71	73.37	85.80	100.97	128.07
AD	Northern Sierra AQMD	Summer	2028	360.63	431.93	490.55	632.96	73.38	85.86	100.98	128.21
AD	Northern Sierra AQMD	Summer	2029	360.65	432.08	490.53	633.23	73.38	85.92	100.98	128.33
AD	Northern Sierra AQMD	Summer	2030	360.66	432.21	490.50	633.50	73.39	85.98	100.97	128.46
AD	Northern Sierra AQMD	Summer	2031	360.68	432.40	490.49	633.75	73.40	86.03	100.98	128.58
AD	Northern Sierra AQMD	Summer	2032	360.69	432.54	490.48	633.99	73.40	86.08	100.98	128.69
AD	Northern Sierra AQMD	Summer	2033	360.71	432.70	490.47	634.21	73.41	86.13	100.98	128.80
AD	Northern Sierra AQMD	Summer	2034	360.72	432.84	490.46	634.40	73.41	86.17	100.99	128.89
AD	Northern Sierra AQMD	Summer	2035	360.71	432.93	490.45	634.56	73.42	86.21	100.99	128.98
AD	Northern Sierra AQMD	Winter	2010	330.67	398.10	453.69	573.92	73.83	93.66	100.49	125.24
AD	Northern Sierra AQMD	Winter	2011	330.56	398.05	452.91	574.54	73.66	92.12	100.45	125.33
AD	Northern Sierra AQMD	Winter	2012	330.50	397.88	452.34	575.25	73.51	90.81	100.45	125.45
AD	Northern Sierra AQMD	Winter	2013	330.48	397.78	451.93	576.01	73.39	89.69	100.44	125.61
AD	Northern Sierra AQMD	Winter	2014	330.43	397.63	451.58	576.74	73.23	88.70	100.46	125.78
AD	Northern Sierra AQMD	Winter	2015	330.46	397.55	451.33	577.53	73.16	87.84	100.50	125.98
AD	Northern Sierra AQMD	Winter	2016	330.54	397.43	451.14	578.28	73.17	87.09	100.56	126.21
AD	Northern Sierra AQMD	Winter	2017	330.55	397.35	451.02	578.95	73.12	86.34	100.55	126.44
AD	Northern Sierra AQMD	Winter	2018	330.57	397.21	450.92	579.56	73.08	85.76	100.59	126.67
AD	Northern Sierra AQMD	Winter	2019	330.60	397.23	450.85	580.08	73.07	85.48	100.62	126.89
AD	Northern Sierra AQMD	Winter	2020	330.64	397.25	450.80	580.53	73.16	85.41	100.69	127.10
AD	Northern Sierra AQMD	Winter	2021	330.68	397.32	450.76	580.82	73.23	85.46	100.76	127.22
AD	Northern Sierra AQMD	Winter	2022	330.66	397.39	450.72	581.03	73.28	85.51	100.82	127.27
AD	Northern Sierra AQMD	Winter	2023	330.62	397.44	450.67	581.20	73.30	85.55	100.87	127.44
AD	Northern Sierra AQMD	Winter	2024	330.55	397.42	450.64	581.38	73.31	85.58	100.90	127.60
AD	Northern Sierra AQMD	Winter	2025	330.53	397.35	450.60	581.60	73.33	85.65	100.93	127.77
AD	Northern Sierra AQMD	Winter	2026	330.56	397.45	450.55	581.82	73.35	85.73	100.96	127.93
AD	Northern Sierra AQMD	Winter	2027	330.57	397.51	450.50	582.04	73.37	85.80	100.97	128.07
AD	Northern Sierra AQMD	Winter	2028	330.58	397.61	450.46	582.28	73.38	85.86	100.98	128.21
AD	Northern Sierra AQMD	Winter	2029	330.58	397.72	450.42	582.52	73.38	85.92	100.98	128.33
AD	Northern Sierra AQMD	Winter	2030	330.58	397.80	450.36	582.75	73.39	85.98	100.97	128.46
AD	Northern Sierra AQMD	Winter	2031	330.60	397.96	450.34	582.95	73.40	86.03	100.98	128.58
AD	Northern Sierra AQMD	Winter	2032	330.60	398.07	450.32	583.15	73.40	86.08	100.98	128.69
AD	Northern Sierra AQMD	Winter	2033	330.61	398.20	450.31	583.31	73.41	86.13	100.98	128.80
AD	Northern Sierra AQMD	Winter	2034	330.62	398.33	450.30	583.45	73.41	86.17	100.99	128.89
AD	Northern Sierra AQMD	Winter	2035	330.61	398.41	450.29	583.56	73.42	86.21	100.99	128.98

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Northern Sonoma County APCD	Annual	2010	390.51	449.32	534.32	668.22	73.44	86.67	100.89	124.24
AD	Northern Sonoma County APCD	Annual	2011	390.41	449.46	533.78	668.92	73.35	86.07	100.76	124.42
AD	Northern Sonoma County APCD	Annual	2012	390.39	449.72	533.36	669.75	73.28	85.75	100.71	124.64
AD	Northern Sonoma County APCD	Annual	2013	390.45	449.93	533.03	670.64	73.24	85.48	100.70	124.89
AD	Northern Sonoma County APCD	Annual	2014	390.51	450.12	532.77	671.53	73.21	85.23	100.66	125.14
AD	Northern Sonoma County APCD	Annual	2015	390.56	450.29	532.56	672.43	73.15	84.99	100.59	125.42
AD	Northern Sonoma County APCD	Annual	2016	389.58	449.24	530.90	671.41	73.14	84.86	100.60	125.69
AD	Northern Sonoma County APCD	Annual	2017	389.62	449.43	530.76	672.22	73.11	84.74	100.59	125.97
AD	Northern Sonoma County APCD	Annual	2018	389.63	449.60	530.64	672.91	73.05	84.67	100.59	126.25
AD	Northern Sonoma County APCD	Annual	2019	389.66	449.79	530.55	673.52	73.04	84.68	100.60	126.51
AD	Northern Sonoma County APCD	Annual	2020	389.72	449.99	530.48	674.07	73.12	84.77	100.66	126.75
AD	Northern Sonoma County APCD	Annual	2021	389.70	450.13	530.40	674.51	73.17	84.88	100.73	126.95
AD	Northern Sonoma County APCD	Annual	2022	389.64	450.20	530.29	674.87	73.19	84.96	100.77	127.13
AD	Northern Sonoma County APCD	Annual	2023	389.45	450.24	530.20	675.12	73.19	85.04	100.81	127.31
AD	Northern Sonoma County APCD	Annual	2024	389.28	450.28	530.12	675.30	73.17	85.12	100.85	127.48
AD	Northern Sonoma County APCD	Annual	2025	389.20	450.39	530.07	675.47	73.17	85.21	100.89	127.63
AD	Northern Sonoma County APCD	Annual	2026	388.38	449.63	528.86	674.20	73.19	85.33	100.92	127.79
AD	Northern Sonoma County APCD	Annual	2027	388.39	449.84	528.80	674.40	73.21	85.43	100.94	127.93
AD	Northern Sonoma County APCD	Annual	2028	388.39	450.05	528.74	674.61	73.21	85.53	100.95	128.07
AD	Northern Sonoma County APCD	Annual	2029	388.37	450.26	528.66	674.83	73.22	85.63	100.96	128.20
AD	Northern Sonoma County APCD	Annual	2030	388.34	450.46	528.57	675.05	73.22	85.71	100.96	128.32
AD	Northern Sonoma County APCD	Annual	2031	388.34	450.68	528.53	675.33	73.23	85.80	100.96	128.45
AD	Northern Sonoma County APCD	Annual	2032	388.33	450.87	528.49	675.61	73.23	85.88	100.97	128.57
AD	Northern Sonoma County APCD	Annual	2033	388.32	451.04	528.45	675.87	73.24	85.96	100.97	128.69
AD	Northern Sonoma County APCD	Annual	2034	388.31	451.20	528.43	676.10	73.25	86.03	100.98	128.79
AD	Northern Sonoma County APCD	Annual	2035	388.30	451.32	528.40	676.31	73.25	86.08	100.98	128.89
AD	Northern Sonoma County APCD	Summer	2010	405.40	463.97	554.11	693.02	73.44	86.67	100.89	124.24
AD	Northern Sonoma County APCD	Summer	2011	405.46	464.55	553.73	693.76	73.35	86.07	100.76	124.42
AD	Northern Sonoma County APCD	Summer	2012	405.58	465.14	553.43	694.67	73.28	85.75	100.71	124.64
AD	Northern Sonoma County APCD	Summer	2013	405.73	465.65	553.21	695.68	73.24	85.48	100.70	124.89
AD	Northern Sonoma County APCD	Summer	2014	405.87	466.08	553.06	696.69	73.21	85.23	100.66	125.14
AD	Northern Sonoma County APCD	Summer	2015	405.97	466.45	552.95	697.74	73.15	84.99	100.59	125.42
AD	Northern Sonoma County APCD	Summer	2016	404.98	465.53	551.32	696.79	73.14	84.86	100.60	125.69
AD	Northern Sonoma County APCD	Summer	2017	405.05	465.86	551.23	697.73	73.11	84.74	100.59	125.97
AD	Northern Sonoma County APCD	Summer	2018	405.05	466.14	551.15	698.52	73.05	84.67	100.59	126.25
AD	Northern Sonoma County APCD	Summer	2019	405.08	466.43	551.09	699.22	73.04	84.68	100.60	126.51
AD	Northern Sonoma County APCD	Summer	2020	405.14	466.72	551.02	699.85	73.12	84.77	100.66	126.75
AD	Northern Sonoma County APCD	Summer	2021	405.12	466.94	550.95	700.35	73.17	84.88	100.73	126.95
AD	Northern Sonoma County APCD	Summer	2022	405.06	467.10	550.86	700.77	73.19	84.96	100.77	127.13
AD	Northern Sonoma County APCD	Summer	2023	404.88	467.22	550.78	701.06	73.19	85.04	100.81	127.31
AD	Northern Sonoma County APCD	Summer	2024	404.72	467.34	550.70	701.27	73.17	85.12	100.85	127.48
AD	Northern Sonoma County APCD	Summer	2025	404.64	467.50	550.65	701.46	73.17	85.21	100.89	127.63
AD	Northern Sonoma County APCD	Summer	2026	403.80	466.76	549.40	700.14	73.19	85.33	100.92	127.79
AD	Northern Sonoma County APCD	Summer	2027	403.82	467.03	549.34	700.34	73.21	85.43	100.94	127.93
AD	Northern Sonoma County APCD	Summer	2028	403.82	467.29	549.29	700.56	73.21	85.53	100.95	128.07
AD	Northern Sonoma County APCD	Summer	2029	403.81	467.55	549.22	700.79	73.22	85.63	100.96	128.20
AD	Northern Sonoma County APCD	Summer	2030	403.80	467.80	549.13	701.03	73.22	85.71	100.96	128.32
AD	Northern Sonoma County APCD	Summer	2031	403.80	468.07	549.10	701.35	73.23	85.80	100.96	128.45
AD	Northern Sonoma County APCD	Summer	2032	403.79	468.29	549.07	701.67	73.23	85.88	100.97	128.57
AD	Northern Sonoma County APCD	Summer	2033	403.79	468.49	549.04	701.96	73.24	85.96	100.97	128.69
AD	Northern Sonoma County APCD	Summer	2034	403.78	468.67	549.01	702.23	73.25	86.03	100.98	128.79
AD	Northern Sonoma County APCD	Summer	2035	403.77	468.80	548.99	702.46	73.25	86.08	100.98	128.89
AD	Northern Sonoma County APCD	Winter	2010	383.18	442.11	524.58	656.01	73.44	86.67	100.89	124.24
AD	Northern Sonoma County APCD	Winter	2011	383.00	442.03	523.97	656.70	73.35	86.07	100.76	124.42

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Northern Sonoma County APCD	Winter	2012	382.92	442.12	523.49	657.49	73.28	85.75	100.71	124.64
AD	Northern Sonoma County APCD	Winter	2013	382.92	442.20	523.10	658.32	73.24	85.48	100.70	124.89
AD	Northern Sonoma County APCD	Winter	2014	382.95	442.27	522.78	659.14	73.21	85.23	100.66	125.14
AD	Northern Sonoma County APCD	Winter	2015	382.97	442.33	522.52	659.97	73.15	84.99	100.59	125.42
AD	Northern Sonoma County APCD	Winter	2016	382.00	441.23	520.85	658.92	73.14	84.86	100.60	125.69
AD	Northern Sonoma County APCD	Winter	2017	382.03	441.35	520.68	659.67	73.11	84.74	100.59	125.97
AD	Northern Sonoma County APCD	Winter	2018	382.04	441.46	520.55	660.31	73.05	84.67	100.59	126.25
AD	Northern Sonoma County APCD	Winter	2019	382.06	441.60	520.45	660.88	73.04	84.68	100.60	126.51
AD	Northern Sonoma County APCD	Winter	2020	382.13	441.75	520.37	661.39	73.12	84.77	100.66	126.75
AD	Northern Sonoma County APCD	Winter	2021	382.11	441.85	520.28	661.79	73.17	84.88	100.73	126.95
AD	Northern Sonoma County APCD	Winter	2022	382.05	441.88	520.16	662.13	73.19	84.96	100.77	127.13
AD	Northern Sonoma County APCD	Winter	2023	381.86	441.88	520.07	662.35	73.19	85.04	100.81	127.31
AD	Northern Sonoma County APCD	Winter	2024	381.68	441.89	519.99	662.52	73.17	85.12	100.85	127.48
AD	Northern Sonoma County APCD	Winter	2025	381.60	441.97	519.94	662.68	73.17	85.21	100.89	127.63
AD	Northern Sonoma County APCD	Winter	2026	380.80	441.20	518.76	661.43	73.19	85.33	100.92	127.79
AD	Northern Sonoma County APCD	Winter	2027	380.81	441.38	518.69	661.63	73.21	85.43	100.94	127.93
AD	Northern Sonoma County APCD	Winter	2028	380.79	441.56	518.63	661.84	73.21	85.53	100.95	128.07
AD	Northern Sonoma County APCD	Winter	2029	380.77	441.75	518.54	662.05	73.22	85.63	100.96	128.20
AD	Northern Sonoma County APCD	Winter	2030	380.74	441.93	518.44	662.26	73.22	85.71	100.96	128.32
AD	Northern Sonoma County APCD	Winter	2031	380.73	442.12	518.40	662.52	73.23	85.80	100.96	128.45
AD	Northern Sonoma County APCD	Winter	2032	380.72	442.30	518.36	662.79	73.23	85.88	100.97	128.57
AD	Northern Sonoma County APCD	Winter	2033	380.71	442.46	518.33	663.03	73.24	85.96	100.97	128.69
AD	Northern Sonoma County APCD	Winter	2034	380.70	442.60	518.30	663.25	73.25	86.03	100.98	128.79
AD	Northern Sonoma County APCD	Winter	2035	380.69	442.72	518.27	663.43	73.25	86.08	100.98	128.89
AD	Placer County APCD	Annual	2010	330.80	382.95	453.87	573.60	73.15	86.40	99.87	125.61
AD	Placer County APCD	Annual	2011	330.96	383.35	453.67	574.14	73.10	85.94	99.92	125.82
AD	Placer County APCD	Annual	2012	331.12	383.73	453.52	574.71	73.06	85.63	100.00	126.05
AD	Placer County APCD	Annual	2013	331.32	384.06	453.41	575.29	73.08	85.40	100.09	126.27
AD	Placer County APCD	Annual	2014	331.48	384.35	453.34	575.86	73.07	85.22	100.16	126.50
AD	Placer County APCD	Annual	2015	331.65	384.62	453.29	576.42	73.11	85.08	100.23	126.73
AD	Placer County APCD	Annual	2016	331.81	384.88	453.26	576.96	73.18	85.00	100.31	126.96
AD	Placer County APCD	Annual	2017	331.93	385.06	453.23	577.48	73.23	84.86	100.37	127.19
AD	Placer County APCD	Annual	2018	332.03	385.26	453.21	577.92	73.27	84.81	100.44	127.41
AD	Placer County APCD	Annual	2019	331.81	385.22	453.03	577.86	73.33	84.90	100.51	127.59
AD	Placer County APCD	Annual	2020	331.89	385.39	453.01	578.18	73.41	85.01	100.59	127.77
AD	Placer County APCD	Annual	2021	331.94	385.58	452.99	578.41	73.48	85.15	100.67	127.91
AD	Placer County APCD	Annual	2022	331.98	385.74	452.97	578.60	73.53	85.27	100.73	128.02
AD	Placer County APCD	Annual	2023	332.00	385.86	452.94	578.76	73.57	85.37	100.79	128.16
AD	Placer County APCD	Annual	2024	332.00	385.96	452.93	578.88	73.59	85.46	100.83	128.28
AD	Placer County APCD	Annual	2025	332.00	386.05	452.91	579.01	73.61	85.54	100.87	128.41
AD	Placer County APCD	Annual	2026	332.02	386.16	452.89	579.13	73.63	85.62	100.90	128.52
AD	Placer County APCD	Annual	2027	332.04	386.27	452.88	579.25	73.64	85.70	100.92	128.62
AD	Placer County APCD	Annual	2028	332.05	386.37	452.86	579.37	73.65	85.76	100.94	128.71
AD	Placer County APCD	Annual	2029	332.05	386.48	452.84	579.49	73.66	85.83	100.95	128.80
AD	Placer County APCD	Annual	2030	332.06	386.59	452.82	579.61	73.67	85.89	100.96	128.88
AD	Placer County APCD	Annual	2031	332.06	386.69	452.81	579.74	73.67	85.94	100.97	128.95
AD	Placer County APCD	Annual	2032	332.06	386.79	452.80	579.86	73.68	86.00	100.98	129.02
AD	Placer County APCD	Annual	2033	332.06	386.87	452.79	579.98	73.68	86.05	100.98	129.09
AD	Placer County APCD	Annual	2034	332.06	386.95	452.79	580.09	73.68	86.09	100.99	129.15
AD	Placer County APCD	Annual	2035	332.06	387.01	452.78	580.18	73.68	86.13	100.99	129.20
AD	Placer County APCD	Summer	2010	366.87	419.79	499.91	632.16	73.15	86.40	99.87	125.61
AD	Placer County APCD	Summer	2011	367.20	420.83	499.86	632.72	73.10	85.94	99.92	125.82
AD	Placer County APCD	Summer	2012	367.51	421.72	499.86	633.38	73.06	85.63	100.00	126.05
AD	Placer County APCD	Summer	2013	367.83	422.43	499.88	634.06	73.08	85.40	100.09	126.27

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Placer County APCD	Summer	2014	368.11	423.03	499.98	634.82	73.07	85.22	100.16	126.50
AD	Placer County APCD	Summer	2015	368.37	423.53	500.06	635.56	73.11	85.08	100.23	126.73
AD	Placer County APCD	Summer	2016	368.59	423.99	500.19	636.33	73.18	85.00	100.31	126.96
AD	Placer County APCD	Summer	2017	368.75	424.37	500.30	637.08	73.23	84.86	100.37	127.19
AD	Placer County APCD	Summer	2018	368.87	424.73	500.37	637.69	73.27	84.81	100.44	127.41
AD	Placer County APCD	Summer	2019	368.64	424.75	500.19	637.68	73.33	84.90	100.51	127.59
AD	Placer County APCD	Summer	2020	368.73	425.03	500.21	638.11	73.41	85.01	100.59	127.77
AD	Placer County APCD	Summer	2021	368.79	425.26	500.22	638.45	73.48	85.15	100.67	127.91
AD	Placer County APCD	Summer	2022	368.85	425.49	500.23	638.74	73.53	85.27	100.73	128.02
AD	Placer County APCD	Summer	2023	368.90	425.67	500.25	638.98	73.57	85.37	100.79	128.16
AD	Placer County APCD	Summer	2024	368.92	425.83	500.26	639.17	73.59	85.46	100.83	128.28
AD	Placer County APCD	Summer	2025	368.94	425.99	500.29	639.37	73.61	85.54	100.87	128.41
AD	Placer County APCD	Summer	2026	368.98	426.17	500.30	639.54	73.63	85.62	100.90	128.52
AD	Placer County APCD	Summer	2027	369.02	426.34	500.32	639.72	73.64	85.70	100.92	128.62
AD	Placer County APCD	Summer	2028	369.05	426.52	500.35	639.90	73.65	85.76	100.94	128.71
AD	Placer County APCD	Summer	2029	369.08	426.71	500.38	640.08	73.66	85.83	100.95	128.80
AD	Placer County APCD	Summer	2030	369.11	426.89	500.40	640.26	73.67	85.89	100.96	128.88
AD	Placer County APCD	Summer	2031	369.14	427.07	500.42	640.42	73.67	85.94	100.97	128.95
AD	Placer County APCD	Summer	2032	369.16	427.23	500.45	640.59	73.68	86.00	100.98	129.02
AD	Placer County APCD	Summer	2033	369.19	427.37	500.48	640.76	73.68	86.05	100.98	129.09
AD	Placer County APCD	Summer	2034	369.21	427.50	500.51	640.92	73.68	86.09	100.99	129.15
AD	Placer County APCD	Summer	2035	369.22	427.60	500.54	641.08	73.68	86.13	100.99	129.20
AD	Placer County APCD	Winter	2010	321.28	373.22	441.80	558.12	73.15	86.40	99.87	125.61
AD	Placer County APCD	Winter	2011	321.39	373.46	441.55	558.65	73.10	85.94	99.92	125.82
AD	Placer County APCD	Winter	2012	321.51	373.70	441.37	559.19	73.06	85.63	100.00	126.05
AD	Placer County APCD	Winter	2013	321.67	373.92	441.22	559.73	73.08	85.40	100.09	126.27
AD	Placer County APCD	Winter	2014	321.80	374.13	441.10	560.26	73.07	85.22	100.16	126.50
AD	Placer County APCD	Winter	2015	321.94	374.34	441.02	560.77	73.11	85.08	100.23	126.73
AD	Placer County APCD	Winter	2016	322.09	374.54	440.94	561.25	73.18	85.00	100.31	126.96
AD	Placer County APCD	Winter	2017	322.20	374.67	440.87	561.70	73.23	84.86	100.37	127.19
AD	Placer County APCD	Winter	2018	322.28	374.82	440.83	562.09	73.27	84.81	100.44	127.41
AD	Placer County APCD	Winter	2019	322.07	374.75	440.63	562.01	73.33	84.90	100.51	127.59
AD	Placer County APCD	Winter	2020	322.14	374.90	440.60	562.29	73.41	85.01	100.59	127.77
AD	Placer County APCD	Winter	2021	322.19	375.07	440.56	562.49	73.48	85.15	100.67	127.91
AD	Placer County APCD	Winter	2022	322.22	375.21	440.52	562.65	73.53	85.27	100.73	128.02
AD	Placer County APCD	Winter	2023	322.22	375.31	440.49	562.78	73.57	85.37	100.79	128.16
AD	Placer County APCD	Winter	2024	322.22	375.39	440.45	562.88	73.59	85.46	100.83	128.28
AD	Placer County APCD	Winter	2025	322.22	375.47	440.42	562.98	73.61	85.54	100.87	128.41
AD	Placer County APCD	Winter	2026	322.23	375.55	440.39	563.08	73.63	85.62	100.90	128.52
AD	Placer County APCD	Winter	2027	322.23	375.64	440.36	563.18	73.64	85.70	100.92	128.62
AD	Placer County APCD	Winter	2028	322.24	375.72	440.33	563.28	73.65	85.76	100.94	128.71
AD	Placer County APCD	Winter	2029	322.23	375.80	440.29	563.38	73.66	85.83	100.95	128.80
AD	Placer County APCD	Winter	2030	322.23	375.89	440.25	563.48	73.67	85.89	100.96	128.88
AD	Placer County APCD	Winter	2031	322.22	375.97	440.23	563.59	73.67	85.94	100.97	128.95
AD	Placer County APCD	Winter	2032	322.22	376.04	440.21	563.70	73.68	86.00	100.98	129.02
AD	Placer County APCD	Winter	2033	322.21	376.11	440.19	563.80	73.68	86.05	100.98	129.09
AD	Placer County APCD	Winter	2034	322.20	376.17	440.17	563.89	73.68	86.09	100.99	129.15
AD	Placer County APCD	Winter	2035	322.19	376.21	440.15	563.96	73.68	86.13	100.99	129.20
AD	Sacramento Metropolitan AQMD	Annual	2010	338.27	388.45	463.58	584.38	72.89	84.85	99.62	124.76
AD	Sacramento Metropolitan AQMD	Annual	2011	338.59	389.26	463.49	584.93	72.94	84.61	99.69	124.96
AD	Sacramento Metropolitan AQMD	Annual	2012	338.89	389.98	463.44	585.56	73.00	84.46	99.78	125.19
AD	Sacramento Metropolitan AQMD	Annual	2013	339.19	390.61	463.40	586.25	73.08	84.39	99.88	125.44
AD	Sacramento Metropolitan AQMD	Annual	2014	339.46	391.17	463.38	586.94	73.15	84.34	99.96	125.69
AD	Sacramento Metropolitan AQMD	Annual	2015	339.72	391.68	463.38	587.65	73.24	84.33	100.03	125.96

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Sacramento Metropolitan AQMD	Annual	2016	339.95	392.11	463.38	588.32	73.35	84.32	100.13	126.23
AD	Sacramento Metropolitan AQMD	Annual	2017	340.12	392.49	463.38	588.95	73.41	84.30	100.21	126.50
AD	Sacramento Metropolitan AQMD	Annual	2018	340.26	392.81	463.37	589.51	73.47	84.32	100.29	126.76
AD	Sacramento Metropolitan AQMD	Annual	2019	338.61	391.09	460.99	586.96	73.53	84.47	100.38	126.99
AD	Sacramento Metropolitan AQMD	Annual	2020	338.72	391.37	460.98	587.40	73.64	84.63	100.47	127.20
AD	Sacramento Metropolitan AQMD	Annual	2021	338.80	391.64	460.97	587.73	73.72	84.80	100.57	127.38
AD	Sacramento Metropolitan AQMD	Annual	2022	338.84	391.86	460.96	588.00	73.78	84.95	100.64	127.54
AD	Sacramento Metropolitan AQMD	Annual	2023	338.86	392.04	460.94	588.22	73.82	85.07	100.71	127.71
AD	Sacramento Metropolitan AQMD	Annual	2024	338.87	392.19	460.92	588.37	73.85	85.19	100.76	127.86
AD	Sacramento Metropolitan AQMD	Annual	2025	338.88	392.32	460.91	588.52	73.87	85.29	100.81	128.00
AD	Sacramento Metropolitan AQMD	Annual	2026	338.89	392.46	460.90	588.69	73.89	85.39	100.85	128.15
AD	Sacramento Metropolitan AQMD	Annual	2027	338.90	392.59	460.89	588.86	73.91	85.48	100.88	128.28
AD	Sacramento Metropolitan AQMD	Annual	2028	338.91	392.72	460.89	589.02	73.92	85.56	100.90	128.39
AD	Sacramento Metropolitan AQMD	Annual	2029	338.91	392.85	460.87	589.18	73.93	85.64	100.92	128.50
AD	Sacramento Metropolitan AQMD	Annual	2030	338.91	392.98	460.87	589.35	73.93	85.71	100.93	128.60
AD	Sacramento Metropolitan AQMD	Annual	2031	338.92	393.12	460.86	589.51	73.94	85.79	100.94	128.70
AD	Sacramento Metropolitan AQMD	Annual	2032	338.92	393.24	460.86	589.69	73.94	85.85	100.95	128.80
AD	Sacramento Metropolitan AQMD	Annual	2033	338.92	393.34	460.85	589.84	73.95	85.91	100.96	128.88
AD	Sacramento Metropolitan AQMD	Annual	2034	338.92	393.44	460.84	589.99	73.95	85.97	100.96	128.96
AD	Sacramento Metropolitan AQMD	Annual	2035	338.92	393.51	460.84	590.12	73.95	86.02	100.97	129.04
AD	Sacramento Metropolitan AQMD	Summer	2010	375.62	427.51	513.20	646.48	72.89	84.85	99.62	124.76
AD	Sacramento Metropolitan AQMD	Summer	2011	376.19	429.01	513.26	646.92	72.94	84.61	99.69	124.96
AD	Sacramento Metropolitan AQMD	Summer	2012	376.70	430.30	513.35	647.57	73.00	84.46	99.78	125.19
AD	Sacramento Metropolitan AQMD	Summer	2013	377.16	431.37	513.46	648.38	73.08	84.39	99.88	125.44
AD	Sacramento Metropolitan AQMD	Summer	2014	377.55	432.28	513.62	649.25	73.15	84.34	99.96	125.69
AD	Sacramento Metropolitan AQMD	Summer	2015	377.89	433.05	513.77	650.20	73.24	84.33	100.03	125.96
AD	Sacramento Metropolitan AQMD	Summer	2016	378.19	433.69	513.89	651.12	73.35	84.32	100.13	126.23
AD	Sacramento Metropolitan AQMD	Summer	2017	378.39	434.26	513.97	651.99	73.41	84.30	100.21	126.50
AD	Sacramento Metropolitan AQMD	Summer	2018	378.53	434.71	513.99	652.74	73.47	84.32	100.29	126.76
AD	Sacramento Metropolitan AQMD	Summer	2019	376.67	432.84	511.33	650.00	73.53	84.47	100.38	126.99
AD	Sacramento Metropolitan AQMD	Summer	2020	376.76	433.18	511.31	650.57	73.64	84.63	100.47	127.20
AD	Sacramento Metropolitan AQMD	Summer	2021	376.83	433.55	511.26	650.99	73.72	84.80	100.57	127.38
AD	Sacramento Metropolitan AQMD	Summer	2022	376.86	433.86	511.21	651.34	73.78	84.95	100.64	127.54
AD	Sacramento Metropolitan AQMD	Summer	2023	376.88	434.12	511.16	651.60	73.82	85.07	100.71	127.71
AD	Sacramento Metropolitan AQMD	Summer	2024	376.89	434.33	511.11	651.76	73.85	85.19	100.76	127.86
AD	Sacramento Metropolitan AQMD	Summer	2025	376.91	434.52	511.07	651.91	73.87	85.29	100.81	128.00
AD	Sacramento Metropolitan AQMD	Summer	2026	376.91	434.70	511.07	652.09	73.89	85.39	100.85	128.15
AD	Sacramento Metropolitan AQMD	Summer	2027	376.93	434.88	511.07	652.26	73.91	85.48	100.88	128.28
AD	Sacramento Metropolitan AQMD	Summer	2028	376.94	435.06	511.07	652.43	73.92	85.56	100.90	128.39
AD	Sacramento Metropolitan AQMD	Summer	2029	376.95	435.25	511.08	652.61	73.93	85.64	100.92	128.50
AD	Sacramento Metropolitan AQMD	Summer	2030	376.96	435.44	511.08	652.80	73.93	85.71	100.93	128.60
AD	Sacramento Metropolitan AQMD	Summer	2031	376.96	435.63	511.08	652.97	73.94	85.79	100.94	128.70
AD	Sacramento Metropolitan AQMD	Summer	2032	376.97	435.80	511.07	653.16	73.94	85.85	100.95	128.80
AD	Sacramento Metropolitan AQMD	Summer	2033	376.98	435.94	511.07	653.35	73.95	85.91	100.96	128.88
AD	Sacramento Metropolitan AQMD	Summer	2034	376.98	436.06	511.06	653.53	73.95	85.97	100.96	128.96
AD	Sacramento Metropolitan AQMD	Summer	2035	376.98	436.16	511.05	653.69	73.95	86.02	100.97	129.04
AD	Sacramento Metropolitan AQMD	Winter	2010	328.26	377.97	450.28	567.73	72.89	84.85	99.62	124.76
AD	Sacramento Metropolitan AQMD	Winter	2011	328.50	378.59	450.15	568.31	72.94	84.61	99.69	124.96
AD	Sacramento Metropolitan AQMD	Winter	2012	328.76	379.17	450.05	568.93	73.00	84.46	99.78	125.19
AD	Sacramento Metropolitan AQMD	Winter	2013	329.01	379.69	449.97	569.59	73.08	84.39	99.88	125.44
AD	Sacramento Metropolitan AQMD	Winter	2014	329.25	380.15	449.91	570.23	73.15	84.34	99.96	125.69
AD	Sacramento Metropolitan AQMD	Winter	2015	329.48	380.58	449.87	570.88	73.24	84.33	100.03	125.96
AD	Sacramento Metropolitan AQMD	Winter	2016	329.69	380.95	449.84	571.48	73.35	84.32	100.13	126.23
AD	Sacramento Metropolitan AQMD	Winter	2017	329.86	381.29	449.81	572.05	73.41	84.30	100.21	126.50

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Sacramento Metropolitan AQMD	Winter	2018	329.99	381.58	449.80	572.55	73.47	84.32	100.29	126.76
AD	Sacramento Metropolitan AQMD	Winter	2019	328.41	379.90	447.49	570.06	73.53	84.47	100.38	126.99
AD	Sacramento Metropolitan AQMD	Winter	2020	328.52	380.16	447.49	570.46	73.64	84.63	100.47	127.20
AD	Sacramento Metropolitan AQMD	Winter	2021	328.60	380.41	447.49	570.77	73.72	84.80	100.57	127.38
AD	Sacramento Metropolitan AQMD	Winter	2022	328.65	380.61	447.49	571.03	73.78	84.95	100.64	127.54
AD	Sacramento Metropolitan AQMD	Winter	2023	328.67	380.77	447.48	571.23	73.82	85.07	100.71	127.71
AD	Sacramento Metropolitan AQMD	Winter	2024	328.67	380.89	447.47	571.38	73.85	85.19	100.76	127.86
AD	Sacramento Metropolitan AQMD	Winter	2025	328.68	381.01	447.47	571.53	73.87	85.29	100.81	128.00
AD	Sacramento Metropolitan AQMD	Winter	2026	328.70	381.14	447.46	571.70	73.89	85.39	100.85	128.15
AD	Sacramento Metropolitan AQMD	Winter	2027	328.71	381.25	447.45	571.86	73.91	85.48	100.88	128.28
AD	Sacramento Metropolitan AQMD	Winter	2028	328.72	381.37	447.43	572.02	73.92	85.56	100.90	128.39
AD	Sacramento Metropolitan AQMD	Winter	2029	328.72	381.49	447.42	572.18	73.93	85.64	100.92	128.50
AD	Sacramento Metropolitan AQMD	Winter	2030	328.72	381.60	447.41	572.34	73.93	85.71	100.93	128.60
AD	Sacramento Metropolitan AQMD	Winter	2031	328.72	381.72	447.40	572.50	73.94	85.79	100.94	128.70
AD	Sacramento Metropolitan AQMD	Winter	2032	328.72	381.83	447.39	572.67	73.94	85.85	100.95	128.80
AD	Sacramento Metropolitan AQMD	Winter	2033	328.72	381.92	447.39	572.82	73.95	85.91	100.96	128.88
AD	Sacramento Metropolitan AQMD	Winter	2034	328.72	382.01	447.38	572.96	73.95	85.97	100.96	128.96
AD	Sacramento Metropolitan AQMD	Winter	2035	328.71	382.08	447.37	573.07	73.95	86.02	100.97	129.04
AD	San Diego County APCD	Annual	2010	352.52	405.15	482.46	610.22	72.99	83.92	99.34	125.27
AD	San Diego County APCD	Annual	2011	353.81	407.05	483.85	612.57	73.01	83.88	99.44	125.44
AD	San Diego County APCD	Annual	2012	354.03	407.67	483.80	613.09	73.05	83.89	99.57	125.64
AD	San Diego County APCD	Annual	2013	354.28	408.23	483.77	613.65	73.12	83.94	99.70	125.85
AD	San Diego County APCD	Annual	2014	354.50	408.76	483.75	614.21	73.17	83.99	99.82	126.06
AD	San Diego County APCD	Annual	2015	354.72	409.25	483.74	614.79	73.24	84.07	99.93	126.29
AD	San Diego County APCD	Annual	2016	354.92	409.69	483.74	615.32	73.32	84.16	100.05	126.52
AD	San Diego County APCD	Annual	2017	355.08	410.10	483.73	615.84	73.37	84.25	100.15	126.74
AD	San Diego County APCD	Annual	2018	355.21	410.47	483.74	616.29	73.41	84.35	100.25	126.96
AD	San Diego County APCD	Annual	2019	355.33	410.82	483.74	616.69	73.46	84.52	100.35	127.15
AD	San Diego County APCD	Annual	2020	355.43	411.15	483.75	617.07	73.55	84.69	100.45	127.34
AD	San Diego County APCD	Annual	2021	356.07	412.11	484.56	618.41	73.62	84.87	100.55	127.52
AD	San Diego County APCD	Annual	2022	356.11	412.36	484.56	618.69	73.67	85.02	100.63	127.67
AD	San Diego County APCD	Annual	2023	356.12	412.55	484.56	618.89	73.71	85.15	100.70	127.83
AD	San Diego County APCD	Annual	2024	356.12	412.71	484.55	619.06	73.72	85.27	100.76	127.98
AD	San Diego County APCD	Annual	2025	356.11	412.86	484.55	619.23	73.74	85.38	100.81	128.12
AD	San Diego County APCD	Annual	2026	356.13	413.01	484.54	619.39	73.76	85.48	100.85	128.26
AD	San Diego County APCD	Annual	2027	356.14	413.16	484.53	619.54	73.77	85.57	100.88	128.38
AD	San Diego County APCD	Annual	2028	356.15	413.30	484.51	619.69	73.78	85.66	100.90	128.48
AD	San Diego County APCD	Annual	2029	356.15	413.45	484.50	619.84	73.79	85.74	100.92	128.58
AD	San Diego County APCD	Annual	2030	356.14	413.59	484.49	619.98	73.79	85.81	100.93	128.68
AD	San Diego County APCD	Annual	2031	356.14	413.74	484.48	620.13	73.80	85.89	100.94	128.77
AD	San Diego County APCD	Annual	2032	356.14	413.87	484.48	620.29	73.80	85.96	100.95	128.86
AD	San Diego County APCD	Annual	2033	356.14	414.00	484.47	620.43	73.80	86.02	100.96	128.93
AD	San Diego County APCD	Annual	2034	356.13	414.10	484.46	620.55	73.80	86.08	100.97	129.01
AD	San Diego County APCD	Annual	2035	356.13	414.20	484.46	620.67	73.81	86.13	100.97	129.08
AD	San Diego County APCD	Summer	2010	372.46	426.19	509.00	643.64	72.99	83.92	99.34	125.27
AD	San Diego County APCD	Summer	2011	373.89	428.41	510.48	645.96	73.01	83.88	99.44	125.44
AD	San Diego County APCD	Summer	2012	374.19	429.26	510.46	646.43	73.05	83.89	99.57	125.64
AD	San Diego County APCD	Summer	2013	374.48	430.00	510.47	646.99	73.12	83.94	99.70	125.85
AD	San Diego County APCD	Summer	2014	374.75	430.67	510.51	647.60	73.17	83.99	99.82	126.06
AD	San Diego County APCD	Summer	2015	375.00	431.27	510.56	648.26	73.24	84.07	99.93	126.29
AD	San Diego County APCD	Summer	2016	375.24	431.81	510.61	648.90	73.32	84.16	100.05	126.52
AD	San Diego County APCD	Summer	2017	375.42	432.30	510.65	649.52	73.37	84.25	100.15	126.74
AD	San Diego County APCD	Summer	2018	375.55	432.74	510.67	650.05	73.41	84.35	100.25	126.96
AD	San Diego County APCD	Summer	2019	375.68	433.15	510.68	650.53	73.46	84.52	100.35	127.15

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	San Diego County APCD	Summer	2020	375.78	433.52	510.68	650.97	73.55	84.69	100.45	127.34
AD	San Diego County APCD	Summer	2021	376.47	434.60	511.57	652.47	73.62	84.87	100.55	127.52
AD	San Diego County APCD	Summer	2022	376.52	434.90	511.57	652.82	73.67	85.02	100.63	127.67
AD	San Diego County APCD	Summer	2023	376.54	435.14	511.57	653.07	73.71	85.15	100.70	127.83
AD	San Diego County APCD	Summer	2024	376.54	435.34	511.56	653.27	73.72	85.27	100.76	127.98
AD	San Diego County APCD	Summer	2025	376.54	435.52	511.56	653.45	73.74	85.38	100.81	128.12
AD	San Diego County APCD	Summer	2026	376.55	435.72	511.54	653.62	73.76	85.48	100.85	128.26
AD	San Diego County APCD	Summer	2027	376.56	435.90	511.53	653.77	73.77	85.57	100.88	128.38
AD	San Diego County APCD	Summer	2028	376.57	436.07	511.51	653.92	73.78	85.66	100.90	128.48
AD	San Diego County APCD	Summer	2029	376.58	436.25	511.49	654.06	73.79	85.74	100.92	128.58
AD	San Diego County APCD	Summer	2030	376.58	436.43	511.48	654.21	73.79	85.81	100.93	128.68
AD	San Diego County APCD	Summer	2031	376.57	436.61	511.47	654.35	73.80	85.89	100.94	128.77
AD	San Diego County APCD	Summer	2032	376.57	436.77	511.46	654.51	73.80	85.96	100.95	128.86
AD	San Diego County APCD	Summer	2033	376.57	436.92	511.45	654.65	73.80	86.02	100.96	128.93
AD	San Diego County APCD	Summer	2034	376.57	437.04	511.45	654.79	73.80	86.08	100.97	129.01
AD	San Diego County APCD	Summer	2035	376.57	437.14	511.44	654.92	73.81	86.13	100.97	129.08
AD	San Diego County APCD	Winter	2010	348.91	401.34	477.65	604.17	72.99	83.92	99.34	125.27
AD	San Diego County APCD	Winter	2011	350.18	403.18	479.04	606.53	73.01	83.88	99.44	125.44
AD	San Diego County APCD	Winter	2012	350.39	403.76	478.98	607.06	73.05	83.89	99.57	125.64
AD	San Diego County APCD	Winter	2013	350.62	404.30	478.94	607.62	73.12	83.94	99.70	125.85
AD	San Diego County APCD	Winter	2014	350.83	404.79	478.91	608.17	73.17	83.99	99.82	126.06
AD	San Diego County APCD	Winter	2015	351.05	405.26	478.89	608.73	73.24	84.07	99.93	126.29
AD	San Diego County APCD	Winter	2016	351.25	405.69	478.88	609.25	73.32	84.16	100.05	126.52
AD	San Diego County APCD	Winter	2017	351.40	406.08	478.87	609.75	73.37	84.25	100.15	126.74
AD	San Diego County APCD	Winter	2018	351.53	406.44	478.86	610.18	73.41	84.35	100.25	126.96
AD	San Diego County APCD	Winter	2019	351.65	406.78	478.87	610.57	73.46	84.52	100.35	127.15
AD	San Diego County APCD	Winter	2020	351.75	407.10	478.87	610.94	73.55	84.69	100.45	127.34
AD	San Diego County APCD	Winter	2021	352.38	408.04	479.67	612.25	73.62	84.87	100.55	127.52
AD	San Diego County APCD	Winter	2022	352.42	408.28	479.67	612.51	73.67	85.02	100.63	127.67
AD	San Diego County APCD	Winter	2023	352.43	408.47	479.67	612.71	73.71	85.15	100.70	127.83
AD	San Diego County APCD	Winter	2024	352.42	408.62	479.66	612.87	73.72	85.27	100.76	127.98
AD	San Diego County APCD	Winter	2025	352.42	408.75	479.66	613.03	73.74	85.38	100.81	128.12
AD	San Diego County APCD	Winter	2026	352.43	408.90	479.65	613.20	73.76	85.48	100.85	128.26
AD	San Diego County APCD	Winter	2027	352.44	409.04	479.64	613.35	73.77	85.57	100.88	128.38
AD	San Diego County APCD	Winter	2028	352.45	409.18	479.63	613.50	73.78	85.66	100.90	128.48
AD	San Diego County APCD	Winter	2029	352.45	409.32	479.62	613.64	73.79	85.74	100.92	128.58
AD	San Diego County APCD	Winter	2030	352.45	409.46	479.60	613.79	73.79	85.81	100.93	128.68
AD	San Diego County APCD	Winter	2031	352.44	409.60	479.60	613.94	73.80	85.89	100.94	128.77
AD	San Diego County APCD	Winter	2032	352.44	409.73	479.59	614.10	73.80	85.96	100.95	128.86
AD	San Diego County APCD	Winter	2033	352.44	409.85	479.59	614.23	73.80	86.02	100.96	128.93
AD	San Diego County APCD	Winter	2034	352.44	409.95	479.58	614.36	73.80	86.08	100.97	129.01
AD	San Diego County APCD	Winter	2035	352.43	410.04	479.57	614.47	73.81	86.13	100.97	129.08
AD	San Joaquin Valley Unified APCD	Annual	2010	344.53	395.23	472.07	594.91	73.37	85.32	100.36	124.58
AD	San Joaquin Valley Unified APCD	Annual	2011	344.79	396.17	471.84	595.64	73.37	85.05	100.34	124.82
AD	San Joaquin Valley Unified APCD	Annual	2012	344.82	396.68	471.40	596.04	73.39	84.87	100.35	125.07
AD	San Joaquin Valley Unified APCD	Annual	2013	345.18	397.48	471.50	597.02	73.43	84.73	100.37	125.34
AD	San Joaquin Valley Unified APCD	Annual	2014	345.41	398.05	471.41	597.81	73.45	84.65	100.38	125.62
AD	San Joaquin Valley Unified APCD	Annual	2015	346.20	399.25	472.24	599.62	73.50	84.60	100.40	125.92
AD	San Joaquin Valley Unified APCD	Annual	2016	346.40	399.70	472.19	600.39	73.57	84.57	100.44	126.22
AD	San Joaquin Valley Unified APCD	Annual	2017	346.53	400.08	472.14	601.11	73.60	84.54	100.44	126.51
AD	San Joaquin Valley Unified APCD	Annual	2018	347.36	401.34	473.27	602.98	73.63	84.56	100.47	126.79
AD	San Joaquin Valley Unified APCD	Annual	2019	347.49	401.71	473.29	603.59	73.68	84.67	100.51	127.05
AD	San Joaquin Valley Unified APCD	Annual	2020	347.59	402.04	473.30	604.13	73.77	84.83	100.58	127.28
AD	San Joaquin Valley Unified APCD	Annual	2021	347.55	402.06	472.98	604.31	73.84	84.99	100.66	127.48

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	San Joaquin Valley Unified APCD	Annual	2022	347.60	402.27	472.95	604.67	73.89	85.13	100.73	127.64
AD	San Joaquin Valley Unified APCD	Annual	2023	347.63	402.44	472.93	604.96	73.92	85.25	100.78	127.82
AD	San Joaquin Valley Unified APCD	Annual	2024	347.85	403.02	473.49	605.81	73.94	85.37	100.83	127.98
AD	San Joaquin Valley Unified APCD	Annual	2025	347.86	403.16	473.48	606.02	73.96	85.47	100.86	128.14
AD	San Joaquin Valley Unified APCD	Annual	2026	348.71	404.36	474.80	607.63	73.98	85.57	100.89	128.28
AD	San Joaquin Valley Unified APCD	Annual	2027	348.72	404.49	474.74	607.80	73.99	85.65	100.92	128.41
AD	San Joaquin Valley Unified APCD	Annual	2028	348.73	404.62	474.69	607.97	74.00	85.74	100.93	128.53
AD	San Joaquin Valley Unified APCD	Annual	2029	348.73	404.75	474.65	608.15	74.01	85.81	100.94	128.63
AD	San Joaquin Valley Unified APCD	Annual	2030	348.73	404.88	474.61	608.33	74.01	85.88	100.95	128.74
AD	San Joaquin Valley Unified APCD	Annual	2031	348.73	405.01	474.57	608.48	74.02	85.95	100.96	128.83
AD	San Joaquin Valley Unified APCD	Annual	2032	348.73	405.13	474.53	608.63	74.02	86.02	100.96	128.92
AD	San Joaquin Valley Unified APCD	Annual	2033	348.73	405.23	474.50	608.78	74.02	86.07	100.97	129.00
AD	San Joaquin Valley Unified APCD	Annual	2034	348.73	405.32	474.47	608.91	74.03	86.12	100.97	129.08
AD	San Joaquin Valley Unified APCD	Annual	2035	348.74	405.39	474.45	609.03	74.03	86.17	100.98	129.15
AD	San Joaquin Valley Unified APCD	Summer	2010	378.79	430.24	517.12	652.23	73.37	85.32	100.36	124.58
AD	San Joaquin Valley Unified APCD	Summer	2011	379.32	432.07	517.21	652.97	73.37	85.05	100.34	124.82
AD	San Joaquin Valley Unified APCD	Summer	2012	379.51	433.17	516.96	653.39	73.39	84.87	100.35	125.07
AD	San Joaquin Valley Unified APCD	Summer	2013	380.02	434.48	517.27	654.53	73.43	84.73	100.37	125.34
AD	San Joaquin Valley Unified APCD	Summer	2014	380.35	435.44	517.38	655.51	73.45	84.65	100.38	125.62
AD	San Joaquin Valley Unified APCD	Summer	2015	381.29	437.04	518.48	657.68	73.50	84.60	100.40	125.92
AD	San Joaquin Valley Unified APCD	Summer	2016	381.55	437.73	518.55	658.71	73.57	84.57	100.44	126.22
AD	San Joaquin Valley Unified APCD	Summer	2017	381.72	438.33	518.60	659.66	73.60	84.54	100.44	126.51
AD	San Joaquin Valley Unified APCD	Summer	2018	382.62	439.83	519.89	661.84	73.63	84.56	100.47	126.79
AD	San Joaquin Valley Unified APCD	Summer	2019	382.75	440.33	519.93	662.62	73.68	84.67	100.51	127.05
AD	San Joaquin Valley Unified APCD	Summer	2020	382.86	440.77	519.95	663.30	73.77	84.83	100.58	127.28
AD	San Joaquin Valley Unified APCD	Summer	2021	382.80	440.85	519.59	663.56	73.84	84.99	100.66	127.48
AD	San Joaquin Valley Unified APCD	Summer	2022	382.85	441.14	519.54	664.00	73.89	85.13	100.73	127.64
AD	San Joaquin Valley Unified APCD	Summer	2023	382.88	441.39	519.49	664.34	73.92	85.25	100.78	127.82
AD	San Joaquin Valley Unified APCD	Summer	2024	383.14	442.10	520.11	665.29	73.94	85.37	100.83	127.98
AD	San Joaquin Valley Unified APCD	Summer	2025	383.16	442.31	520.10	665.52	73.96	85.47	100.86	128.14
AD	San Joaquin Valley Unified APCD	Summer	2026	384.09	443.68	521.54	667.23	73.98	85.57	100.89	128.28
AD	San Joaquin Valley Unified APCD	Summer	2027	384.11	443.88	521.48	667.40	73.99	85.65	100.92	128.41
AD	San Joaquin Valley Unified APCD	Summer	2028	384.12	444.07	521.44	667.58	74.00	85.74	100.93	128.53
AD	San Joaquin Valley Unified APCD	Summer	2029	384.14	444.28	521.41	667.76	74.01	85.81	100.94	128.63
AD	San Joaquin Valley Unified APCD	Summer	2030	384.15	444.48	521.38	667.96	74.01	85.88	100.95	128.74
AD	San Joaquin Valley Unified APCD	Summer	2031	384.15	444.67	521.34	668.13	74.02	85.95	100.96	128.83
AD	San Joaquin Valley Unified APCD	Summer	2032	384.15	444.83	521.31	668.31	74.02	86.02	100.96	128.92
AD	San Joaquin Valley Unified APCD	Summer	2033	384.15	444.97	521.29	668.48	74.02	86.07	100.97	129.00
AD	San Joaquin Valley Unified APCD	Summer	2034	384.16	445.10	521.27	668.66	74.03	86.12	100.97	129.08
AD	San Joaquin Valley Unified APCD	Summer	2035	384.17	445.18	521.25	668.82	74.03	86.17	100.98	129.15
AD	San Joaquin Valley Unified APCD	Winter	2010	331.71	382.09	455.17	573.36	73.37	85.32	100.36	124.58
AD	San Joaquin Valley Unified APCD	Winter	2011	331.86	382.70	454.81	574.06	73.37	85.05	100.34	124.82
AD	San Joaquin Valley Unified APCD	Winter	2012	331.84	382.98	454.30	574.45	73.39	84.87	100.35	125.07
AD	San Joaquin Valley Unified APCD	Winter	2013	332.15	383.59	454.32	575.38	73.43	84.73	100.37	125.34
AD	San Joaquin Valley Unified APCD	Winter	2014	332.34	384.02	454.16	576.11	73.45	84.65	100.38	125.62
AD	San Joaquin Valley Unified APCD	Winter	2015	333.08	385.08	454.89	577.78	73.50	84.60	100.40	125.92
AD	San Joaquin Valley Unified APCD	Winter	2016	333.25	385.43	454.79	578.46	73.57	84.57	100.44	126.22
AD	San Joaquin Valley Unified APCD	Winter	2017	333.38	385.74	454.71	579.09	73.60	84.54	100.44	126.51
AD	San Joaquin Valley Unified APCD	Winter	2018	334.17	386.90	455.78	580.83	73.63	84.56	100.47	126.79
AD	San Joaquin Valley Unified APCD	Winter	2019	334.29	387.21	455.78	581.37	73.68	84.67	100.51	127.05
AD	San Joaquin Valley Unified APCD	Winter	2020	334.40	387.49	455.79	581.86	73.77	84.83	100.58	127.28
AD	San Joaquin Valley Unified APCD	Winter	2021	334.35	387.50	455.49	582.01	73.84	84.99	100.66	127.48
AD	San Joaquin Valley Unified APCD	Winter	2022	334.40	387.67	455.46	582.34	73.89	85.13	100.73	127.64
AD	San Joaquin Valley Unified APCD	Winter	2023	334.42	387.81	455.44	582.61	73.92	85.25	100.78	127.82

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	San Joaquin Valley Unified APCD	Winter	2024	334.63	388.34	455.98	583.42	73.94	85.37	100.83	127.98
AD	San Joaquin Valley Unified APCD	Winter	2025	334.64	388.44	455.97	583.62	73.96	85.47	100.86	128.14
AD	San Joaquin Valley Unified APCD	Winter	2026	335.45	389.58	457.23	585.17	73.98	85.57	100.89	128.28
AD	San Joaquin Valley Unified APCD	Winter	2027	335.46	389.68	457.17	585.33	73.99	85.65	100.92	128.41
AD	San Joaquin Valley Unified APCD	Winter	2028	335.46	389.78	457.12	585.50	74.00	85.74	100.93	128.53
AD	San Joaquin Valley Unified APCD	Winter	2029	335.46	389.88	457.06	585.66	74.01	85.81	100.94	128.63
AD	San Joaquin Valley Unified APCD	Winter	2030	335.45	389.98	457.02	585.83	74.01	85.88	100.95	128.74
AD	San Joaquin Valley Unified APCD	Winter	2031	335.45	390.08	456.97	585.97	74.02	85.95	100.96	128.83
AD	San Joaquin Valley Unified APCD	Winter	2032	335.44	390.18	456.93	586.11	74.02	86.02	100.96	128.92
AD	San Joaquin Valley Unified APCD	Winter	2033	335.44	390.27	456.89	586.24	74.02	86.07	100.97	129.00
AD	San Joaquin Valley Unified APCD	Winter	2034	335.44	390.34	456.86	586.35	74.03	86.12	100.97	129.08
AD	San Joaquin Valley Unified APCD	Winter	2035	335.44	390.41	456.83	586.45	74.03	86.17	100.98	129.15
AD	San Luis Obispo County APCD	Annual	2010	323.71	378.06	444.34	556.25	73.66	90.73	100.02	124.73
AD	San Luis Obispo County APCD	Annual	2011	323.66	377.48	443.78	556.86	73.53	89.58	100.04	124.90
AD	San Luis Obispo County APCD	Annual	2012	323.65	377.05	443.34	557.51	73.41	88.66	100.08	125.11
AD	San Luis Obispo County APCD	Annual	2013	323.72	376.63	442.99	558.19	73.36	87.82	100.14	125.34
AD	San Luis Obispo County APCD	Annual	2014	323.79	376.32	442.72	558.85	73.31	87.15	100.20	125.58
AD	San Luis Obispo County APCD	Annual	2015	323.89	376.00	442.50	559.54	73.31	86.48	100.25	125.85
AD	San Luis Obispo County APCD	Annual	2016	323.99	375.75	442.33	560.18	73.31	85.95	100.33	126.11
AD	San Luis Obispo County APCD	Annual	2017	324.07	375.53	442.19	560.79	73.31	85.47	100.39	126.38
AD	San Luis Obispo County APCD	Annual	2018	324.12	375.39	442.08	561.33	73.30	85.15	100.47	126.64
AD	San Luis Obispo County APCD	Annual	2019	324.17	375.38	441.99	561.79	73.31	85.03	100.54	126.87
AD	San Luis Obispo County APCD	Annual	2020	324.24	375.40	441.92	562.20	73.40	85.04	100.62	127.10
AD	San Luis Obispo County APCD	Annual	2021	324.29	375.51	441.85	562.51	73.47	85.15	100.70	127.27
AD	San Luis Obispo County APCD	Annual	2022	324.32	375.62	441.79	562.77	73.52	85.25	100.76	127.41
AD	San Luis Obispo County APCD	Annual	2023	324.30	375.69	441.73	562.97	73.56	85.34	100.82	127.59
AD	San Luis Obispo County APCD	Annual	2024	324.27	375.76	441.66	563.12	73.57	85.42	100.86	127.74
AD	San Luis Obispo County APCD	Annual	2025	324.25	375.82	441.61	563.29	73.59	85.49	100.89	127.90
AD	San Luis Obispo County APCD	Annual	2026	324.27	375.91	441.54	563.46	73.61	85.57	100.92	128.06
AD	San Luis Obispo County APCD	Annual	2027	324.28	375.99	441.47	563.63	73.63	85.63	100.94	128.19
AD	San Luis Obispo County APCD	Annual	2028	324.28	376.07	441.40	563.80	73.64	85.68	100.95	128.31
AD	San Luis Obispo County APCD	Annual	2029	324.27	376.16	441.32	563.96	73.64	85.74	100.95	128.43
AD	San Luis Obispo County APCD	Annual	2030	324.26	376.24	441.24	564.13	73.65	85.79	100.95	128.54
AD	San Luis Obispo County APCD	Annual	2031	324.26	376.33	441.20	564.31	73.65	85.84	100.96	128.65
AD	San Luis Obispo County APCD	Annual	2032	324.26	376.41	441.16	564.49	73.66	85.88	100.96	128.75
AD	San Luis Obispo County APCD	Annual	2033	324.25	376.48	441.13	564.65	73.66	85.92	100.97	128.84
AD	San Luis Obispo County APCD	Annual	2034	324.25	376.54	441.10	564.79	73.67	85.96	100.97	128.93
AD	San Luis Obispo County APCD	Annual	2035	324.24	376.60	441.08	564.92	73.67	86.00	100.97	129.01
AD	San Luis Obispo County APCD	Summer	2010	337.08	392.11	461.85	578.62	73.66	90.73	100.02	124.73
AD	San Luis Obispo County APCD	Summer	2011	337.15	391.73	461.44	579.22	73.53	89.58	100.04	124.90
AD	San Luis Obispo County APCD	Summer	2012	337.23	391.46	461.13	579.91	73.41	88.66	100.08	125.11
AD	San Luis Obispo County APCD	Summer	2013	337.36	391.21	460.89	580.65	73.36	87.82	100.14	125.34
AD	San Luis Obispo County APCD	Summer	2014	337.49	391.02	460.71	581.40	73.31	87.15	100.20	125.58
AD	San Luis Obispo County APCD	Summer	2015	337.63	390.82	460.57	582.19	73.31	86.48	100.25	125.85
AD	San Luis Obispo County APCD	Summer	2016	337.76	390.68	460.46	582.94	73.31	85.95	100.33	126.11
AD	San Luis Obispo County APCD	Summer	2017	337.85	390.56	460.36	583.64	73.31	85.47	100.39	126.38
AD	San Luis Obispo County APCD	Summer	2018	337.91	390.51	460.26	584.25	73.30	85.15	100.47	126.64
AD	San Luis Obispo County APCD	Summer	2019	337.96	390.55	460.18	584.77	73.31	85.03	100.54	126.87
AD	San Luis Obispo County APCD	Summer	2020	338.03	390.62	460.11	585.24	73.40	85.04	100.62	127.10
AD	San Luis Obispo County APCD	Summer	2021	338.07	390.76	460.04	585.58	73.47	85.15	100.70	127.27
AD	San Luis Obispo County APCD	Summer	2022	338.10	390.89	459.97	585.87	73.52	85.25	100.76	127.41
AD	San Luis Obispo County APCD	Summer	2023	338.08	390.99	459.91	586.10	73.56	85.34	100.82	127.59
AD	San Luis Obispo County APCD	Summer	2024	338.05	391.07	459.85	586.26	73.57	85.42	100.86	127.74
AD	San Luis Obispo County APCD	Summer	2025	338.04	391.16	459.80	586.42	73.59	85.49	100.89	127.90

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	San Luis Obispo County APCD	Summer	2026	338.05	391.26	459.73	586.60	73.61	85.57	100.92	128.06
AD	San Luis Obispo County APCD	Summer	2027	338.07	391.36	459.67	586.77	73.63	85.63	100.94	128.19
AD	San Luis Obispo County APCD	Summer	2028	338.07	391.45	459.61	586.94	73.64	85.68	100.95	128.31
AD	San Luis Obispo County APCD	Summer	2029	338.07	391.55	459.54	587.11	73.64	85.74	100.95	128.43
AD	San Luis Obispo County APCD	Summer	2030	338.06	391.65	459.47	587.29	73.65	85.79	100.95	128.54
AD	San Luis Obispo County APCD	Summer	2031	338.06	391.75	459.44	587.47	73.65	85.84	100.96	128.65
AD	San Luis Obispo County APCD	Summer	2032	338.06	391.85	459.41	587.66	73.66	85.88	100.96	128.75
AD	San Luis Obispo County APCD	Summer	2033	338.06	391.93	459.38	587.84	73.66	85.92	100.97	128.84
AD	San Luis Obispo County APCD	Summer	2034	338.06	391.99	459.35	588.00	73.67	85.96	100.97	128.93
AD	San Luis Obispo County APCD	Summer	2035	338.05	392.05	459.33	588.14	73.67	86.00	100.97	129.01
AD	San Luis Obispo County APCD	Winter	2010	321.04	375.26	440.86	551.80	73.66	90.73	100.02	124.73
AD	San Luis Obispo County APCD	Winter	2011	320.97	374.65	440.26	552.41	73.53	89.58	100.04	124.90
AD	San Luis Obispo County APCD	Winter	2012	320.95	374.18	439.80	553.05	73.41	88.66	100.08	125.11
AD	San Luis Obispo County APCD	Winter	2013	321.01	373.73	439.43	553.72	73.36	87.82	100.14	125.34
AD	San Luis Obispo County APCD	Winter	2014	321.07	373.40	439.14	554.36	73.31	87.15	100.20	125.58
AD	San Luis Obispo County APCD	Winter	2015	321.16	373.05	438.90	555.03	73.31	86.48	100.25	125.85
AD	San Luis Obispo County APCD	Winter	2016	321.25	372.78	438.72	555.65	73.31	85.95	100.33	126.11
AD	San Luis Obispo County APCD	Winter	2017	321.32	372.53	438.57	556.25	73.31	85.47	100.39	126.38
AD	San Luis Obispo County APCD	Winter	2018	321.37	372.38	438.46	556.77	73.30	85.15	100.47	126.64
AD	San Luis Obispo County APCD	Winter	2019	321.42	372.35	438.37	557.21	73.31	85.03	100.54	126.87
AD	San Luis Obispo County APCD	Winter	2020	321.50	372.37	438.30	557.61	73.40	85.04	100.62	127.10
AD	San Luis Obispo County APCD	Winter	2021	321.55	372.47	438.23	557.91	73.47	85.15	100.70	127.27
AD	San Luis Obispo County APCD	Winter	2022	321.57	372.57	438.17	558.16	73.52	85.25	100.76	127.41
AD	San Luis Obispo County APCD	Winter	2023	321.56	372.64	438.10	558.37	73.56	85.34	100.82	127.59
AD	San Luis Obispo County APCD	Winter	2024	321.53	372.71	438.04	558.51	73.57	85.42	100.86	127.74
AD	San Luis Obispo County APCD	Winter	2025	321.51	372.77	437.99	558.68	73.59	85.49	100.89	127.90
AD	San Luis Obispo County APCD	Winter	2026	321.52	372.85	437.92	558.85	73.61	85.57	100.92	128.06
AD	San Luis Obispo County APCD	Winter	2027	321.53	372.93	437.84	559.02	73.63	85.63	100.94	128.19
AD	San Luis Obispo County APCD	Winter	2028	321.53	373.01	437.77	559.19	73.64	85.68	100.95	128.31
AD	San Luis Obispo County APCD	Winter	2029	321.52	373.09	437.69	559.35	73.64	85.74	100.95	128.43
AD	San Luis Obispo County APCD	Winter	2030	321.51	373.17	437.61	559.52	73.65	85.79	100.95	128.54
AD	San Luis Obispo County APCD	Winter	2031	321.51	373.25	437.57	559.69	73.65	85.84	100.96	128.65
AD	San Luis Obispo County APCD	Winter	2032	321.51	373.33	437.53	559.87	73.66	85.88	100.96	128.75
AD	San Luis Obispo County APCD	Winter	2033	321.50	373.40	437.50	560.03	73.66	85.92	100.97	128.84
AD	San Luis Obispo County APCD	Winter	2034	321.50	373.46	437.47	560.17	73.67	85.96	100.97	128.93
AD	San Luis Obispo County APCD	Winter	2035	321.49	373.52	437.45	560.29	73.67	86.00	100.97	129.01
AD	Santa Barbara County APCD	Annual	2010	310.84	363.09	427.75	535.11	73.30	88.99	99.96	124.67
AD	Santa Barbara County APCD	Annual	2011	310.88	362.63	427.11	535.68	73.27	88.16	99.98	124.88
AD	Santa Barbara County APCD	Annual	2012	310.95	362.25	426.61	536.31	73.24	87.48	100.03	125.11
AD	Santa Barbara County APCD	Annual	2013	311.07	361.91	426.21	536.98	73.26	86.88	100.11	125.37
AD	Santa Barbara County APCD	Annual	2014	311.18	361.62	425.89	537.62	73.27	86.37	100.18	125.64
AD	Santa Barbara County APCD	Annual	2015	313.00	363.39	428.01	541.26	73.31	85.95	100.25	125.92
AD	Santa Barbara County APCD	Annual	2016	313.13	363.16	427.81	541.86	73.36	85.55	100.33	126.20
AD	Santa Barbara County APCD	Annual	2017	313.22	362.94	427.65	542.43	73.38	85.18	100.40	126.48
AD	Santa Barbara County APCD	Annual	2018	313.28	362.85	427.53	542.93	73.40	85.00	100.47	126.74
AD	Santa Barbara County APCD	Annual	2019	313.35	362.86	427.43	543.35	73.43	84.95	100.55	126.99
AD	Santa Barbara County APCD	Annual	2020	313.43	362.88	427.35	543.74	73.53	84.99	100.64	127.22
AD	Santa Barbara County APCD	Annual	2021	313.48	362.96	427.30	543.99	73.59	85.09	100.71	127.38
AD	Santa Barbara County APCD	Annual	2022	313.49	363.03	427.24	544.20	73.64	85.18	100.77	127.51
AD	Santa Barbara County APCD	Annual	2023	313.48	363.09	427.17	544.37	73.67	85.26	100.82	127.66
AD	Santa Barbara County APCD	Annual	2024	313.44	363.12	427.11	544.49	73.68	85.33	100.86	127.80
AD	Santa Barbara County APCD	Annual	2025	313.43	363.17	427.06	544.63	73.70	85.40	100.90	127.95
AD	Santa Barbara County APCD	Annual	2026	311.28	360.68	423.96	540.92	73.71	85.47	100.92	128.08
AD	Santa Barbara County APCD	Annual	2027	311.28	360.75	423.88	541.07	73.73	85.52	100.94	128.21

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Santa Barbara County APCD	Annual	2028	311.28	360.82	423.82	541.22	73.74	85.58	100.95	128.32
AD	Santa Barbara County APCD	Annual	2029	311.28	360.90	423.73	541.36	73.74	85.63	100.95	128.43
AD	Santa Barbara County APCD	Annual	2030	311.26	360.97	423.64	541.52	73.75	85.67	100.95	128.53
AD	Santa Barbara County APCD	Annual	2031	311.26	361.06	423.58	541.68	73.75	85.72	100.96	128.63
AD	Santa Barbara County APCD	Annual	2032	311.25	361.13	423.54	541.85	73.76	85.77	100.96	128.73
AD	Santa Barbara County APCD	Annual	2033	311.25	361.21	423.50	542.00	73.76	85.81	100.96	128.82
AD	Santa Barbara County APCD	Annual	2034	311.24	361.27	423.46	542.14	73.76	85.85	100.97	128.90
AD	Santa Barbara County APCD	Annual	2035	311.24	361.32	423.43	542.26	73.77	85.88	100.97	128.98
AD	Santa Barbara County APCD	Summer	2010	318.00	370.60	437.04	547.10	73.30	88.99	99.96	124.67
AD	Santa Barbara County APCD	Summer	2011	318.11	370.21	436.50	547.67	73.27	88.16	99.98	124.88
AD	Santa Barbara County APCD	Summer	2012	318.23	369.92	436.07	548.31	73.24	87.48	100.03	125.11
AD	Santa Barbara County APCD	Summer	2013	318.39	369.65	435.73	549.01	73.26	86.88	100.11	125.37
AD	Santa Barbara County APCD	Summer	2014	318.53	369.43	435.47	549.69	73.27	86.37	100.18	125.64
AD	Santa Barbara County APCD	Summer	2015	320.38	371.28	437.66	553.41	73.31	85.95	100.25	125.92
AD	Santa Barbara County APCD	Summer	2016	320.52	371.11	437.49	554.06	73.36	85.55	100.33	126.20
AD	Santa Barbara County APCD	Summer	2017	320.61	370.94	437.35	554.68	73.38	85.18	100.40	126.48
AD	Santa Barbara County APCD	Summer	2018	320.68	370.90	437.24	555.21	73.40	85.00	100.47	126.74
AD	Santa Barbara County APCD	Summer	2019	320.75	370.93	437.14	555.67	73.43	84.95	100.55	126.99
AD	Santa Barbara County APCD	Summer	2020	320.82	370.99	437.07	556.08	73.53	84.99	100.64	127.22
AD	Santa Barbara County APCD	Summer	2021	320.86	371.07	437.00	556.34	73.59	85.09	100.71	127.38
AD	Santa Barbara County APCD	Summer	2022	320.87	371.15	436.93	556.55	73.64	85.18	100.77	127.51
AD	Santa Barbara County APCD	Summer	2023	320.85	371.21	436.86	556.71	73.67	85.26	100.82	127.66
AD	Santa Barbara County APCD	Summer	2024	320.82	371.26	436.79	556.83	73.68	85.33	100.86	127.80
AD	Santa Barbara County APCD	Summer	2025	320.80	371.31	436.74	556.96	73.70	85.40	100.90	127.95
AD	Santa Barbara County APCD	Summer	2026	318.61	368.79	433.59	553.19	73.71	85.47	100.92	128.08
AD	Santa Barbara County APCD	Summer	2027	318.61	368.86	433.51	553.33	73.73	85.52	100.94	128.21
AD	Santa Barbara County APCD	Summer	2028	318.62	368.94	433.45	553.48	73.74	85.58	100.95	128.32
AD	Santa Barbara County APCD	Summer	2029	318.61	369.02	433.37	553.64	73.74	85.63	100.95	128.43
AD	Santa Barbara County APCD	Summer	2030	318.60	369.11	433.28	553.80	73.75	85.67	100.95	128.53
AD	Santa Barbara County APCD	Summer	2031	318.60	369.20	433.24	553.96	73.75	85.72	100.96	128.63
AD	Santa Barbara County APCD	Summer	2032	318.60	369.29	433.20	554.14	73.76	85.77	100.96	128.73
AD	Santa Barbara County APCD	Summer	2033	318.60	369.37	433.17	554.30	73.76	85.81	100.96	128.82
AD	Santa Barbara County APCD	Summer	2034	318.59	369.44	433.13	554.45	73.76	85.85	100.97	128.90
AD	Santa Barbara County APCD	Summer	2035	318.59	369.50	433.10	554.58	73.77	85.88	100.97	128.98
AD	Santa Barbara County APCD	Winter	2010	310.39	362.63	427.17	534.37	73.30	88.99	99.96	124.67
AD	Santa Barbara County APCD	Winter	2011	310.43	362.16	426.53	534.94	73.27	88.16	99.98	124.88
AD	Santa Barbara County APCD	Winter	2012	310.50	361.77	426.02	535.57	73.24	87.48	100.03	125.11
AD	Santa Barbara County APCD	Winter	2013	310.62	361.43	425.62	536.23	73.26	86.88	100.11	125.37
AD	Santa Barbara County APCD	Winter	2014	310.73	361.13	425.30	536.87	73.27	86.37	100.18	125.64
AD	Santa Barbara County APCD	Winter	2015	312.55	362.90	427.42	540.51	73.31	85.95	100.25	125.92
AD	Santa Barbara County APCD	Winter	2016	312.67	362.67	427.21	541.11	73.36	85.55	100.33	126.20
AD	Santa Barbara County APCD	Winter	2017	312.76	362.45	427.05	541.68	73.38	85.18	100.40	126.48
AD	Santa Barbara County APCD	Winter	2018	312.83	362.36	426.93	542.17	73.40	85.00	100.47	126.74
AD	Santa Barbara County APCD	Winter	2019	312.90	362.36	426.83	542.59	73.43	84.95	100.55	126.99
AD	Santa Barbara County APCD	Winter	2020	312.97	362.38	426.75	542.98	73.53	84.99	100.64	127.22
AD	Santa Barbara County APCD	Winter	2021	313.02	362.45	426.70	543.23	73.59	85.09	100.71	127.38
AD	Santa Barbara County APCD	Winter	2022	313.04	362.53	426.64	543.44	73.64	85.18	100.77	127.51
AD	Santa Barbara County APCD	Winter	2023	313.02	362.58	426.57	543.61	73.67	85.26	100.82	127.66
AD	Santa Barbara County APCD	Winter	2024	312.99	362.62	426.51	543.73	73.68	85.33	100.86	127.80
AD	Santa Barbara County APCD	Winter	2025	312.98	362.66	426.46	543.87	73.70	85.40	100.90	127.95
AD	Santa Barbara County APCD	Winter	2026	310.82	360.18	423.37	540.16	73.71	85.47	100.92	128.08
AD	Santa Barbara County APCD	Winter	2027	310.83	360.25	423.29	540.31	73.73	85.52	100.94	128.21
AD	Santa Barbara County APCD	Winter	2028	310.83	360.32	423.22	540.46	73.74	85.58	100.95	128.32
AD	Santa Barbara County APCD	Winter	2029	310.82	360.40	423.14	540.60	73.74	85.63	100.95	128.43

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Santa Barbara County APCD	Winter	2030	310.81	360.47	423.04	540.76	73.75	85.67	100.95	128.53
AD	Santa Barbara County APCD	Winter	2031	310.80	360.55	422.99	540.92	73.75	85.72	100.96	128.63
AD	Santa Barbara County APCD	Winter	2032	310.80	360.63	422.94	541.09	73.76	85.77	100.96	128.73
AD	Santa Barbara County APCD	Winter	2033	310.80	360.70	422.90	541.24	73.76	85.81	100.96	128.82
AD	Santa Barbara County APCD	Winter	2034	310.79	360.76	422.87	541.38	73.76	85.85	100.97	128.90
AD	Santa Barbara County APCD	Winter	2035	310.78	360.82	422.83	541.50	73.77	85.88	100.97	128.98
AD	Shasta County AQMD	Annual	2010	350.80	413.29	482.10	601.62	74.15	98.71	101.24	125.46
AD	Shasta County AQMD	Annual	2011	350.90	412.33	481.45	602.23	73.97	96.26	101.09	125.49
AD	Shasta County AQMD	Annual	2012	351.01	411.55	480.95	602.95	73.79	94.20	101.00	125.59
AD	Shasta County AQMD	Annual	2013	351.16	410.88	480.56	603.76	73.67	92.45	100.93	125.73
AD	Shasta County AQMD	Annual	2014	351.28	410.22	480.26	604.58	73.54	90.71	100.85	125.88
AD	Shasta County AQMD	Annual	2015	351.43	409.72	480.02	605.45	73.48	89.34	100.76	126.07
AD	Shasta County AQMD	Annual	2016	351.59	409.32	479.82	606.30	73.48	88.23	100.75	126.28
AD	Shasta County AQMD	Annual	2017	351.70	408.85	479.65	607.09	73.46	86.94	100.68	126.51
AD	Shasta County AQMD	Annual	2018	351.78	408.50	479.51	607.77	73.42	85.93	100.65	126.73
AD	Shasta County AQMD	Annual	2019	351.86	408.40	479.39	608.38	73.43	85.58	100.66	126.93
AD	Shasta County AQMD	Annual	2020	351.92	408.34	479.30	608.94	73.52	85.46	100.71	127.12
AD	Shasta County AQMD	Annual	2021	351.97	408.41	479.21	609.29	73.59	85.54	100.78	127.19
AD	Shasta County AQMD	Annual	2022	352.00	408.47	479.13	609.57	73.64	85.60	100.83	127.24
AD	Shasta County AQMD	Annual	2023	351.99	408.52	479.04	609.77	73.67	85.66	100.87	127.40
AD	Shasta County AQMD	Annual	2024	351.96	408.57	478.97	609.93	73.69	85.71	100.90	127.56
AD	Shasta County AQMD	Annual	2025	351.96	408.62	478.91	610.13	73.71	85.77	100.93	127.72
AD	Shasta County AQMD	Annual	2026	351.98	408.69	478.84	610.34	73.73	85.83	100.95	127.89
AD	Shasta County AQMD	Annual	2027	351.99	408.74	478.77	610.55	73.74	85.87	100.96	128.04
AD	Shasta County AQMD	Annual	2028	352.00	408.80	478.71	610.77	73.75	85.92	100.97	128.18
AD	Shasta County AQMD	Annual	2029	352.00	408.87	478.63	610.99	73.76	85.96	100.97	128.31
AD	Shasta County AQMD	Annual	2030	351.99	408.94	478.56	611.21	73.76	86.00	100.96	128.43
AD	Shasta County AQMD	Annual	2031	351.99	409.00	478.53	611.45	73.77	86.04	100.96	128.55
AD	Shasta County AQMD	Annual	2032	351.99	409.07	478.50	611.69	73.78	86.08	100.96	128.67
AD	Shasta County AQMD	Annual	2033	351.98	409.12	478.47	611.91	73.78	86.11	100.97	128.77
AD	Shasta County AQMD	Annual	2034	351.98	409.16	478.44	612.11	73.78	86.14	100.97	128.87
AD	Shasta County AQMD	Annual	2035	351.97	409.20	478.42	612.29	73.79	86.17	100.97	128.96
AD	Shasta County AQMD	Summer	2010	377.12	440.81	516.16	644.42	74.15	98.71	101.24	125.46
AD	Shasta County AQMD	Summer	2011	377.45	440.35	515.97	645.10	73.97	96.26	101.09	125.49
AD	Shasta County AQMD	Summer	2012	377.75	439.98	515.82	645.96	73.79	94.20	101.00	125.59
AD	Shasta County AQMD	Summer	2013	378.03	439.65	515.70	646.99	73.67	92.45	100.93	125.73
AD	Shasta County AQMD	Summer	2014	378.26	439.31	515.62	648.05	73.54	90.71	100.85	125.88
AD	Shasta County AQMD	Summer	2015	378.49	439.05	515.56	649.19	73.48	89.34	100.76	126.07
AD	Shasta County AQMD	Summer	2016	378.71	438.86	515.49	650.32	73.48	88.23	100.75	126.28
AD	Shasta County AQMD	Summer	2017	378.85	438.66	515.40	651.36	73.46	86.94	100.68	126.51
AD	Shasta County AQMD	Summer	2018	378.93	438.50	515.27	652.24	73.42	85.93	100.65	126.73
AD	Shasta County AQMD	Summer	2019	379.01	438.48	515.17	653.03	73.43	85.58	100.66	126.93
AD	Shasta County AQMD	Summer	2020	379.07	438.49	515.07	653.75	73.52	85.46	100.71	127.12
AD	Shasta County AQMD	Summer	2021	379.11	438.58	514.97	654.24	73.59	85.54	100.78	127.19
AD	Shasta County AQMD	Summer	2022	379.12	438.68	514.88	654.63	73.64	85.60	100.83	127.24
AD	Shasta County AQMD	Summer	2023	379.11	438.76	514.80	654.91	73.67	85.66	100.87	127.40
AD	Shasta County AQMD	Summer	2024	379.10	438.85	514.73	655.11	73.69	85.71	100.90	127.56
AD	Shasta County AQMD	Summer	2025	379.11	438.93	514.68	655.32	73.71	85.77	100.93	127.72
AD	Shasta County AQMD	Summer	2026	379.13	439.02	514.61	655.54	73.73	85.83	100.95	127.89
AD	Shasta County AQMD	Summer	2027	379.15	439.10	514.56	655.77	73.74	85.87	100.96	128.04
AD	Shasta County AQMD	Summer	2028	379.16	439.18	514.51	656.00	73.75	85.92	100.97	128.18
AD	Shasta County AQMD	Summer	2029	379.17	439.28	514.46	656.24	73.76	85.96	100.97	128.31
AD	Shasta County AQMD	Summer	2030	379.18	439.37	514.41	656.49	73.76	86.00	100.96	128.43
AD	Shasta County AQMD	Summer	2031	379.17	439.46	514.40	656.77	73.77	86.04	100.96	128.55

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Shasta County AQMD	Summer	2032	379.17	439.53	514.40	657.05	73.78	86.08	100.96	128.67
AD	Shasta County AQMD	Summer	2033	379.17	439.59	514.38	657.31	73.78	86.11	100.97	128.77
AD	Shasta County AQMD	Summer	2034	379.16	439.64	514.37	657.55	73.78	86.14	100.97	128.87
AD	Shasta County AQMD	Summer	2035	379.16	439.67	514.35	657.77	73.79	86.17	100.97	128.96
AD	Shasta County AQMD	Winter	2010	339.28	401.24	467.18	582.88	74.15	98.71	101.24	125.46
AD	Shasta County AQMD	Winter	2011	339.28	400.06	466.34	583.46	73.97	96.26	101.09	125.49
AD	Shasta County AQMD	Winter	2012	339.31	399.10	465.69	584.12	73.79	94.20	101.00	125.59
AD	Shasta County AQMD	Winter	2013	339.39	398.29	465.18	584.84	73.67	92.45	100.93	125.73
AD	Shasta County AQMD	Winter	2014	339.47	397.49	464.78	585.56	73.54	90.71	100.85	125.88
AD	Shasta County AQMD	Winter	2015	339.58	396.87	464.45	586.30	73.48	89.34	100.76	126.07
AD	Shasta County AQMD	Winter	2016	339.72	396.38	464.21	587.03	73.48	88.23	100.75	126.28
AD	Shasta County AQMD	Winter	2017	339.82	395.81	464.01	587.71	73.46	86.94	100.68	126.51
AD	Shasta County AQMD	Winter	2018	339.89	395.36	463.85	588.30	73.42	85.93	100.65	126.73
AD	Shasta County AQMD	Winter	2019	339.97	395.23	463.73	588.83	73.43	85.58	100.66	126.93
AD	Shasta County AQMD	Winter	2020	340.04	395.15	463.64	589.32	73.52	85.46	100.71	127.12
AD	Shasta County AQMD	Winter	2021	340.09	395.20	463.55	589.61	73.59	85.54	100.78	127.19
AD	Shasta County AQMD	Winter	2022	340.12	395.24	463.47	589.84	73.64	85.60	100.83	127.24
AD	Shasta County AQMD	Winter	2023	340.11	395.29	463.39	590.01	73.67	85.66	100.87	127.40
AD	Shasta County AQMD	Winter	2024	340.09	395.32	463.31	590.15	73.69	85.71	100.90	127.56
AD	Shasta County AQMD	Winter	2025	340.08	395.35	463.25	590.34	73.71	85.77	100.93	127.72
AD	Shasta County AQMD	Winter	2026	340.10	395.41	463.18	590.55	73.73	85.83	100.95	127.89
AD	Shasta County AQMD	Winter	2027	340.11	395.45	463.10	590.76	73.74	85.87	100.96	128.04
AD	Shasta County AQMD	Winter	2028	340.11	395.50	463.03	590.97	73.75	85.92	100.97	128.18
AD	Shasta County AQMD	Winter	2029	340.10	395.56	462.95	591.18	73.76	85.96	100.97	128.31
AD	Shasta County AQMD	Winter	2030	340.09	395.62	462.87	591.39	73.76	86.00	100.96	128.43
AD	Shasta County AQMD	Winter	2031	340.09	395.67	462.82	591.61	73.77	86.04	100.96	128.55
AD	Shasta County AQMD	Winter	2032	340.09	395.73	462.78	591.84	73.78	86.08	100.96	128.67
AD	Shasta County AQMD	Winter	2033	340.08	395.78	462.74	592.04	73.78	86.11	100.97	128.77
AD	Shasta County AQMD	Winter	2034	340.08	395.82	462.71	592.22	73.78	86.14	100.97	128.87
AD	Shasta County AQMD	Winter	2035	340.07	395.85	462.69	592.38	73.79	86.17	100.97	128.96
AD	Siskiyou County APCD	Annual	2010	378.80	444.35	519.95	649.03	74.19	93.56	102.24	125.12
AD	Siskiyou County APCD	Annual	2011	378.73	443.52	519.19	649.67	74.04	92.11	102.01	125.20
AD	Siskiyou County APCD	Annual	2012	378.70	442.82	518.58	650.49	73.88	90.89	101.82	125.30
AD	Siskiyou County APCD	Annual	2013	378.69	442.25	518.06	651.35	73.68	89.89	101.54	125.46
AD	Siskiyou County APCD	Annual	2014	378.76	441.72	517.67	652.21	73.60	88.92	101.36	125.61
AD	Siskiyou County APCD	Annual	2015	378.86	441.26	517.36	653.09	73.55	88.04	101.18	125.82
AD	Siskiyou County APCD	Annual	2016	378.97	440.88	517.10	653.95	73.55	87.27	101.06	126.05
AD	Siskiyou County APCD	Annual	2017	379.02	440.51	516.88	654.72	73.49	86.50	100.90	126.29
AD	Siskiyou County APCD	Annual	2018	379.03	440.25	516.71	655.39	73.41	85.98	100.79	126.52
AD	Siskiyou County APCD	Annual	2019	379.07	440.11	516.58	655.97	73.39	85.68	100.76	126.74
AD	Siskiyou County APCD	Annual	2020	379.14	439.98	516.47	656.46	73.48	85.54	100.80	126.95
AD	Siskiyou County APCD	Annual	2021	379.12	439.88	516.35	656.80	73.52	85.53	100.84	127.11
AD	Siskiyou County APCD	Annual	2022	379.05	439.72	516.23	657.04	73.53	85.50	100.87	127.20
AD	Siskiyou County APCD	Annual	2023	378.90	439.60	516.12	657.19	73.51	85.48	100.89	127.36
AD	Siskiyou County APCD	Annual	2024	378.77	439.53	516.02	657.33	73.48	85.50	100.91	127.52
AD	Siskiyou County APCD	Annual	2025	378.71	439.58	515.95	657.44	73.49	85.56	100.93	127.67
AD	Siskiyou County APCD	Annual	2026	378.72	439.71	515.87	657.62	73.51	85.65	100.95	127.82
AD	Siskiyou County APCD	Annual	2027	378.72	439.84	515.80	657.81	73.52	85.73	100.97	127.97
AD	Siskiyou County APCD	Annual	2028	378.72	439.97	515.74	658.01	73.53	85.81	100.98	128.11
AD	Siskiyou County APCD	Annual	2029	378.70	440.10	515.67	658.20	73.53	85.88	100.98	128.23
AD	Siskiyou County APCD	Annual	2030	378.68	440.21	515.58	658.40	73.54	85.95	100.97	128.36
AD	Siskiyou County APCD	Annual	2031	378.67	440.34	515.53	658.68	73.54	86.01	100.97	128.49
AD	Siskiyou County APCD	Annual	2032	378.67	440.44	515.49	658.96	73.55	86.07	100.98	128.62
AD	Siskiyou County APCD	Annual	2033	378.66	440.54	515.46	659.20	73.55	86.13	100.98	128.73

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Siskiyou County APCD	Annual	2034	378.65	440.63	515.42	659.41	73.56	86.18	100.98	128.83
AD	Siskiyou County APCD	Annual	2035	378.64	440.70	515.40	659.60	73.56	86.22	100.99	128.93
AD	Siskiyou County APCD	Summer	2010	393.78	458.70	539.46	673.02	74.19	93.56	102.24	125.12
AD	Siskiyou County APCD	Summer	2011	393.90	458.44	538.93	673.75	74.04	92.11	102.01	125.20
AD	Siskiyou County APCD	Summer	2012	394.02	458.19	538.51	674.72	73.88	90.89	101.82	125.30
AD	Siskiyou County APCD	Summer	2013	394.12	457.97	538.18	675.77	73.68	89.89	101.54	125.46
AD	Siskiyou County APCD	Summer	2014	394.26	457.73	537.93	676.82	73.60	88.92	101.36	125.61
AD	Siskiyou County APCD	Summer	2015	394.41	457.52	537.74	677.91	73.55	88.04	101.18	125.82
AD	Siskiyou County APCD	Summer	2016	394.55	457.35	537.58	678.96	73.55	87.27	101.06	126.05
AD	Siskiyou County APCD	Summer	2017	394.62	457.17	537.43	679.91	73.49	86.50	100.90	126.29
AD	Siskiyou County APCD	Summer	2018	394.63	457.04	537.29	680.74	73.41	85.98	100.79	126.52
AD	Siskiyou County APCD	Summer	2019	394.66	457.01	537.18	681.46	73.39	85.68	100.76	126.74
AD	Siskiyou County APCD	Summer	2020	394.72	456.98	537.09	682.06	73.48	85.54	100.80	126.95
AD	Siskiyou County APCD	Summer	2021	394.69	456.95	536.97	682.49	73.52	85.53	100.84	127.11
AD	Siskiyou County APCD	Summer	2022	394.62	456.88	536.86	682.82	73.53	85.50	100.87	127.20
AD	Siskiyou County APCD	Summer	2023	394.48	456.83	536.76	683.03	73.51	85.48	100.89	127.36
AD	Siskiyou County APCD	Summer	2024	394.35	456.84	536.67	683.22	73.48	85.50	100.91	127.52
AD	Siskiyou County APCD	Summer	2025	394.30	456.94	536.61	683.38	73.49	85.56	100.93	127.67
AD	Siskiyou County APCD	Summer	2026	394.32	457.11	536.53	683.57	73.51	85.65	100.95	127.82
AD	Siskiyou County APCD	Summer	2027	394.33	457.28	536.46	683.78	73.52	85.73	100.97	127.97
AD	Siskiyou County APCD	Summer	2028	394.34	457.44	536.40	684.00	73.53	85.81	100.98	128.11
AD	Siskiyou County APCD	Summer	2029	394.33	457.61	536.34	684.23	73.53	85.88	100.98	128.23
AD	Siskiyou County APCD	Summer	2030	394.32	457.77	536.26	684.47	73.54	85.95	100.97	128.36
AD	Siskiyou County APCD	Summer	2031	394.32	457.91	536.23	684.79	73.54	86.01	100.97	128.49
AD	Siskiyou County APCD	Summer	2032	394.32	458.04	536.21	685.10	73.55	86.07	100.98	128.62
AD	Siskiyou County APCD	Summer	2033	394.31	458.15	536.18	685.38	73.55	86.13	100.98	128.73
AD	Siskiyou County APCD	Summer	2034	394.30	458.25	536.16	685.63	73.56	86.18	100.98	128.83
AD	Siskiyou County APCD	Summer	2035	394.29	458.31	536.14	685.85	73.56	86.22	100.99	128.93
AD	Siskiyou County APCD	Winter	2010	373.71	439.47	513.32	640.88	74.19	93.56	102.24	125.12
AD	Siskiyou County APCD	Winter	2011	373.57	438.45	512.48	641.49	74.04	92.11	102.01	125.20
AD	Siskiyou County APCD	Winter	2012	373.50	437.60	511.81	642.25	73.88	90.89	101.82	125.30
AD	Siskiyou County APCD	Winter	2013	373.45	436.91	511.23	643.06	73.68	89.89	101.54	125.46
AD	Siskiyou County APCD	Winter	2014	373.49	436.28	510.79	643.86	73.60	88.92	101.36	125.61
AD	Siskiyou County APCD	Winter	2015	373.58	435.74	510.43	644.66	73.55	88.04	101.18	125.82
AD	Siskiyou County APCD	Winter	2016	373.68	435.28	510.15	645.45	73.55	87.27	101.06	126.05
AD	Siskiyou County APCD	Winter	2017	373.73	434.85	509.90	646.16	73.49	86.50	100.90	126.29
AD	Siskiyou County APCD	Winter	2018	373.74	434.55	509.71	646.78	73.41	85.98	100.79	126.52
AD	Siskiyou County APCD	Winter	2019	373.78	434.37	509.58	647.31	73.39	85.68	100.76	126.74
AD	Siskiyou County APCD	Winter	2020	373.85	434.21	509.47	647.77	73.48	85.54	100.80	126.95
AD	Siskiyou County APCD	Winter	2021	373.83	434.08	509.34	648.08	73.52	85.53	100.84	127.11
AD	Siskiyou County APCD	Winter	2022	373.76	433.89	509.22	648.29	73.53	85.50	100.87	127.20
AD	Siskiyou County APCD	Winter	2023	373.61	433.74	509.10	648.41	73.51	85.48	100.89	127.36
AD	Siskiyou County APCD	Winter	2024	373.47	433.65	509.00	648.53	73.48	85.50	100.91	127.52
AD	Siskiyou County APCD	Winter	2025	373.42	433.68	508.93	648.63	73.49	85.56	100.93	127.67
AD	Siskiyou County APCD	Winter	2026	373.42	433.81	508.85	648.81	73.51	85.65	100.95	127.82
AD	Siskiyou County APCD	Winter	2027	373.42	433.92	508.79	648.99	73.52	85.73	100.97	127.97
AD	Siskiyou County APCD	Winter	2028	373.41	434.03	508.72	649.17	73.53	85.81	100.98	128.11
AD	Siskiyou County APCD	Winter	2029	373.39	434.14	508.65	649.35	73.53	85.88	100.98	128.23
AD	Siskiyou County APCD	Winter	2030	373.36	434.25	508.56	649.55	73.54	85.95	100.97	128.36
AD	Siskiyou County APCD	Winter	2031	373.36	434.37	508.50	649.81	73.54	86.01	100.97	128.49
AD	Siskiyou County APCD	Winter	2032	373.35	434.47	508.45	650.08	73.55	86.07	100.98	128.62
AD	Siskiyou County APCD	Winter	2033	373.34	434.56	508.42	650.30	73.55	86.13	100.98	128.73
AD	Siskiyou County APCD	Winter	2034	373.34	434.64	508.38	650.51	73.56	86.18	100.98	128.83
AD	Siskiyou County APCD	Winter	2035	373.33	434.71	508.36	650.69	73.56	86.22	100.99	128.93

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	South Coast AQMD	Annual	2010	358.02	409.62	488.99	615.32	73.21	84.05	99.45	125.25
AD	South Coast AQMD	Annual	2011	358.54	410.54	489.35	616.40	73.23	84.00	99.55	125.44
AD	South Coast AQMD	Annual	2012	358.67	410.92	489.13	616.69	73.27	83.99	99.67	125.65
AD	South Coast AQMD	Annual	2013	358.87	411.39	488.96	617.06	73.33	84.01	99.79	125.87
AD	South Coast AQMD	Annual	2014	359.01	411.72	488.78	617.39	73.38	84.02	99.90	126.09
AD	South Coast AQMD	Annual	2015	359.50	412.41	489.04	618.24	73.44	84.08	100.01	126.32
AD	South Coast AQMD	Annual	2016	359.61	412.72	488.91	618.65	73.51	84.14	100.13	126.56
AD	South Coast AQMD	Annual	2017	359.68	413.00	488.78	619.05	73.56	84.22	100.22	126.80
AD	South Coast AQMD	Annual	2018	359.73	413.24	488.67	619.36	73.60	84.30	100.30	127.02
AD	South Coast AQMD	Annual	2019	359.09	412.70	487.70	618.61	73.64	84.46	100.39	127.22
AD	South Coast AQMD	Annual	2020	359.10	412.90	487.57	618.81	73.73	84.62	100.49	127.42
AD	South Coast AQMD	Annual	2021	359.90	414.07	488.59	620.47	73.80	84.79	100.58	127.58
AD	South Coast AQMD	Annual	2022	359.87	414.24	488.50	620.64	73.85	84.93	100.66	127.72
AD	South Coast AQMD	Annual	2023	359.81	414.36	488.41	620.74	73.88	85.06	100.72	127.88
AD	South Coast AQMD	Annual	2024	361.75	416.75	490.99	624.15	73.90	85.17	100.77	128.02
AD	South Coast AQMD	Annual	2025	361.67	416.81	490.90	624.21	73.92	85.28	100.82	128.15
AD	South Coast AQMD	Annual	2026	361.63	416.90	490.79	624.27	73.94	85.38	100.85	128.28
AD	South Coast AQMD	Annual	2027	361.58	416.99	490.68	624.32	73.95	85.47	100.88	128.40
AD	South Coast AQMD	Annual	2028	361.52	417.07	490.57	624.36	73.96	85.56	100.90	128.50
AD	South Coast AQMD	Annual	2029	361.45	417.16	490.46	624.40	73.97	85.64	100.92	128.60
AD	South Coast AQMD	Annual	2030	361.38	417.24	490.34	624.44	73.97	85.72	100.93	128.69
AD	South Coast AQMD	Annual	2031	361.74	417.83	490.77	625.15	73.98	85.80	100.94	128.78
AD	South Coast AQMD	Annual	2032	361.68	417.92	490.68	625.19	73.98	85.87	100.95	128.87
AD	South Coast AQMD	Annual	2033	361.62	417.98	490.58	625.22	73.99	85.93	100.96	128.95
AD	South Coast AQMD	Annual	2034	361.55	418.03	490.49	625.24	73.99	85.99	100.96	129.02
AD	South Coast AQMD	Annual	2035	361.48	418.05	490.39	625.25	73.99	86.05	100.97	129.09
AD	South Coast AQMD	Summer	2010	376.35	428.81	513.13	646.58	73.21	84.05	99.45	125.25
AD	South Coast AQMD	Summer	2011	376.97	430.12	513.62	647.72	73.23	84.00	99.55	125.44
AD	South Coast AQMD	Summer	2012	377.16	430.78	513.49	648.06	73.27	83.99	99.67	125.65
AD	South Coast AQMD	Summer	2013	377.42	431.49	513.42	648.53	73.33	84.01	99.79	125.87
AD	South Coast AQMD	Summer	2014	377.59	432.01	513.33	648.98	73.38	84.02	99.90	126.09
AD	South Coast AQMD	Summer	2015	378.15	432.89	513.72	650.01	73.44	84.08	100.01	126.32
AD	South Coast AQMD	Summer	2016	378.30	433.33	513.68	650.59	73.51	84.14	100.13	126.56
AD	South Coast AQMD	Summer	2017	378.41	433.75	513.63	651.14	73.56	84.22	100.22	126.80
AD	South Coast AQMD	Summer	2018	378.49	434.09	513.58	651.59	73.60	84.30	100.30	127.02
AD	South Coast AQMD	Summer	2019	377.86	433.63	512.63	650.96	73.64	84.46	100.39	127.22
AD	South Coast AQMD	Summer	2020	377.91	433.94	512.56	651.31	73.73	84.62	100.49	127.42
AD	South Coast AQMD	Summer	2021	378.79	435.26	513.67	653.16	73.80	84.79	100.58	127.58
AD	South Coast AQMD	Summer	2022	378.78	435.52	513.61	653.41	73.85	84.93	100.66	127.72
AD	South Coast AQMD	Summer	2023	378.75	435.72	513.53	653.58	73.88	85.06	100.72	127.88
AD	South Coast AQMD	Summer	2024	380.85	438.35	516.31	657.27	73.90	85.17	100.77	128.02
AD	South Coast AQMD	Summer	2025	380.80	438.49	516.23	657.36	73.92	85.28	100.82	128.15
AD	South Coast AQMD	Summer	2026	380.78	438.66	516.15	657.45	73.94	85.38	100.85	128.28
AD	South Coast AQMD	Summer	2027	380.75	438.81	516.07	657.53	73.95	85.47	100.88	128.40
AD	South Coast AQMD	Summer	2028	380.72	438.96	515.99	657.60	73.96	85.56	100.90	128.50
AD	South Coast AQMD	Summer	2029	380.68	439.12	515.91	657.67	73.97	85.64	100.92	128.60
AD	South Coast AQMD	Summer	2030	380.64	439.28	515.83	657.75	73.97	85.72	100.93	128.69
AD	South Coast AQMD	Summer	2031	381.06	439.99	516.35	658.58	73.98	85.80	100.94	128.78
AD	South Coast AQMD	Summer	2032	381.02	440.15	516.29	658.68	73.98	85.87	100.95	128.87
AD	South Coast AQMD	Summer	2033	380.98	440.27	516.23	658.77	73.99	85.93	100.96	128.95
AD	South Coast AQMD	Summer	2034	380.94	440.37	516.16	658.85	73.99	85.99	100.96	129.02
AD	South Coast AQMD	Summer	2035	380.89	440.43	516.10	658.92	73.99	86.05	100.97	129.09
AD	South Coast AQMD	Winter	2010	352.29	403.80	481.47	605.90	73.21	84.05	99.45	125.25
AD	South Coast AQMD	Winter	2011	352.78	404.63	481.81	606.99	73.23	84.00	99.55	125.44

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	South Coast AQMD	Winter	2012	352.90	404.95	481.58	607.30	73.27	83.99	99.67	125.65
AD	South Coast AQMD	Winter	2013	353.09	405.36	481.40	607.67	73.33	84.01	99.79	125.87
AD	South Coast AQMD	Winter	2014	353.22	405.65	481.21	608.00	73.38	84.02	99.90	126.09
AD	South Coast AQMD	Winter	2015	353.70	406.30	481.45	608.82	73.44	84.08	100.01	126.32
AD	South Coast AQMD	Winter	2016	353.80	406.58	481.31	609.21	73.51	84.14	100.13	126.56
AD	South Coast AQMD	Winter	2017	353.87	406.84	481.17	609.58	73.56	84.22	100.22	126.80
AD	South Coast AQMD	Winter	2018	353.92	407.05	481.05	609.87	73.60	84.30	100.30	127.02
AD	South Coast AQMD	Winter	2019	353.29	406.51	480.09	609.12	73.64	84.46	100.39	127.22
AD	South Coast AQMD	Winter	2020	353.30	406.69	479.97	609.30	73.73	84.62	100.49	127.42
AD	South Coast AQMD	Winter	2021	354.09	407.83	480.97	610.93	73.80	84.79	100.58	127.58
AD	South Coast AQMD	Winter	2022	354.06	407.98	480.89	611.09	73.85	84.93	100.66	127.72
AD	South Coast AQMD	Winter	2023	354.00	408.09	480.80	611.19	73.88	85.06	100.72	127.88
AD	South Coast AQMD	Winter	2024	355.90	410.41	483.33	614.52	73.90	85.17	100.77	128.02
AD	South Coast AQMD	Winter	2025	355.82	410.46	483.24	614.58	73.92	85.28	100.82	128.15
AD	South Coast AQMD	Winter	2026	355.78	410.54	483.14	614.65	73.94	85.38	100.85	128.28
AD	South Coast AQMD	Winter	2027	355.73	410.61	483.03	614.70	73.95	85.47	100.88	128.40
AD	South Coast AQMD	Winter	2028	355.68	410.69	482.93	614.74	73.96	85.56	100.90	128.50
AD	South Coast AQMD	Winter	2029	355.61	410.76	482.82	614.79	73.97	85.64	100.92	128.60
AD	South Coast AQMD	Winter	2030	355.54	410.84	482.71	614.83	73.97	85.72	100.93	128.69
AD	South Coast AQMD	Winter	2031	355.89	411.39	483.12	615.52	73.98	85.80	100.94	128.78
AD	South Coast AQMD	Winter	2032	355.83	411.47	483.03	615.56	73.98	85.87	100.95	128.87
AD	South Coast AQMD	Winter	2033	355.77	411.53	482.94	615.59	73.99	85.93	100.96	128.95
AD	South Coast AQMD	Winter	2034	355.71	411.57	482.84	615.61	73.99	85.99	100.96	129.02
AD	South Coast AQMD	Winter	2035	355.64	411.60	482.75	615.61	73.99	86.05	100.97	129.09
AD	Tehama County APCD	Annual	2010	347.71	408.08	478.44	596.20	73.92	97.65	101.75	125.26
AD	Tehama County APCD	Annual	2011	347.75	407.21	477.63	596.79	73.75	95.12	101.53	125.31
AD	Tehama County APCD	Annual	2012	347.86	406.66	477.01	597.48	73.65	93.32	101.40	125.42
AD	Tehama County APCD	Annual	2013	347.97	406.10	476.53	598.29	73.54	91.52	101.28	125.55
AD	Tehama County APCD	Annual	2014	348.09	405.68	476.15	599.09	73.46	90.11	101.17	125.71
AD	Tehama County APCD	Annual	2015	348.24	405.38	475.85	599.96	73.44	88.97	101.03	125.89
AD	Tehama County APCD	Annual	2016	348.39	405.05	475.61	600.78	73.43	87.78	100.95	126.12
AD	Tehama County APCD	Annual	2017	348.50	404.72	475.41	601.55	73.42	86.61	100.84	126.35
AD	Tehama County APCD	Annual	2018	348.57	404.51	475.24	602.23	73.38	85.79	100.77	126.58
AD	Tehama County APCD	Annual	2019	348.67	404.46	475.11	602.83	73.42	85.46	100.74	126.78
AD	Tehama County APCD	Annual	2020	348.75	404.42	475.00	603.36	73.52	85.32	100.77	126.99
AD	Tehama County APCD	Annual	2021	348.82	404.51	474.91	603.73	73.60	85.40	100.84	127.12
AD	Tehama County APCD	Annual	2022	348.84	404.58	474.81	603.99	73.65	85.48	100.88	127.15
AD	Tehama County APCD	Annual	2023	348.83	404.65	474.72	604.17	73.68	85.54	100.91	127.32
AD	Tehama County APCD	Annual	2024	348.79	404.72	474.64	604.33	73.69	85.61	100.94	127.48
AD	Tehama County APCD	Annual	2025	348.78	404.78	474.58	604.54	73.71	85.67	100.96	127.66
AD	Tehama County APCD	Annual	2026	348.80	404.87	474.51	604.75	73.74	85.74	100.98	127.82
AD	Tehama County APCD	Annual	2027	348.82	404.95	474.43	604.97	73.75	85.80	100.99	127.98
AD	Tehama County APCD	Annual	2028	348.82	405.02	474.36	605.19	73.76	85.86	100.99	128.12
AD	Tehama County APCD	Annual	2029	348.82	405.11	474.28	605.40	73.77	85.91	100.98	128.26
AD	Tehama County APCD	Annual	2030	348.81	405.19	474.20	605.62	73.77	85.96	100.97	128.38
AD	Tehama County APCD	Annual	2031	348.81	405.27	474.16	605.87	73.78	86.01	100.97	128.51
AD	Tehama County APCD	Annual	2032	348.81	405.34	474.13	606.13	73.78	86.06	100.97	128.63
AD	Tehama County APCD	Annual	2033	348.80	405.40	474.10	606.35	73.79	86.10	100.97	128.74
AD	Tehama County APCD	Annual	2034	348.80	405.45	474.07	606.55	73.79	86.14	100.97	128.85
AD	Tehama County APCD	Annual	2035	348.79	405.50	474.05	606.73	73.80	86.17	100.98	128.94
AD	Tehama County APCD	Summer	2010	383.41	444.94	524.62	654.31	73.92	97.65	101.75	125.26
AD	Tehama County APCD	Summer	2011	383.77	445.00	524.52	654.97	73.75	95.12	101.53	125.31
AD	Tehama County APCD	Summer	2012	384.14	445.10	524.43	655.86	73.65	93.32	101.40	125.42
AD	Tehama County APCD	Summer	2013	384.45	445.13	524.35	656.99	73.54	91.52	101.28	125.55

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Tehama County APCD	Summer	2014	384.73	445.13	524.29	658.11	73.46	90.11	101.17	125.71
AD	Tehama County APCD	Summer	2015	385.00	445.18	524.25	659.39	73.44	88.97	101.03	125.89
AD	Tehama County APCD	Summer	2016	385.23	445.19	524.18	660.60	73.43	87.78	100.95	126.12
AD	Tehama County APCD	Summer	2017	385.39	445.19	524.07	661.71	73.42	86.61	100.84	126.35
AD	Tehama County APCD	Summer	2018	385.47	445.18	523.93	662.69	73.38	85.79	100.77	126.58
AD	Tehama County APCD	Summer	2019	385.58	445.24	523.81	663.55	73.42	85.46	100.74	126.78
AD	Tehama County APCD	Summer	2020	385.65	445.32	523.70	664.29	73.52	85.32	100.77	126.99
AD	Tehama County APCD	Summer	2021	385.70	445.43	523.58	664.83	73.60	85.40	100.84	127.12
AD	Tehama County APCD	Summer	2022	385.72	445.55	523.48	665.26	73.65	85.48	100.88	127.15
AD	Tehama County APCD	Summer	2023	385.71	445.67	523.40	665.55	73.68	85.54	100.91	127.32
AD	Tehama County APCD	Summer	2024	385.66	445.84	523.33	665.79	73.69	85.61	100.94	127.48
AD	Tehama County APCD	Summer	2025	385.66	445.99	523.29	666.03	73.71	85.67	100.96	127.66
AD	Tehama County APCD	Summer	2026	385.69	446.14	523.22	666.24	73.74	85.74	100.98	127.82
AD	Tehama County APCD	Summer	2027	385.72	446.27	523.16	666.46	73.75	85.80	100.99	127.98
AD	Tehama County APCD	Summer	2028	385.74	446.39	523.12	666.69	73.76	85.86	100.99	128.12
AD	Tehama County APCD	Summer	2029	385.76	446.52	523.06	666.94	73.77	85.91	100.98	128.26
AD	Tehama County APCD	Summer	2030	385.77	446.65	523.02	667.20	73.77	85.96	100.97	128.38
AD	Tehama County APCD	Summer	2031	385.77	446.77	523.01	667.51	73.78	86.01	100.97	128.51
AD	Tehama County APCD	Summer	2032	385.77	446.86	523.00	667.82	73.78	86.06	100.97	128.63
AD	Tehama County APCD	Summer	2033	385.77	446.94	522.99	668.11	73.79	86.10	100.97	128.74
AD	Tehama County APCD	Summer	2034	385.77	447.00	522.97	668.39	73.79	86.14	100.97	128.85
AD	Tehama County APCD	Summer	2035	385.76	447.05	522.96	668.63	73.80	86.17	100.98	128.94
AD	Tehama County APCD	Winter	2010	339.88	399.98	468.30	583.44	73.92	97.65	101.75	125.26
AD	Tehama County APCD	Winter	2011	339.84	398.91	467.33	584.01	73.75	95.12	101.53	125.31
AD	Tehama County APCD	Winter	2012	339.89	398.22	466.60	584.66	73.65	93.32	101.40	125.42
AD	Tehama County APCD	Winter	2013	339.96	397.53	466.03	585.41	73.54	91.52	101.28	125.55
AD	Tehama County APCD	Winter	2014	340.05	397.02	465.58	586.13	73.46	90.11	101.17	125.71
AD	Tehama County APCD	Winter	2015	340.18	396.64	465.23	586.91	73.44	88.97	101.03	125.89
AD	Tehama County APCD	Winter	2016	340.30	396.23	464.95	587.65	73.43	87.78	100.95	126.12
AD	Tehama County APCD	Winter	2017	340.40	395.84	464.72	588.34	73.42	86.61	100.84	126.35
AD	Tehama County APCD	Winter	2018	340.46	395.57	464.55	588.96	73.38	85.79	100.77	126.58
AD	Tehama County APCD	Winter	2019	340.57	395.50	464.42	589.50	73.42	85.46	100.74	126.78
AD	Tehama County APCD	Winter	2020	340.65	395.45	464.31	589.99	73.52	85.32	100.77	126.99
AD	Tehama County APCD	Winter	2021	340.72	395.53	464.22	590.32	73.60	85.40	100.84	127.12
AD	Tehama County APCD	Winter	2022	340.75	395.59	464.13	590.54	73.65	85.48	100.88	127.15
AD	Tehama County APCD	Winter	2023	340.74	395.64	464.04	590.70	73.68	85.54	100.91	127.32
AD	Tehama County APCD	Winter	2024	340.69	395.69	463.95	590.84	73.69	85.61	100.94	127.48
AD	Tehama County APCD	Winter	2025	340.69	395.73	463.89	591.04	73.71	85.67	100.96	127.66
AD	Tehama County APCD	Winter	2026	340.71	395.81	463.81	591.25	73.74	85.74	100.98	127.82
AD	Tehama County APCD	Winter	2027	340.72	395.87	463.73	591.47	73.75	85.80	100.99	127.98
AD	Tehama County APCD	Winter	2028	340.72	395.94	463.66	591.68	73.76	85.86	100.99	128.12
AD	Tehama County APCD	Winter	2029	340.71	396.01	463.57	591.89	73.77	85.91	100.98	128.26
AD	Tehama County APCD	Winter	2030	340.70	396.08	463.49	592.11	73.77	85.96	100.97	128.38
AD	Tehama County APCD	Winter	2031	340.69	396.15	463.44	592.34	73.78	86.01	100.97	128.51
AD	Tehama County APCD	Winter	2032	340.69	396.22	463.40	592.58	73.78	86.06	100.97	128.63
AD	Tehama County APCD	Winter	2033	340.69	396.28	463.36	592.79	73.79	86.10	100.97	128.74
AD	Tehama County APCD	Winter	2034	340.68	396.33	463.33	592.98	73.79	86.14	100.97	128.85
AD	Tehama County APCD	Winter	2035	340.68	396.38	463.31	593.14	73.80	86.17	100.98	128.94
AD	Tuolomne County APCD	Annual	2010	351.80	409.05	482.29	602.53	74.53	90.23	101.65	124.41
AD	Tuolomne County APCD	Annual	2011	351.82	408.95	481.75	603.20	74.32	89.28	101.47	124.55
AD	Tuolomne County APCD	Annual	2012	351.88	408.91	481.33	604.01	74.15	88.59	101.37	124.74
AD	Tuolomne County APCD	Annual	2013	351.99	408.83	480.99	604.89	74.02	87.89	101.25	124.97
AD	Tuolomne County APCD	Annual	2014	352.09	408.75	480.72	605.77	73.90	87.27	101.07	125.20
AD	Tuolomne County APCD	Annual	2015	352.23	408.71	480.51	606.66	73.86	86.74	100.95	125.47

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Tuolomne County APCD	Annual	2016	352.33	408.71	480.34	607.53	73.81	86.35	100.89	125.75
AD	Tuolomne County APCD	Annual	2017	352.40	408.66	480.19	608.32	73.73	85.87	100.79	126.04
AD	Tuolomne County APCD	Annual	2018	352.44	408.65	480.07	609.00	73.66	85.55	100.74	126.32
AD	Tuolomne County APCD	Annual	2019	352.50	408.66	479.98	609.60	73.64	85.35	100.71	126.58
AD	Tuolomne County APCD	Annual	2020	352.53	408.71	479.91	610.12	73.71	85.33	100.75	126.82
AD	Tuolomne County APCD	Annual	2021	352.52	408.72	479.81	610.51	73.75	85.36	100.79	127.02
AD	Tuolomne County APCD	Annual	2022	352.49	408.72	479.74	610.83	73.77	85.39	100.83	127.18
AD	Tuolomne County APCD	Annual	2023	352.42	408.71	479.67	611.05	73.77	85.42	100.87	127.37
AD	Tuolomne County APCD	Annual	2024	352.35	408.71	479.60	611.23	73.76	85.46	100.89	127.55
AD	Tuolomne County APCD	Annual	2025	352.30	408.78	479.56	611.41	73.76	85.53	100.93	127.72
AD	Tuolomne County APCD	Annual	2026	352.31	408.91	479.51	611.58	73.78	85.63	100.95	127.88
AD	Tuolomne County APCD	Annual	2027	352.31	409.03	479.46	611.78	73.79	85.72	100.97	128.03
AD	Tuolomne County APCD	Annual	2028	352.31	409.16	479.41	611.96	73.80	85.80	100.98	128.17
AD	Tuolomne County APCD	Annual	2029	352.30	409.28	479.35	612.15	73.80	85.87	100.98	128.30
AD	Tuolomne County APCD	Annual	2030	352.29	409.39	479.30	612.34	73.81	85.94	100.98	128.42
AD	Tuolomne County APCD	Annual	2031	352.28	409.51	479.27	612.58	73.81	86.01	100.98	128.55
AD	Tuolomne County APCD	Annual	2032	352.28	409.62	479.24	612.83	73.82	86.08	100.98	128.67
AD	Tuolomne County APCD	Annual	2033	352.28	409.71	479.22	613.04	73.82	86.13	100.99	128.78
AD	Tuolomne County APCD	Annual	2034	352.28	409.79	479.20	613.24	73.83	86.19	100.99	128.88
AD	Tuolomne County APCD	Annual	2035	352.27	409.86	479.19	613.41	73.83	86.23	101.00	128.97
AD	Tuolomne County APCD	Summer	2010	379.58	436.17	518.68	647.34	74.53	90.23	101.65	124.41
AD	Tuolomne County APCD	Summer	2011	379.89	437.05	518.44	648.13	74.32	89.28	101.47	124.55
AD	Tuolomne County APCD	Summer	2012	380.18	437.74	518.26	649.15	74.15	88.59	101.37	124.74
AD	Tuolomne County APCD	Summer	2013	380.45	438.26	518.15	650.32	74.02	87.89	101.25	124.97
AD	Tuolomne County APCD	Summer	2014	380.68	438.66	518.10	651.50	73.90	87.27	101.07	125.20
AD	Tuolomne County APCD	Summer	2015	380.90	439.01	518.08	652.73	73.86	86.74	100.95	125.47
AD	Tuolomne County APCD	Summer	2016	381.07	439.30	518.06	653.92	73.81	86.35	100.89	125.75
AD	Tuolomne County APCD	Summer	2017	381.16	439.53	518.01	654.99	73.73	85.87	100.79	126.04
AD	Tuolomne County APCD	Summer	2018	381.20	439.71	517.96	655.91	73.66	85.55	100.74	126.32
AD	Tuolomne County APCD	Summer	2019	381.25	439.89	517.91	656.72	73.64	85.35	100.71	126.58
AD	Tuolomne County APCD	Summer	2020	381.27	440.08	517.84	657.42	73.71	85.33	100.75	126.82
AD	Tuolomne County APCD	Summer	2021	381.25	440.21	517.77	657.94	73.75	85.36	100.79	127.02
AD	Tuolomne County APCD	Summer	2022	381.21	440.34	517.69	658.37	73.77	85.39	100.83	127.18
AD	Tuolomne County APCD	Summer	2023	381.14	440.44	517.62	658.69	73.77	85.42	100.87	127.37
AD	Tuolomne County APCD	Summer	2024	381.08	440.54	517.57	658.94	73.76	85.46	100.89	127.55
AD	Tuolomne County APCD	Summer	2025	381.03	440.66	517.52	659.17	73.76	85.53	100.93	127.72
AD	Tuolomne County APCD	Summer	2026	381.05	440.87	517.48	659.35	73.78	85.63	100.95	127.88
AD	Tuolomne County APCD	Summer	2027	381.07	441.05	517.44	659.54	73.79	85.72	100.97	128.03
AD	Tuolomne County APCD	Summer	2028	381.08	441.24	517.40	659.75	73.80	85.80	100.98	128.17
AD	Tuolomne County APCD	Summer	2029	381.09	441.43	517.36	659.96	73.80	85.87	100.98	128.30
AD	Tuolomne County APCD	Summer	2030	381.09	441.61	517.32	660.19	73.81	85.94	100.98	128.42
AD	Tuolomne County APCD	Summer	2031	381.10	441.78	517.30	660.50	73.81	86.01	100.98	128.55
AD	Tuolomne County APCD	Summer	2032	381.10	441.93	517.28	660.80	73.82	86.08	100.98	128.67
AD	Tuolomne County APCD	Summer	2033	381.09	442.04	517.26	661.07	73.82	86.13	100.99	128.78
AD	Tuolomne County APCD	Summer	2034	381.09	442.15	517.24	661.33	73.83	86.19	100.99	128.88
AD	Tuolomne County APCD	Summer	2035	381.08	442.22	517.22	661.55	73.83	86.23	101.00	128.97
AD	Tuolomne County APCD	Winter	2010	345.75	403.14	474.37	592.78	74.53	90.23	101.65	124.41
AD	Tuolomne County APCD	Winter	2011	345.71	402.84	473.77	593.43	74.32	89.28	101.47	124.55
AD	Tuolomne County APCD	Winter	2012	345.72	402.64	473.30	594.19	74.15	88.59	101.37	124.74
AD	Tuolomne County APCD	Winter	2013	345.79	402.42	472.91	595.00	74.02	87.89	101.25	124.97
AD	Tuolomne County APCD	Winter	2014	345.87	402.24	472.59	595.82	73.90	87.27	101.07	125.20
AD	Tuolomne County APCD	Winter	2015	345.99	402.12	472.33	596.64	73.86	86.74	100.95	125.47
AD	Tuolomne County APCD	Winter	2016	346.08	402.05	472.13	597.43	73.81	86.35	100.89	125.75
AD	Tuolomne County APCD	Winter	2017	346.14	401.95	471.96	598.16	73.73	85.87	100.79	126.04

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Tuolomne County APCD	Winter	2018	346.19	401.89	471.83	598.79	73.66	85.55	100.74	126.32
AD	Tuolomne County APCD	Winter	2019	346.24	401.87	471.73	599.34	73.64	85.35	100.71	126.58
AD	Tuolomne County APCD	Winter	2020	346.28	401.88	471.65	599.83	73.71	85.33	100.75	126.82
AD	Tuolomne County APCD	Winter	2021	346.27	401.86	471.55	600.19	73.75	85.36	100.79	127.02
AD	Tuolomne County APCD	Winter	2022	346.24	401.84	471.48	600.48	73.77	85.39	100.83	127.18
AD	Tuolomne County APCD	Winter	2023	346.16	401.81	471.41	600.69	73.77	85.42	100.87	127.37
AD	Tuolomne County APCD	Winter	2024	346.10	401.78	471.34	600.85	73.76	85.46	100.89	127.55
AD	Tuolomne County APCD	Winter	2025	346.04	401.84	471.30	601.01	73.76	85.53	100.93	127.72
AD	Tuolomne County APCD	Winter	2026	346.05	401.96	471.25	601.19	73.78	85.63	100.95	127.88
AD	Tuolomne County APCD	Winter	2027	346.05	402.06	471.20	601.38	73.79	85.72	100.97	128.03
AD	Tuolomne County APCD	Winter	2028	346.04	402.17	471.14	601.56	73.80	85.80	100.98	128.17
AD	Tuolomne County APCD	Winter	2029	346.03	402.28	471.08	601.74	73.80	85.87	100.98	128.30
AD	Tuolomne County APCD	Winter	2030	346.02	402.38	471.02	601.93	73.81	85.94	100.98	128.42
AD	Tuolomne County APCD	Winter	2031	346.01	402.49	470.99	602.16	73.81	86.01	100.98	128.55
AD	Tuolomne County APCD	Winter	2032	346.01	402.59	470.97	602.39	73.82	86.08	100.98	128.67
AD	Tuolomne County APCD	Winter	2033	346.01	402.67	470.95	602.59	73.82	86.13	100.99	128.78
AD	Tuolomne County APCD	Winter	2034	346.01	402.75	470.93	602.77	73.83	86.19	100.99	128.88
AD	Tuolomne County APCD	Winter	2035	346.00	402.81	470.91	602.93	73.83	86.23	101.00	128.97
AD	Ventura County APCD	Annual	2010	333.21	383.06	456.23	576.41	73.39	83.96	99.49	125.11
AD	Ventura County APCD	Annual	2011	334.06	384.40	457.06	578.10	73.37	83.90	99.58	125.31
AD	Ventura County APCD	Annual	2012	334.23	384.93	456.97	578.64	73.35	83.91	99.69	125.52
AD	Ventura County APCD	Annual	2013	334.46	385.44	456.97	579.27	73.37	83.94	99.80	125.74
AD	Ventura County APCD	Annual	2014	334.61	385.87	456.92	579.81	73.35	83.96	99.91	125.96
AD	Ventura County APCD	Annual	2015	336.96	388.79	459.88	584.16	73.37	84.01	100.00	126.20
AD	Ventura County APCD	Annual	2016	337.13	389.18	459.85	584.69	73.42	84.08	100.11	126.44
AD	Ventura County APCD	Annual	2017	337.26	389.54	459.83	585.20	73.44	84.15	100.20	126.68
AD	Ventura County APCD	Annual	2018	337.37	389.86	459.82	585.65	73.47	84.25	100.29	126.90
AD	Ventura County APCD	Annual	2019	338.59	391.47	461.34	587.98	73.51	84.41	100.38	127.11
AD	Ventura County APCD	Annual	2020	338.68	391.75	461.34	588.35	73.61	84.58	100.48	127.31
AD	Ventura County APCD	Annual	2021	340.62	394.18	463.90	591.89	73.68	84.75	100.57	127.48
AD	Ventura County APCD	Annual	2022	340.66	394.41	463.89	592.14	73.73	84.90	100.65	127.62
AD	Ventura County APCD	Annual	2023	340.67	394.58	463.88	592.33	73.77	85.03	100.71	127.78
AD	Ventura County APCD	Annual	2024	342.13	396.43	465.87	595.04	73.79	85.15	100.77	127.93
AD	Ventura County APCD	Annual	2025	342.13	396.57	465.87	595.19	73.81	85.26	100.81	128.07
AD	Ventura County APCD	Annual	2026	342.15	396.72	465.85	595.36	73.83	85.37	100.85	128.21
AD	Ventura County APCD	Annual	2027	342.16	396.87	465.84	595.51	73.84	85.46	100.88	128.33
AD	Ventura County APCD	Annual	2028	342.17	397.01	465.82	595.67	73.85	85.55	100.90	128.45
AD	Ventura County APCD	Annual	2029	342.17	397.16	465.80	595.81	73.86	85.64	100.92	128.55
AD	Ventura County APCD	Annual	2030	342.17	397.31	465.79	595.97	73.86	85.72	100.93	128.65
AD	Ventura County APCD	Annual	2031	343.80	399.36	468.01	598.97	73.87	85.80	100.94	128.74
AD	Ventura County APCD	Annual	2032	343.79	399.50	468.00	599.13	73.88	85.87	100.95	128.83
AD	Ventura County APCD	Annual	2033	343.79	399.63	467.99	599.27	73.88	85.94	100.96	128.92
AD	Ventura County APCD	Annual	2034	343.79	399.74	467.98	599.40	73.88	86.00	100.96	128.99
AD	Ventura County APCD	Annual	2035	343.79	399.84	467.97	599.52	73.89	86.06	100.97	129.06
AD	Ventura County APCD	Summer	2010	347.83	398.15	475.58	600.79	73.39	83.96	99.49	125.11
AD	Ventura County APCD	Summer	2011	348.77	399.76	476.48	602.48	73.37	83.90	99.58	125.31
AD	Ventura County APCD	Summer	2012	348.98	400.46	476.42	602.99	73.35	83.91	99.69	125.52
AD	Ventura County APCD	Summer	2013	349.27	401.14	476.48	603.66	73.37	83.94	99.80	125.74
AD	Ventura County APCD	Summer	2014	349.45	401.68	476.48	604.24	73.35	83.96	99.91	125.96
AD	Ventura County APCD	Summer	2015	351.94	404.82	479.63	608.85	73.37	84.01	100.00	126.20
AD	Ventura County APCD	Summer	2016	352.14	405.30	479.65	609.45	73.42	84.08	100.11	126.44
AD	Ventura County APCD	Summer	2017	352.28	405.73	479.66	610.04	73.44	84.15	100.20	126.68
AD	Ventura County APCD	Summer	2018	352.41	406.11	479.66	610.55	73.47	84.25	100.29	126.90
AD	Ventura County APCD	Summer	2019	353.67	407.82	481.25	613.02	73.51	84.41	100.38	127.11

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Ventura County APCD	Summer	2020	353.77	408.15	481.25	613.43	73.61	84.58	100.48	127.31
AD	Ventura County APCD	Summer	2021	355.80	410.74	483.94	617.18	73.68	84.75	100.57	127.48
AD	Ventura County APCD	Summer	2022	355.84	411.01	483.93	617.47	73.73	84.90	100.65	127.62
AD	Ventura County APCD	Summer	2023	355.85	411.23	483.92	617.68	73.77	85.03	100.71	127.78
AD	Ventura County APCD	Summer	2024	357.40	413.22	486.02	620.55	73.79	85.15	100.77	127.93
AD	Ventura County APCD	Summer	2025	357.40	413.40	486.01	620.72	73.81	85.26	100.81	128.07
AD	Ventura County APCD	Summer	2026	357.42	413.59	486.00	620.90	73.83	85.37	100.85	128.21
AD	Ventura County APCD	Summer	2027	357.43	413.77	485.98	621.06	73.84	85.46	100.88	128.33
AD	Ventura County APCD	Summer	2028	357.44	413.94	485.96	621.21	73.85	85.55	100.90	128.45
AD	Ventura County APCD	Summer	2029	357.45	414.12	485.94	621.36	73.86	85.64	100.92	128.55
AD	Ventura County APCD	Summer	2030	357.45	414.30	485.93	621.52	73.86	85.72	100.93	128.65
AD	Ventura County APCD	Summer	2031	359.14	416.47	488.25	624.65	73.87	85.80	100.94	128.74
AD	Ventura County APCD	Summer	2032	359.14	416.64	488.24	624.81	73.88	85.87	100.95	128.83
AD	Ventura County APCD	Summer	2033	359.14	416.79	488.23	624.96	73.88	85.94	100.96	128.92
AD	Ventura County APCD	Summer	2034	359.13	416.92	488.22	625.10	73.88	86.00	100.96	128.99
AD	Ventura County APCD	Summer	2035	359.13	417.02	488.21	625.23	73.89	86.06	100.97	129.06
AD	Ventura County APCD	Winter	2010	330.44	380.19	452.56	571.78	73.39	83.96	99.49	125.11
AD	Ventura County APCD	Winter	2011	331.27	381.49	453.38	573.48	73.37	83.90	99.58	125.31
AD	Ventura County APCD	Winter	2012	331.43	381.98	453.29	574.02	73.35	83.91	99.69	125.52
AD	Ventura County APCD	Winter	2013	331.65	382.46	453.27	574.64	73.37	83.94	99.80	125.74
AD	Ventura County APCD	Winter	2014	331.80	382.87	453.21	575.18	73.35	83.96	99.91	125.96
AD	Ventura County APCD	Winter	2015	334.12	385.75	456.13	579.48	73.37	84.01	100.00	126.20
AD	Ventura County APCD	Winter	2016	334.29	386.12	456.10	579.99	73.42	84.08	100.11	126.44
AD	Ventura County APCD	Winter	2017	334.41	386.47	456.07	580.49	73.44	84.15	100.20	126.68
AD	Ventura County APCD	Winter	2018	334.52	386.78	456.06	580.93	73.47	84.25	100.29	126.90
AD	Ventura County APCD	Winter	2019	335.73	388.37	457.57	583.24	73.51	84.41	100.38	127.11
AD	Ventura County APCD	Winter	2020	335.82	388.65	457.57	583.59	73.61	84.58	100.48	127.31
AD	Ventura County APCD	Winter	2021	337.74	391.05	460.10	587.10	73.68	84.75	100.57	127.48
AD	Ventura County APCD	Winter	2022	337.78	391.26	460.10	587.34	73.73	84.90	100.65	127.62
AD	Ventura County APCD	Winter	2023	337.80	391.43	460.09	587.53	73.77	85.03	100.71	127.78
AD	Ventura County APCD	Winter	2024	339.24	393.25	462.06	590.20	73.79	85.15	100.77	127.93
AD	Ventura County APCD	Winter	2025	339.24	393.38	462.05	590.36	73.81	85.26	100.81	128.07
AD	Ventura County APCD	Winter	2026	339.26	393.53	462.04	590.52	73.83	85.37	100.85	128.21
AD	Ventura County APCD	Winter	2027	339.27	393.67	462.02	590.68	73.84	85.46	100.88	128.33
AD	Ventura County APCD	Winter	2028	339.28	393.81	462.01	590.83	73.85	85.55	100.90	128.45
AD	Ventura County APCD	Winter	2029	339.28	393.95	461.99	590.98	73.86	85.64	100.92	128.55
AD	Ventura County APCD	Winter	2030	339.28	394.09	461.98	591.13	73.86	85.72	100.93	128.65
AD	Ventura County APCD	Winter	2031	340.89	396.12	464.18	594.11	73.87	85.80	100.94	128.74
AD	Ventura County APCD	Winter	2032	340.89	396.26	464.17	594.27	73.88	85.87	100.95	128.83
AD	Ventura County APCD	Winter	2033	340.89	396.38	464.16	594.41	73.88	85.94	100.96	128.92
AD	Ventura County APCD	Winter	2034	340.89	396.49	464.15	594.54	73.88	86.00	100.96	128.99
AD	Ventura County APCD	Winter	2035	340.88	396.58	464.14	594.65	73.89	86.06	100.97	129.06
AD	Yolo/Solano AQMD	Annual	2010	348.81	400.50	478.26	603.67	73.04	85.15	99.95	124.98
AD	Yolo/Solano AQMD	Annual	2011	348.99	401.18	477.99	604.06	73.05	84.88	99.97	125.17
AD	Yolo/Solano AQMD	Annual	2012	349.17	401.79	477.76	604.52	73.06	84.74	100.04	125.39
AD	Yolo/Solano AQMD	Annual	2013	349.34	402.29	477.57	605.02	73.08	84.59	100.09	125.62
AD	Yolo/Solano AQMD	Annual	2014	349.51	402.73	477.42	605.55	73.11	84.49	100.15	125.86
AD	Yolo/Solano AQMD	Annual	2015	349.67	403.13	477.29	606.07	73.16	84.45	100.19	126.11
AD	Yolo/Solano AQMD	Annual	2016	353.97	408.29	483.02	614.15	73.24	84.45	100.26	126.36
AD	Yolo/Solano AQMD	Annual	2017	354.05	408.52	482.92	614.62	73.29	84.39	100.28	126.61
AD	Yolo/Solano AQMD	Annual	2018	354.10	408.72	482.83	615.03	73.36	84.42	100.33	126.85
AD	Yolo/Solano AQMD	Annual	2019	353.42	408.16	481.76	614.16	73.42	84.51	100.39	127.06
AD	Yolo/Solano AQMD	Annual	2020	353.47	408.43	481.69	614.50	73.52	84.64	100.48	127.26
AD	Yolo/Solano AQMD	Annual	2021	353.51	408.63	481.65	614.75	73.60	84.80	100.57	127.42

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Yolo/Solano AQMD	Annual	2022	353.51	408.79	481.60	614.94	73.65	84.93	100.65	127.57
AD	Yolo/Solano AQMD	Annual	2023	353.48	408.91	481.54	615.07	73.69	85.05	100.71	127.73
AD	Yolo/Solano AQMD	Annual	2024	353.46	409.04	481.46	615.10	73.72	85.17	100.76	127.87
AD	Yolo/Solano AQMD	Annual	2025	353.44	409.16	481.39	615.14	73.74	85.26	100.81	128.01
AD	Yolo/Solano AQMD	Annual	2026	354.57	410.57	482.91	617.16	73.77	85.36	100.84	128.15
AD	Yolo/Solano AQMD	Annual	2027	354.57	410.67	482.84	617.13	73.78	85.45	100.87	128.27
AD	Yolo/Solano AQMD	Annual	2028	354.56	410.76	482.78	617.10	73.79	85.53	100.90	128.39
AD	Yolo/Solano AQMD	Annual	2029	354.54	410.86	482.71	617.07	73.80	85.61	100.91	128.49
AD	Yolo/Solano AQMD	Annual	2030	354.51	410.96	482.64	617.06	73.80	85.69	100.92	128.59
AD	Yolo/Solano AQMD	Annual	2031	354.46	411.07	482.56	617.24	73.81	85.76	100.94	128.69
AD	Yolo/Solano AQMD	Annual	2032	354.41	411.16	482.49	617.41	73.81	85.83	100.94	128.79
AD	Yolo/Solano AQMD	Annual	2033	354.36	411.24	482.41	617.56	73.82	85.89	100.95	128.88
AD	Yolo/Solano AQMD	Annual	2034	354.31	411.30	482.34	617.69	73.82	85.95	100.96	128.96
AD	Yolo/Solano AQMD	Annual	2035	354.26	411.34	482.27	617.80	73.82	86.00	100.96	129.03
AD	Yolo/Solano AQMD	Summer	2010	384.05	437.08	524.93	662.32	73.04	85.15	99.95	124.98
AD	Yolo/Solano AQMD	Summer	2011	384.41	438.40	524.78	662.58	73.05	84.88	99.97	125.17
AD	Yolo/Solano AQMD	Summer	2012	384.74	439.53	524.67	663.02	73.06	84.74	100.04	125.39
AD	Yolo/Solano AQMD	Summer	2013	385.03	440.45	524.60	663.61	73.08	84.59	100.09	125.62
AD	Yolo/Solano AQMD	Summer	2014	385.29	441.23	524.61	664.29	73.11	84.49	100.15	125.86
AD	Yolo/Solano AQMD	Summer	2015	385.53	441.88	524.63	665.02	73.16	84.45	100.19	126.11
AD	Yolo/Solano AQMD	Summer	2016	390.28	447.65	531.00	673.98	73.24	84.45	100.26	126.36
AD	Yolo/Solano AQMD	Summer	2017	390.39	448.07	531.01	674.67	73.29	84.39	100.28	126.61
AD	Yolo/Solano AQMD	Summer	2018	390.46	448.37	530.97	675.24	73.36	84.42	100.33	126.85
AD	Yolo/Solano AQMD	Summer	2019	389.67	447.80	529.75	674.33	73.42	84.51	100.39	127.06
AD	Yolo/Solano AQMD	Summer	2020	389.71	448.17	529.67	674.78	73.52	84.64	100.48	127.26
AD	Yolo/Solano AQMD	Summer	2021	389.75	448.46	529.61	675.11	73.60	84.80	100.57	127.42
AD	Yolo/Solano AQMD	Summer	2022	389.75	448.70	529.53	675.38	73.65	84.93	100.65	127.57
AD	Yolo/Solano AQMD	Summer	2023	389.71	448.91	529.44	675.56	73.69	85.05	100.71	127.73
AD	Yolo/Solano AQMD	Summer	2024	389.70	449.12	529.33	675.60	73.72	85.17	100.76	127.87
AD	Yolo/Solano AQMD	Summer	2025	389.68	449.31	529.24	675.64	73.74	85.26	100.81	128.01
AD	Yolo/Solano AQMD	Summer	2026	390.91	450.90	530.91	677.83	73.77	85.36	100.84	128.15
AD	Yolo/Solano AQMD	Summer	2027	390.91	451.05	530.86	677.80	73.78	85.45	100.87	128.27
AD	Yolo/Solano AQMD	Summer	2028	390.90	451.20	530.81	677.78	73.79	85.53	100.90	128.39
AD	Yolo/Solano AQMD	Summer	2029	390.89	451.36	530.75	677.76	73.80	85.61	100.91	128.49
AD	Yolo/Solano AQMD	Summer	2030	390.87	451.53	530.69	677.75	73.80	85.69	100.92	128.59
AD	Yolo/Solano AQMD	Summer	2031	390.81	451.70	530.61	677.97	73.81	85.76	100.94	128.69
AD	Yolo/Solano AQMD	Summer	2032	390.76	451.83	530.54	678.19	73.81	85.83	100.94	128.79
AD	Yolo/Solano AQMD	Summer	2033	390.71	451.94	530.46	678.37	73.82	85.89	100.95	128.88
AD	Yolo/Solano AQMD	Summer	2034	390.67	452.04	530.39	678.55	73.82	85.95	100.96	128.96
AD	Yolo/Solano AQMD	Summer	2035	390.62	452.10	530.31	678.71	73.82	86.00	100.96	129.03
AD	Yolo/Solano AQMD	Winter	2010	339.81	391.18	466.38	588.76	73.04	85.15	99.95	124.98
AD	Yolo/Solano AQMD	Winter	2011	339.95	391.68	466.07	589.17	73.05	84.88	99.97	125.17
AD	Yolo/Solano AQMD	Winter	2012	340.09	392.16	465.81	589.62	73.06	84.74	100.04	125.39
AD	Yolo/Solano AQMD	Winter	2013	340.23	392.54	465.57	590.10	73.08	84.59	100.09	125.62
AD	Yolo/Solano AQMD	Winter	2014	340.36	392.90	465.38	590.58	73.11	84.49	100.15	125.86
AD	Yolo/Solano AQMD	Winter	2015	340.50	393.23	465.21	591.05	73.16	84.45	100.19	126.11
AD	Yolo/Solano AQMD	Winter	2016	344.68	398.23	470.76	598.89	73.24	84.45	100.26	126.36
AD	Yolo/Solano AQMD	Winter	2017	344.76	398.41	470.64	599.30	73.29	84.39	100.28	126.61
AD	Yolo/Solano AQMD	Winter	2018	344.80	398.57	470.54	599.66	73.36	84.42	100.33	126.85
AD	Yolo/Solano AQMD	Winter	2019	344.16	398.04	469.52	598.83	73.42	84.51	100.39	127.06
AD	Yolo/Solano AQMD	Winter	2020	344.20	398.28	469.45	599.14	73.52	84.64	100.48	127.26
AD	Yolo/Solano AQMD	Winter	2021	344.25	398.45	469.41	599.36	73.60	84.80	100.57	127.42
AD	Yolo/Solano AQMD	Winter	2022	344.25	398.59	469.37	599.54	73.65	84.93	100.65	127.57
AD	Yolo/Solano AQMD	Winter	2023	344.21	398.69	469.31	599.65	73.69	85.05	100.71	127.73

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
AD	Yolo/Solano AQMD	Winter	2024	344.19	398.80	469.24	599.67	73.72	85.17	100.76	127.87
AD	Yolo/Solano AQMD	Winter	2025	344.17	398.89	469.17	599.71	73.74	85.26	100.81	128.01
AD	Yolo/Solano AQMD	Winter	2026	345.28	400.27	470.65	601.67	73.77	85.36	100.84	128.15
AD	Yolo/Solano AQMD	Winter	2027	345.27	400.35	470.58	601.64	73.78	85.45	100.87	128.27
AD	Yolo/Solano AQMD	Winter	2028	345.26	400.42	470.51	601.60	73.79	85.53	100.90	128.39
AD	Yolo/Solano AQMD	Winter	2029	345.24	400.50	470.43	601.57	73.80	85.61	100.91	128.49
AD	Yolo/Solano AQMD	Winter	2030	345.21	400.59	470.36	601.54	73.80	85.69	100.92	128.59
AD	Yolo/Solano AQMD	Winter	2031	345.15	400.68	470.28	601.72	73.81	85.76	100.94	128.69
AD	Yolo/Solano AQMD	Winter	2032	345.10	400.75	470.21	601.88	73.81	85.83	100.94	128.79
AD	Yolo/Solano AQMD	Winter	2033	345.05	400.82	470.13	602.01	73.82	85.89	100.95	128.88
AD	Yolo/Solano AQMD	Winter	2034	345.00	400.87	470.05	602.13	73.82	85.95	100.96	128.96
AD	Yolo/Solano AQMD	Winter	2035	344.95	400.90	469.98	602.23	73.82	86.00	100.96	129.03
C	Alameda (SF)	Annual	2010	339.24	389.56	464.06	585.20	72.90	84.16	99.41	124.70
C	Alameda (SF)	Annual	2011	339.37	390.02	463.94	585.71	72.95	84.06	99.50	124.89
C	Alameda (SF)	Annual	2012	339.53	390.50	463.85	586.29	73.01	84.04	99.62	125.11
C	Alameda (SF)	Annual	2013	339.73	390.93	463.79	586.90	73.09	84.03	99.75	125.34
C	Alameda (SF)	Annual	2014	339.91	391.34	463.74	587.52	73.16	84.04	99.85	125.58
C	Alameda (SF)	Annual	2015	340.11	391.74	463.71	588.15	73.24	84.08	99.96	125.84
C	Alameda (SF)	Annual	2016	340.29	392.13	463.69	588.75	73.33	84.14	100.07	126.09
C	Alameda (SF)	Annual	2017	340.43	392.49	463.67	589.32	73.39	84.20	100.16	126.35
C	Alameda (SF)	Annual	2018	340.55	392.81	463.66	589.82	73.43	84.28	100.25	126.59
C	Alameda (SF)	Annual	2019	340.66	393.13	463.66	590.26	73.49	84.42	100.34	126.81
C	Alameda (SF)	Annual	2020	340.77	393.43	463.66	590.66	73.60	84.58	100.44	127.03
C	Alameda (SF)	Annual	2021	340.84	393.69	463.67	590.99	73.67	84.75	100.53	127.21
C	Alameda (SF)	Annual	2022	340.88	393.91	463.66	591.27	73.73	84.89	100.62	127.35
C	Alameda (SF)	Annual	2023	340.88	394.08	463.65	591.48	73.77	85.02	100.68	127.52
C	Alameda (SF)	Annual	2024	340.86	394.22	463.64	591.66	73.79	85.14	100.74	127.68
C	Alameda (SF)	Annual	2025	340.85	394.35	463.64	591.84	73.81	85.24	100.79	127.84
C	Alameda (SF)	Annual	2026	340.87	394.50	463.62	592.03	73.83	85.34	100.83	127.99
C	Alameda (SF)	Annual	2027	340.88	394.65	463.61	592.20	73.85	85.44	100.86	128.12
C	Alameda (SF)	Annual	2028	340.88	394.80	463.59	592.38	73.86	85.52	100.89	128.25
C	Alameda (SF)	Annual	2029	340.88	394.96	463.57	592.55	73.87	85.61	100.90	128.36
C	Alameda (SF)	Annual	2030	340.87	395.12	463.56	592.72	73.87	85.69	100.92	128.47
C	Alameda (SF)	Annual	2031	340.87	395.28	463.55	592.91	73.88	85.76	100.93	128.58
C	Alameda (SF)	Annual	2032	340.87	395.44	463.54	593.10	73.88	85.84	100.94	128.68
C	Alameda (SF)	Annual	2033	340.86	395.58	463.53	593.27	73.89	85.90	100.95	128.77
C	Alameda (SF)	Annual	2034	340.86	395.71	463.52	593.42	73.89	85.97	100.95	128.86
C	Alameda (SF)	Annual	2035	340.85	395.82	463.51	593.56	73.89	86.02	100.96	128.94
C	Alameda (SF)	Summer	2010	366.44	417.66	500.31	630.82	72.90	84.16	99.41	124.70
C	Alameda (SF)	Summer	2011	366.76	418.54	500.25	631.22	72.95	84.06	99.50	124.89
C	Alameda (SF)	Summer	2012	367.07	419.37	500.24	631.77	73.01	84.04	99.62	125.11
C	Alameda (SF)	Summer	2013	367.38	420.09	500.26	632.43	73.09	84.03	99.75	125.34
C	Alameda (SF)	Summer	2014	367.65	420.75	500.31	633.13	73.16	84.04	99.85	125.58
C	Alameda (SF)	Summer	2015	367.91	421.35	500.37	633.90	73.24	84.08	99.96	125.84
C	Alameda (SF)	Summer	2016	368.14	421.93	500.44	634.66	73.33	84.14	100.07	126.09
C	Alameda (SF)	Summer	2017	368.30	422.46	500.49	635.39	73.39	84.20	100.16	126.35
C	Alameda (SF)	Summer	2018	368.43	422.93	500.51	636.01	73.43	84.28	100.25	126.59
C	Alameda (SF)	Summer	2019	368.55	423.36	500.53	636.55	73.49	84.42	100.34	126.81
C	Alameda (SF)	Summer	2020	368.65	423.76	500.53	637.05	73.60	84.58	100.44	127.03
C	Alameda (SF)	Summer	2021	368.73	424.11	500.53	637.46	73.67	84.75	100.53	127.21
C	Alameda (SF)	Summer	2022	368.76	424.41	500.53	637.82	73.73	84.89	100.62	127.35
C	Alameda (SF)	Summer	2023	368.76	424.66	500.51	638.09	73.77	85.02	100.68	127.52
C	Alameda (SF)	Summer	2024	368.74	424.87	500.49	638.33	73.79	85.14	100.74	127.68
C	Alameda (SF)	Summer	2025	368.73	425.06	500.48	638.54	73.81	85.24	100.79	127.84

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Alameda (SF)	Summer	2026	368.75	425.27	500.46	638.75	73.83	85.34	100.83	127.99
C	Alameda (SF)	Summer	2027	368.77	425.48	500.44	638.94	73.85	85.44	100.86	128.12
C	Alameda (SF)	Summer	2028	368.78	425.70	500.42	639.12	73.86	85.52	100.89	128.25
C	Alameda (SF)	Summer	2029	368.78	425.92	500.39	639.31	73.87	85.61	100.90	128.36
C	Alameda (SF)	Summer	2030	368.78	426.15	500.38	639.50	73.87	85.69	100.92	128.47
C	Alameda (SF)	Summer	2031	368.79	426.39	500.37	639.69	73.88	85.76	100.93	128.58
C	Alameda (SF)	Summer	2032	368.79	426.60	500.36	639.89	73.88	85.84	100.94	128.68
C	Alameda (SF)	Summer	2033	368.80	426.78	500.35	640.08	73.89	85.90	100.95	128.77
C	Alameda (SF)	Summer	2034	368.80	426.95	500.35	640.26	73.89	85.97	100.95	128.86
C	Alameda (SF)	Summer	2035	368.79	427.08	500.34	640.42	73.89	86.02	100.96	128.94
C	Alameda (SF)	Winter	2010	336.52	386.75	460.43	580.64	72.90	84.16	99.41	124.70
C	Alameda (SF)	Winter	2011	336.63	387.17	460.31	581.17	72.95	84.06	99.50	124.89
C	Alameda (SF)	Winter	2012	336.78	387.61	460.22	581.74	73.01	84.04	99.62	125.11
C	Alameda (SF)	Winter	2013	336.96	388.01	460.15	582.35	73.09	84.03	99.75	125.34
C	Alameda (SF)	Winter	2014	337.14	388.40	460.09	582.96	73.16	84.04	99.85	125.58
C	Alameda (SF)	Winter	2015	337.33	388.78	460.05	583.58	73.24	84.08	99.96	125.84
C	Alameda (SF)	Winter	2016	337.51	389.15	460.02	584.16	73.33	84.14	100.07	126.09
C	Alameda (SF)	Winter	2017	337.65	389.50	459.99	584.72	73.39	84.20	100.16	126.35
C	Alameda (SF)	Winter	2018	337.76	389.80	459.98	585.20	73.43	84.28	100.25	126.59
C	Alameda (SF)	Winter	2019	337.87	390.11	459.98	585.63	73.49	84.42	100.34	126.81
C	Alameda (SF)	Winter	2020	337.98	390.40	459.98	586.02	73.60	84.58	100.44	127.03
C	Alameda (SF)	Winter	2021	338.06	390.65	459.98	586.34	73.67	84.75	100.53	127.21
C	Alameda (SF)	Winter	2022	338.09	390.86	459.98	586.61	73.73	84.89	100.62	127.35
C	Alameda (SF)	Winter	2023	338.09	391.02	459.97	586.82	73.77	85.02	100.68	127.52
C	Alameda (SF)	Winter	2024	338.07	391.15	459.96	586.99	73.79	85.14	100.74	127.68
C	Alameda (SF)	Winter	2025	338.07	391.28	459.95	587.17	73.81	85.24	100.79	127.84
C	Alameda (SF)	Winter	2026	338.08	391.42	459.94	587.36	73.83	85.34	100.83	127.99
C	Alameda (SF)	Winter	2027	338.09	391.57	459.93	587.53	73.85	85.44	100.86	128.12
C	Alameda (SF)	Winter	2028	338.10	391.72	459.91	587.71	73.86	85.52	100.89	128.25
C	Alameda (SF)	Winter	2029	338.09	391.87	459.89	587.88	73.87	85.61	100.90	128.36
C	Alameda (SF)	Winter	2030	338.08	392.02	459.87	588.05	73.87	85.69	100.92	128.47
C	Alameda (SF)	Winter	2031	338.08	392.17	459.87	588.23	73.88	85.76	100.93	128.58
C	Alameda (SF)	Winter	2032	338.07	392.33	459.86	588.42	73.88	85.84	100.94	128.68
C	Alameda (SF)	Winter	2033	338.07	392.47	459.85	588.59	73.89	85.90	100.95	128.77
C	Alameda (SF)	Winter	2034	338.07	392.59	459.84	588.74	73.89	85.97	100.95	128.86
C	Alameda (SF)	Winter	2035	338.06	392.70	459.83	588.87	73.89	86.02	100.96	128.94
C	Alpine (GBV)	Annual	2010	319.94	373.91	436.04	546.24	77.24	91.37	100.57	125.68
C	Alpine (GBV)	Annual	2011	319.54	373.51	435.72	546.98	76.26	90.65	100.32	125.51
C	Alpine (GBV)	Annual	2012	319.25	372.89	435.50	547.57	75.15	89.58	100.40	125.56
C	Alpine (GBV)	Annual	2013	319.18	372.57	435.22	548.28	74.57	89.04	99.96	125.68
C	Alpine (GBV)	Annual	2014	319.32	372.32	435.07	548.95	74.52	88.58	100.09	125.82
C	Alpine (GBV)	Annual	2015	319.45	372.11	434.95	549.66	74.47	88.18	100.23	126.00
C	Alpine (GBV)	Annual	2016	319.56	371.52	434.86	550.33	74.44	87.12	100.36	126.21
C	Alpine (GBV)	Annual	2017	319.49	371.33	434.79	550.99	73.94	86.73	100.49	126.44
C	Alpine (GBV)	Annual	2018	319.46	370.85	434.73	551.66	73.66	85.86	100.61	126.58
C	Alpine (GBV)	Annual	2019	319.51	370.58	434.66	552.11	73.60	85.37	100.54	126.79
C	Alpine (GBV)	Annual	2020	319.52	370.53	434.63	552.59	73.65	85.36	100.64	126.94
C	Alpine (GBV)	Annual	2021	319.35	370.39	434.54	552.76	73.53	85.37	100.70	126.88
C	Alpine (GBV)	Annual	2022	319.41	370.29	434.41	553.01	73.61	85.39	100.71	126.98
C	Alpine (GBV)	Annual	2023	319.45	370.13	434.39	553.18	73.67	85.39	100.78	127.17
C	Alpine (GBV)	Annual	2024	319.20	370.08	434.37	553.31	73.50	85.44	100.83	127.34
C	Alpine (GBV)	Annual	2025	319.16	370.11	434.34	553.52	73.49	85.51	100.88	127.53
C	Alpine (GBV)	Annual	2026	319.16	370.24	434.32	553.65	73.52	85.61	100.91	127.67
C	Alpine (GBV)	Annual	2027	319.16	370.37	434.30	553.84	73.53	85.71	100.94	127.83

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Alpine (GBV)	Annual	2028	319.14	370.50	434.23	554.01	73.53	85.80	100.95	127.98
C	Alpine (GBV)	Annual	2029	319.14	370.62	434.21	554.25	73.54	85.89	100.97	128.13
C	Alpine (GBV)	Annual	2030	319.14	370.74	434.16	554.47	73.55	85.96	100.97	128.27
C	Alpine (GBV)	Annual	2031	319.13	370.85	434.14	554.72	73.56	86.04	100.98	128.41
C	Alpine (GBV)	Annual	2032	319.13	370.96	434.12	554.98	73.56	86.10	100.99	128.55
C	Alpine (GBV)	Annual	2033	319.13	371.06	434.10	555.21	73.57	86.17	100.99	128.68
C	Alpine (GBV)	Annual	2034	319.13	371.14	434.09	555.41	73.57	86.23	101.00	128.80
C	Alpine (GBV)	Annual	2035	319.12	371.21	434.06	555.61	73.58	86.27	101.00	128.90
C	Alpine (GBV)	Summer	2010	322.05	375.88	438.84	549.63	77.24	91.37	100.57	125.68
C	Alpine (GBV)	Summer	2011	321.67	375.54	438.54	550.39	76.26	90.65	100.32	125.51
C	Alpine (GBV)	Summer	2012	321.42	374.98	438.32	550.99	75.15	89.58	100.40	125.56
C	Alpine (GBV)	Summer	2013	321.36	374.72	438.06	551.73	74.57	89.04	99.96	125.68
C	Alpine (GBV)	Summer	2014	321.50	374.50	437.93	552.42	74.52	88.58	100.09	125.82
C	Alpine (GBV)	Summer	2015	321.64	374.32	437.81	553.16	74.47	88.18	100.23	126.00
C	Alpine (GBV)	Summer	2016	321.76	373.78	437.73	553.86	74.44	87.12	100.36	126.21
C	Alpine (GBV)	Summer	2017	321.69	373.61	437.66	554.54	73.94	86.73	100.49	126.44
C	Alpine (GBV)	Summer	2018	321.65	373.16	437.61	555.23	73.66	85.86	100.61	126.58
C	Alpine (GBV)	Summer	2019	321.70	372.92	437.55	555.70	73.60	85.37	100.54	126.79
C	Alpine (GBV)	Summer	2020	321.71	372.88	437.52	556.20	73.65	85.36	100.64	126.94
C	Alpine (GBV)	Summer	2021	321.54	372.76	437.44	556.38	73.53	85.37	100.70	126.88
C	Alpine (GBV)	Summer	2022	321.60	372.67	437.31	556.63	73.61	85.39	100.71	126.98
C	Alpine (GBV)	Summer	2023	321.64	372.52	437.29	556.81	73.67	85.39	100.78	127.17
C	Alpine (GBV)	Summer	2024	321.39	372.48	437.27	556.95	73.50	85.44	100.83	127.34
C	Alpine (GBV)	Summer	2025	321.35	372.52	437.24	557.16	73.49	85.51	100.88	127.53
C	Alpine (GBV)	Summer	2026	321.36	372.65	437.22	557.29	73.52	85.61	100.91	127.67
C	Alpine (GBV)	Summer	2027	321.36	372.79	437.20	557.48	73.53	85.71	100.94	127.83
C	Alpine (GBV)	Summer	2028	321.34	372.93	437.12	557.66	73.53	85.80	100.95	127.98
C	Alpine (GBV)	Summer	2029	321.34	373.07	437.11	557.90	73.54	85.89	100.97	128.13
C	Alpine (GBV)	Summer	2030	321.34	373.19	437.06	558.13	73.55	85.96	100.97	128.27
C	Alpine (GBV)	Summer	2031	321.34	373.31	437.04	558.38	73.56	86.04	100.98	128.41
C	Alpine (GBV)	Summer	2032	321.33	373.42	437.02	558.64	73.56	86.10	100.99	128.55
C	Alpine (GBV)	Summer	2033	321.33	373.52	437.00	558.87	73.57	86.17	100.99	128.68
C	Alpine (GBV)	Summer	2034	321.33	373.61	436.99	559.09	73.57	86.23	101.00	128.80
C	Alpine (GBV)	Summer	2035	321.32	373.68	436.96	559.29	73.58	86.27	101.00	128.90
C	Alpine (GBV)	Winter	2010	321.45	375.32	438.05	548.67	77.24	91.37	100.57	125.68
C	Alpine (GBV)	Winter	2011	321.07	374.96	437.74	549.42	76.26	90.65	100.32	125.51
C	Alpine (GBV)	Winter	2012	320.80	374.39	437.52	550.02	75.15	89.58	100.40	125.56
C	Alpine (GBV)	Winter	2013	320.74	374.11	437.26	550.75	74.57	89.04	99.96	125.68
C	Alpine (GBV)	Winter	2014	320.88	373.88	437.12	551.43	74.52	88.58	100.09	125.82
C	Alpine (GBV)	Winter	2015	321.02	373.69	437.00	552.16	74.47	88.18	100.23	126.00
C	Alpine (GBV)	Winter	2016	321.14	373.14	436.91	552.86	74.44	87.12	100.36	126.21
C	Alpine (GBV)	Winter	2017	321.06	372.96	436.85	553.53	73.94	86.73	100.49	126.44
C	Alpine (GBV)	Winter	2018	321.03	372.51	436.79	554.22	73.66	85.86	100.61	126.58
C	Alpine (GBV)	Winter	2019	321.08	372.25	436.73	554.68	73.60	85.37	100.54	126.79
C	Alpine (GBV)	Winter	2020	321.09	372.21	436.70	555.17	73.65	85.36	100.64	126.94
C	Alpine (GBV)	Winter	2021	320.92	372.08	436.62	555.35	73.53	85.37	100.70	126.88
C	Alpine (GBV)	Winter	2022	320.98	371.99	436.49	555.60	73.61	85.39	100.71	126.98
C	Alpine (GBV)	Winter	2023	321.02	371.84	436.47	555.78	73.67	85.39	100.78	127.17
C	Alpine (GBV)	Winter	2024	320.77	371.80	436.44	555.92	73.50	85.44	100.83	127.34
C	Alpine (GBV)	Winter	2025	320.73	371.84	436.42	556.12	73.49	85.51	100.88	127.53
C	Alpine (GBV)	Winter	2026	320.74	371.97	436.40	556.26	73.52	85.61	100.91	127.67
C	Alpine (GBV)	Winter	2027	320.74	372.11	436.38	556.45	73.53	85.71	100.94	127.83
C	Alpine (GBV)	Winter	2028	320.71	372.24	436.30	556.62	73.53	85.80	100.95	127.98
C	Alpine (GBV)	Winter	2029	320.71	372.37	436.29	556.87	73.54	85.89	100.97	128.13

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Alpine (GBV)	Winter	2030	320.71	372.49	436.23	557.09	73.55	85.96	100.97	128.27
C	Alpine (GBV)	Winter	2031	320.71	372.61	436.21	557.34	73.56	86.04	100.98	128.41
C	Alpine (GBV)	Winter	2032	320.71	372.72	436.20	557.60	73.56	86.10	100.99	128.55
C	Alpine (GBV)	Winter	2033	320.71	372.82	436.18	557.83	73.57	86.17	100.99	128.68
C	Alpine (GBV)	Winter	2034	320.70	372.91	436.17	558.05	73.57	86.23	101.00	128.80
C	Alpine (GBV)	Winter	2035	320.70	372.98	436.14	558.25	73.58	86.27	101.00	128.90
C	Amador (MC)	Annual	2010	304.65	351.36	416.56	520.77	74.42	88.71	101.28	124.30
C	Amador (MC)	Annual	2011	304.66	351.60	416.18	521.37	74.22	87.90	101.12	124.48
C	Amador (MC)	Annual	2012	304.71	351.83	415.89	522.08	74.04	87.30	101.03	124.70
C	Amador (MC)	Annual	2013	304.79	351.99	415.66	522.86	73.92	86.76	100.95	124.94
C	Amador (MC)	Annual	2014	304.86	352.15	415.48	523.60	73.78	86.37	100.90	125.21
C	Amador (MC)	Annual	2015	304.98	352.29	415.35	524.39	73.76	85.97	100.78	125.49
C	Amador (MC)	Annual	2016	305.08	352.44	415.24	525.15	73.74	85.71	100.76	125.78
C	Amador (MC)	Annual	2017	305.13	352.54	415.14	525.85	73.67	85.39	100.65	126.08
C	Amador (MC)	Annual	2018	305.17	352.64	415.05	526.46	73.63	85.21	100.62	126.36
C	Amador (MC)	Annual	2019	305.20	352.73	414.99	526.98	73.61	85.07	100.64	126.62
C	Amador (MC)	Annual	2020	305.25	352.84	414.93	527.43	73.70	85.10	100.70	126.87
C	Amador (MC)	Annual	2021	305.27	352.92	414.87	527.78	73.76	85.17	100.76	127.07
C	Amador (MC)	Annual	2022	305.25	352.98	414.81	528.07	73.79	85.24	100.80	127.21
C	Amador (MC)	Annual	2023	305.17	353.01	414.75	528.29	73.79	85.29	100.83	127.40
C	Amador (MC)	Annual	2024	305.08	353.05	414.70	528.47	73.77	85.35	100.86	127.58
C	Amador (MC)	Annual	2025	305.03	353.13	414.66	528.63	73.78	85.43	100.90	127.75
C	Amador (MC)	Annual	2026	305.04	353.24	414.62	528.79	73.80	85.53	100.92	127.91
C	Amador (MC)	Annual	2027	305.05	353.36	414.57	528.95	73.81	85.62	100.94	128.05
C	Amador (MC)	Annual	2028	305.05	353.48	414.54	529.12	73.82	85.70	100.96	128.19
C	Amador (MC)	Annual	2029	305.04	353.60	414.51	529.29	73.83	85.78	100.96	128.32
C	Amador (MC)	Annual	2030	305.03	353.72	414.47	529.46	73.83	85.85	100.96	128.44
C	Amador (MC)	Annual	2031	305.02	353.84	414.44	529.67	73.83	85.93	100.97	128.56
C	Amador (MC)	Annual	2032	305.02	353.95	414.42	529.88	73.84	85.99	100.97	128.68
C	Amador (MC)	Annual	2033	305.01	354.05	414.40	530.07	73.84	86.06	100.98	128.78
C	Amador (MC)	Annual	2034	305.01	354.14	414.39	530.24	73.85	86.11	100.98	128.88
C	Amador (MC)	Annual	2035	305.01	354.21	414.37	530.39	73.85	86.16	100.98	128.97
C	Amador (MC)	Summer	2010	335.39	381.81	456.97	570.78	74.42	88.71	101.28	124.30
C	Amador (MC)	Summer	2011	335.69	383.05	456.90	571.49	74.22	87.90	101.12	124.48
C	Amador (MC)	Summer	2012	335.97	384.03	456.85	572.39	74.04	87.30	101.03	124.70
C	Amador (MC)	Summer	2013	336.23	384.81	456.85	573.45	73.92	86.76	100.95	124.94
C	Amador (MC)	Summer	2014	336.43	385.43	456.87	574.47	73.78	86.37	100.90	125.21
C	Amador (MC)	Summer	2015	336.65	385.97	456.94	575.58	73.76	85.97	100.78	125.49
C	Amador (MC)	Summer	2016	336.82	386.42	456.98	576.67	73.74	85.71	100.76	125.78
C	Amador (MC)	Summer	2017	336.90	386.79	457.00	577.65	73.67	85.39	100.65	126.08
C	Amador (MC)	Summer	2018	336.95	387.08	456.98	578.50	73.63	85.21	100.62	126.36
C	Amador (MC)	Summer	2019	336.99	387.35	456.95	579.23	73.61	85.07	100.64	126.62
C	Amador (MC)	Summer	2020	337.02	387.58	456.90	579.85	73.70	85.10	100.70	126.87
C	Amador (MC)	Summer	2021	337.03	387.78	456.85	580.34	73.76	85.17	100.76	127.07
C	Amador (MC)	Summer	2022	337.01	387.96	456.79	580.75	73.79	85.24	100.80	127.21
C	Amador (MC)	Summer	2023	336.93	388.10	456.74	581.05	73.79	85.29	100.83	127.40
C	Amador (MC)	Summer	2024	336.85	388.24	456.69	581.30	73.77	85.35	100.86	127.58
C	Amador (MC)	Summer	2025	336.80	388.38	456.65	581.51	73.78	85.43	100.90	127.75
C	Amador (MC)	Summer	2026	336.83	388.54	456.62	581.67	73.80	85.53	100.92	127.91
C	Amador (MC)	Summer	2027	336.85	388.70	456.59	581.84	73.81	85.62	100.94	128.05
C	Amador (MC)	Summer	2028	336.86	388.88	456.57	582.04	73.82	85.70	100.96	128.19
C	Amador (MC)	Summer	2029	336.87	389.06	456.55	582.24	73.83	85.78	100.96	128.32
C	Amador (MC)	Summer	2030	336.87	389.25	456.52	582.44	73.83	85.85	100.96	128.44
C	Amador (MC)	Summer	2031	336.87	389.46	456.50	582.71	73.83	85.93	100.97	128.56

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Amador (MC)	Summer	2032	336.87	389.62	456.48	582.98	73.84	85.99	100.97	128.68
C	Amador (MC)	Summer	2033	336.86	389.77	456.47	583.23	73.84	86.06	100.98	128.78
C	Amador (MC)	Summer	2034	336.85	389.90	456.45	583.45	73.85	86.11	100.98	128.88
C	Amador (MC)	Summer	2035	336.85	389.98	456.44	583.66	73.85	86.16	100.98	128.97
C	Amador (MC)	Winter	2010	295.29	342.08	404.24	505.53	74.42	88.71	101.28	124.30
C	Amador (MC)	Winter	2011	295.21	342.02	403.78	506.10	74.22	87.90	101.12	124.48
C	Amador (MC)	Winter	2012	295.18	342.01	403.41	506.75	74.04	87.30	101.03	124.70
C	Amador (MC)	Winter	2013	295.22	341.99	403.11	507.45	73.92	86.76	100.95	124.94
C	Amador (MC)	Winter	2014	295.24	342.01	402.87	508.11	73.78	86.37	100.90	125.21
C	Amador (MC)	Winter	2015	295.33	342.02	402.67	508.79	73.76	85.97	100.78	125.49
C	Amador (MC)	Winter	2016	295.41	342.08	402.52	509.45	73.74	85.71	100.76	125.78
C	Amador (MC)	Winter	2017	295.45	342.10	402.38	510.06	73.67	85.39	100.65	126.08
C	Amador (MC)	Winter	2018	295.49	342.14	402.28	510.60	73.63	85.21	100.62	126.36
C	Amador (MC)	Winter	2019	295.52	342.18	402.21	511.06	73.61	85.07	100.64	126.62
C	Amador (MC)	Winter	2020	295.57	342.25	402.15	511.46	73.70	85.10	100.70	126.87
C	Amador (MC)	Winter	2021	295.59	342.29	402.08	511.77	73.76	85.17	100.76	127.07
C	Amador (MC)	Winter	2022	295.58	342.32	402.02	512.02	73.79	85.24	100.80	127.21
C	Amador (MC)	Winter	2023	295.49	342.32	401.95	512.21	73.79	85.29	100.83	127.40
C	Amador (MC)	Winter	2024	295.40	342.33	401.90	512.37	73.77	85.35	100.86	127.58
C	Amador (MC)	Winter	2025	295.35	342.39	401.87	512.52	73.78	85.43	100.90	127.75
C	Amador (MC)	Winter	2026	295.36	342.49	401.82	512.68	73.80	85.53	100.92	127.91
C	Amador (MC)	Winter	2027	295.36	342.59	401.77	512.84	73.81	85.62	100.94	128.05
C	Amador (MC)	Winter	2028	295.35	342.69	401.74	513.00	73.82	85.70	100.96	128.19
C	Amador (MC)	Winter	2029	295.34	342.79	401.70	513.16	73.83	85.78	100.96	128.32
C	Amador (MC)	Winter	2030	295.32	342.89	401.65	513.32	73.83	85.85	100.96	128.44
C	Amador (MC)	Winter	2031	295.32	342.99	401.63	513.51	73.83	85.93	100.97	128.56
C	Amador (MC)	Winter	2032	295.32	343.09	401.61	513.70	73.84	85.99	100.97	128.68
C	Amador (MC)	Winter	2033	295.31	343.17	401.59	513.88	73.84	86.06	100.98	128.78
C	Amador (MC)	Winter	2034	295.31	343.24	401.57	514.03	73.85	86.11	100.98	128.88
C	Amador (MC)	Winter	2035	295.30	343.31	401.56	514.17	73.85	86.16	100.98	128.97
C	Butte (SV)	Annual	2010	339.87	396.33	466.79	582.59	73.74	93.40	101.05	125.37
C	Butte (SV)	Annual	2011	340.16	396.11	466.41	583.82	73.64	91.64	100.92	125.50
C	Butte (SV)	Annual	2012	340.27	395.85	465.90	584.74	73.58	90.38	100.87	125.67
C	Butte (SV)	Annual	2013	340.39	395.57	465.50	585.71	73.53	89.20	100.81	125.88
C	Butte (SV)	Annual	2014	340.47	395.32	465.20	586.62	73.46	88.16	100.77	126.08
C	Butte (SV)	Annual	2015	340.60	395.14	464.96	587.52	73.45	87.30	100.75	126.32
C	Butte (SV)	Annual	2016	342.35	396.92	466.99	591.13	73.49	86.64	100.74	126.57
C	Butte (SV)	Annual	2017	342.42	396.78	466.81	591.87	73.48	85.98	100.71	126.82
C	Butte (SV)	Annual	2018	342.44	396.68	466.66	592.50	73.44	85.49	100.70	127.05
C	Butte (SV)	Annual	2019	342.48	396.71	466.54	593.04	73.45	85.31	100.70	127.27
C	Butte (SV)	Annual	2020	342.53	396.78	466.44	593.51	73.54	85.30	100.76	127.47
C	Butte (SV)	Annual	2021	343.10	397.55	467.11	594.81	73.60	85.41	100.82	127.57
C	Butte (SV)	Annual	2022	343.10	397.67	467.03	595.07	73.64	85.50	100.87	127.65
C	Butte (SV)	Annual	2023	343.08	397.75	466.95	595.27	73.67	85.58	100.90	127.82
C	Butte (SV)	Annual	2024	343.02	397.84	466.88	595.42	73.68	85.66	100.93	127.97
C	Butte (SV)	Annual	2025	343.01	397.92	466.82	595.60	73.70	85.73	100.96	128.12
C	Butte (SV)	Annual	2026	343.02	398.03	466.75	595.77	73.72	85.80	100.97	128.26
C	Butte (SV)	Annual	2027	343.02	398.12	466.69	595.94	73.73	85.86	100.98	128.39
C	Butte (SV)	Annual	2028	343.02	398.22	466.63	596.11	73.74	85.92	100.99	128.51
C	Butte (SV)	Annual	2029	343.02	398.31	466.55	596.28	73.74	85.97	100.99	128.62
C	Butte (SV)	Annual	2030	343.01	398.40	466.48	596.45	73.75	86.02	100.98	128.72
C	Butte (SV)	Annual	2031	343.01	398.49	466.45	596.62	73.75	86.07	100.98	128.82
C	Butte (SV)	Annual	2032	343.01	398.57	466.42	596.79	73.76	86.12	100.99	128.91
C	Butte (SV)	Annual	2033	343.00	398.64	466.40	596.95	73.76	86.15	100.99	128.99

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Butte (SV)	Annual	2034	343.00	398.69	466.38	597.09	73.76	86.19	100.99	129.06
C	Butte (SV)	Annual	2035	342.99	398.74	466.36	597.22	73.77	86.22	100.99	129.13
C	Butte (SV)	Summer	2010	378.25	435.25	516.75	645.70	73.74	93.40	101.05	125.37
C	Butte (SV)	Summer	2011	379.01	436.21	517.19	647.27	73.64	91.64	100.92	125.50
C	Butte (SV)	Summer	2012	379.48	436.79	517.26	648.57	73.58	90.38	100.87	125.67
C	Butte (SV)	Summer	2013	379.86	437.26	517.34	649.98	73.53	89.20	100.81	125.88
C	Butte (SV)	Summer	2014	380.14	437.60	517.39	651.33	73.46	88.16	100.77	126.08
C	Butte (SV)	Summer	2015	380.40	437.90	517.40	652.65	73.45	87.30	100.75	126.32
C	Butte (SV)	Summer	2016	382.44	440.27	519.84	656.95	73.49	86.64	100.74	126.57
C	Butte (SV)	Summer	2017	382.54	440.50	519.76	658.01	73.48	85.98	100.71	126.82
C	Butte (SV)	Summer	2018	382.56	440.67	519.63	658.88	73.44	85.49	100.70	127.05
C	Butte (SV)	Summer	2019	382.59	440.87	519.51	659.62	73.45	85.31	100.70	127.27
C	Butte (SV)	Summer	2020	382.63	441.06	519.39	660.26	73.54	85.30	100.76	127.47
C	Butte (SV)	Summer	2021	383.24	442.01	520.14	661.82	73.60	85.41	100.82	127.57
C	Butte (SV)	Summer	2022	383.23	442.21	520.05	662.21	73.64	85.50	100.87	127.65
C	Butte (SV)	Summer	2023	383.21	442.39	519.98	662.50	73.67	85.58	100.90	127.82
C	Butte (SV)	Summer	2024	383.15	442.57	519.92	662.70	73.68	85.66	100.93	127.97
C	Butte (SV)	Summer	2025	383.13	442.73	519.88	662.89	73.70	85.73	100.96	128.12
C	Butte (SV)	Summer	2026	383.15	442.89	519.81	663.05	73.72	85.80	100.97	128.26
C	Butte (SV)	Summer	2027	383.17	443.04	519.76	663.21	73.73	85.86	100.98	128.39
C	Butte (SV)	Summer	2028	383.19	443.19	519.72	663.40	73.74	85.92	100.99	128.51
C	Butte (SV)	Summer	2029	383.21	443.35	519.67	663.59	73.74	85.97	100.99	128.62
C	Butte (SV)	Summer	2030	383.22	443.50	519.63	663.79	73.75	86.02	100.98	128.72
C	Butte (SV)	Summer	2031	383.22	443.64	519.62	663.97	73.75	86.07	100.98	128.82
C	Butte (SV)	Summer	2032	383.22	443.74	519.61	664.16	73.76	86.12	100.99	128.91
C	Butte (SV)	Summer	2033	383.22	443.83	519.60	664.35	73.76	86.15	100.99	128.99
C	Butte (SV)	Summer	2034	383.22	443.91	519.59	664.54	73.76	86.19	100.99	129.06
C	Butte (SV)	Summer	2035	383.21	443.96	519.58	664.71	73.77	86.22	100.99	129.13
C	Butte (SV)	Winter	2010	328.68	384.98	452.21	564.18	73.74	93.40	101.05	125.37
C	Butte (SV)	Winter	2011	328.82	384.41	451.61	565.32	73.64	91.64	100.92	125.50
C	Butte (SV)	Winter	2012	328.84	383.90	450.92	566.13	73.58	90.38	100.87	125.67
C	Butte (SV)	Winter	2013	328.87	383.41	450.39	566.96	73.53	89.20	100.81	125.88
C	Butte (SV)	Winter	2014	328.90	382.99	449.98	567.75	73.46	88.16	100.77	126.08
C	Butte (SV)	Winter	2015	328.99	382.67	449.66	568.52	73.45	87.30	100.75	126.32
C	Butte (SV)	Winter	2016	330.67	384.27	451.57	571.94	73.49	86.64	100.74	126.57
C	Butte (SV)	Winter	2017	330.72	384.03	451.37	572.58	73.48	85.98	100.71	126.82
C	Butte (SV)	Winter	2018	330.74	383.86	451.21	573.14	73.44	85.49	100.70	127.05
C	Butte (SV)	Winter	2019	330.78	383.84	451.09	573.62	73.45	85.31	100.70	127.27
C	Butte (SV)	Winter	2020	330.84	383.86	450.99	574.04	73.54	85.30	100.76	127.47
C	Butte (SV)	Winter	2021	331.40	384.59	451.65	575.26	73.60	85.41	100.82	127.57
C	Butte (SV)	Winter	2022	331.39	384.68	451.56	575.49	73.64	85.50	100.87	127.65
C	Butte (SV)	Winter	2023	331.38	384.73	451.48	575.67	73.67	85.58	100.90	127.82
C	Butte (SV)	Winter	2024	331.32	384.80	451.41	575.80	73.68	85.66	100.93	127.97
C	Butte (SV)	Winter	2025	331.30	384.86	451.35	575.97	73.70	85.73	100.96	128.12
C	Butte (SV)	Winter	2026	331.31	384.94	451.28	576.14	73.72	85.80	100.97	128.26
C	Butte (SV)	Winter	2027	331.31	385.02	451.21	576.32	73.73	85.86	100.98	128.39
C	Butte (SV)	Winter	2028	331.31	385.10	451.14	576.48	73.74	85.92	100.99	128.51
C	Butte (SV)	Winter	2029	331.30	385.18	451.06	576.65	73.74	85.97	100.99	128.62
C	Butte (SV)	Winter	2030	331.28	385.25	450.98	576.81	73.75	86.02	100.98	128.72
C	Butte (SV)	Winter	2031	331.28	385.33	450.94	576.98	73.75	86.07	100.98	128.82
C	Butte (SV)	Winter	2032	331.28	385.40	450.91	577.14	73.76	86.12	100.99	128.91
C	Butte (SV)	Winter	2033	331.27	385.45	450.88	577.29	73.76	86.15	100.99	128.99
C	Butte (SV)	Winter	2034	331.27	385.51	450.86	577.42	73.76	86.19	100.99	129.06
C	Butte (SV)	Winter	2035	331.26	385.55	450.84	577.54	73.77	86.22	100.99	129.13

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Calaveras (MC)	Annual	2010	339.15	393.21	464.59	580.79	74.52	89.63	101.49	124.52
C	Calaveras (MC)	Annual	2011	339.17	393.31	464.13	581.44	74.31	88.76	101.30	124.68
C	Calaveras (MC)	Annual	2012	339.22	393.39	463.78	582.21	74.10	88.01	101.21	124.87
C	Calaveras (MC)	Annual	2013	339.30	393.43	463.49	583.06	73.93	87.36	101.13	125.10
C	Calaveras (MC)	Annual	2014	339.36	393.46	463.27	583.88	73.74	86.82	101.00	125.34
C	Calaveras (MC)	Annual	2015	339.48	393.52	463.10	584.75	73.70	86.38	100.93	125.59
C	Calaveras (MC)	Annual	2016	339.59	393.59	462.96	585.57	73.69	86.07	100.88	125.88
C	Calaveras (MC)	Annual	2017	339.64	393.63	462.83	586.35	73.61	85.70	100.81	126.15
C	Calaveras (MC)	Annual	2018	339.66	393.65	462.73	587.01	73.51	85.38	100.75	126.42
C	Calaveras (MC)	Annual	2019	339.69	393.73	462.65	587.57	73.48	85.28	100.71	126.69
C	Calaveras (MC)	Annual	2020	339.72	393.81	462.58	588.07	73.55	85.28	100.76	126.92
C	Calaveras (MC)	Annual	2021	339.70	393.86	462.51	588.43	73.59	85.33	100.81	127.08
C	Calaveras (MC)	Annual	2022	339.67	393.90	462.43	588.75	73.61	85.38	100.85	127.26
C	Calaveras (MC)	Annual	2023	339.61	393.93	462.36	588.97	73.61	85.43	100.87	127.44
C	Calaveras (MC)	Annual	2024	339.52	393.92	462.29	589.14	73.58	85.45	100.89	127.61
C	Calaveras (MC)	Annual	2025	339.50	393.98	462.24	589.30	73.59	85.52	100.92	127.77
C	Calaveras (MC)	Annual	2026	339.51	394.11	462.19	589.48	73.61	85.62	100.94	127.93
C	Calaveras (MC)	Annual	2027	339.51	394.23	462.13	589.67	73.62	85.70	100.96	128.08
C	Calaveras (MC)	Annual	2028	339.51	394.36	462.10	589.86	73.63	85.78	100.97	128.21
C	Calaveras (MC)	Annual	2029	339.50	394.48	462.05	590.05	73.64	85.86	100.97	128.34
C	Calaveras (MC)	Annual	2030	339.49	394.60	462.00	590.25	73.64	85.93	100.97	128.46
C	Calaveras (MC)	Annual	2031	339.49	394.71	461.98	590.48	73.65	86.00	100.98	128.58
C	Calaveras (MC)	Annual	2032	339.49	394.82	461.96	590.71	73.65	86.06	100.98	128.70
C	Calaveras (MC)	Annual	2033	339.49	394.90	461.94	590.91	73.65	86.12	100.98	128.81
C	Calaveras (MC)	Annual	2034	339.48	394.98	461.92	591.10	73.66	86.17	100.99	128.90
C	Calaveras (MC)	Annual	2035	339.48	395.05	461.91	591.26	73.66	86.21	100.99	128.99
C	Calaveras (MC)	Summer	2010	371.79	425.53	507.37	633.67	74.52	89.63	101.49	124.52
C	Calaveras (MC)	Summer	2011	372.10	426.67	507.24	634.43	74.31	88.76	101.30	124.68
C	Calaveras (MC)	Summer	2012	372.38	427.56	507.15	635.42	74.10	88.01	101.21	124.87
C	Calaveras (MC)	Summer	2013	372.63	428.25	507.10	636.56	73.93	87.36	101.13	125.10
C	Calaveras (MC)	Summer	2014	372.82	428.79	507.12	637.70	73.74	86.82	101.00	125.34
C	Calaveras (MC)	Summer	2015	373.03	429.26	507.15	638.94	73.70	86.38	100.93	125.59
C	Calaveras (MC)	Summer	2016	373.20	429.64	507.18	640.12	73.69	86.07	100.88	125.88
C	Calaveras (MC)	Summer	2017	373.29	429.96	507.18	641.21	73.61	85.70	100.81	126.15
C	Calaveras (MC)	Summer	2018	373.31	430.20	507.15	642.13	73.51	85.38	100.75	126.42
C	Calaveras (MC)	Summer	2019	373.34	430.44	507.12	642.91	73.48	85.28	100.71	126.69
C	Calaveras (MC)	Summer	2020	373.36	430.67	507.07	643.60	73.55	85.28	100.76	126.92
C	Calaveras (MC)	Summer	2021	373.33	430.84	507.00	644.13	73.59	85.33	100.81	127.08
C	Calaveras (MC)	Summer	2022	373.30	431.01	506.94	644.57	73.61	85.38	100.85	127.26
C	Calaveras (MC)	Summer	2023	373.24	431.15	506.88	644.89	73.61	85.43	100.87	127.44
C	Calaveras (MC)	Summer	2024	373.18	431.27	506.81	645.12	73.58	85.45	100.89	127.61
C	Calaveras (MC)	Summer	2025	373.16	431.40	506.76	645.32	73.59	85.52	100.92	127.77
C	Calaveras (MC)	Summer	2026	373.18	431.61	506.71	645.52	73.61	85.62	100.94	127.93
C	Calaveras (MC)	Summer	2027	373.19	431.81	506.66	645.72	73.62	85.70	100.96	128.08
C	Calaveras (MC)	Summer	2028	373.20	432.01	506.63	645.94	73.63	85.78	100.97	128.21
C	Calaveras (MC)	Summer	2029	373.21	432.20	506.60	646.17	73.64	85.86	100.97	128.34
C	Calaveras (MC)	Summer	2030	373.22	432.39	506.57	646.41	73.64	85.93	100.97	128.46
C	Calaveras (MC)	Summer	2031	373.22	432.56	506.56	646.71	73.65	86.00	100.98	128.58
C	Calaveras (MC)	Summer	2032	373.21	432.71	506.56	646.99	73.65	86.06	100.98	128.70
C	Calaveras (MC)	Summer	2033	373.21	432.83	506.55	647.26	73.65	86.12	100.98	128.81
C	Calaveras (MC)	Summer	2034	373.20	432.93	506.54	647.51	73.66	86.17	100.99	128.90
C	Calaveras (MC)	Summer	2035	373.19	433.00	506.53	647.73	73.66	86.21	100.99	128.99
C	Calaveras (MC)	Winter	2010	329.78	383.93	452.30	565.59	74.52	89.63	101.49	124.52
C	Calaveras (MC)	Winter	2011	329.72	383.73	451.75	566.21	74.31	88.76	101.30	124.68

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Calaveras (MC)	Winter	2012	329.69	383.57	451.31	566.92	74.10	88.01	101.21	124.87
C	Calaveras (MC)	Winter	2013	329.72	383.42	450.96	567.68	73.93	87.36	101.13	125.10
C	Calaveras (MC)	Winter	2014	329.75	383.31	450.67	568.42	73.74	86.82	101.00	125.34
C	Calaveras (MC)	Winter	2015	329.84	383.25	450.44	569.19	73.70	86.38	100.93	125.59
C	Calaveras (MC)	Winter	2016	329.93	383.24	450.25	569.90	73.69	86.07	100.88	125.88
C	Calaveras (MC)	Winter	2017	329.98	383.20	450.09	570.59	73.61	85.70	100.81	126.15
C	Calaveras (MC)	Winter	2018	329.99	383.15	449.97	571.17	73.51	85.38	100.75	126.42
C	Calaveras (MC)	Winter	2019	330.02	383.18	449.87	571.67	73.48	85.28	100.71	126.69
C	Calaveras (MC)	Winter	2020	330.05	383.22	449.80	572.12	73.55	85.28	100.76	126.92
C	Calaveras (MC)	Winter	2021	330.04	383.24	449.72	572.43	73.59	85.33	100.81	127.08
C	Calaveras (MC)	Winter	2022	330.01	383.24	449.64	572.72	73.61	85.38	100.85	127.26
C	Calaveras (MC)	Winter	2023	329.94	383.24	449.56	572.90	73.61	85.43	100.87	127.44
C	Calaveras (MC)	Winter	2024	329.85	383.19	449.49	573.05	73.58	85.45	100.89	127.61
C	Calaveras (MC)	Winter	2025	329.83	383.23	449.45	573.20	73.59	85.52	100.92	127.77
C	Calaveras (MC)	Winter	2026	329.84	383.34	449.40	573.38	73.61	85.62	100.94	127.93
C	Calaveras (MC)	Winter	2027	329.84	383.44	449.34	573.56	73.62	85.70	100.96	128.08
C	Calaveras (MC)	Winter	2028	329.83	383.54	449.30	573.75	73.63	85.78	100.97	128.21
C	Calaveras (MC)	Winter	2029	329.82	383.64	449.25	573.93	73.64	85.86	100.97	128.34
C	Calaveras (MC)	Winter	2030	329.81	383.74	449.19	574.11	73.64	85.93	100.97	128.46
C	Calaveras (MC)	Winter	2031	329.80	383.84	449.17	574.32	73.65	86.00	100.98	128.58
C	Calaveras (MC)	Winter	2032	329.80	383.93	449.14	574.54	73.65	86.06	100.98	128.70
C	Calaveras (MC)	Winter	2033	329.80	384.01	449.12	574.73	73.65	86.12	100.98	128.81
C	Calaveras (MC)	Winter	2034	329.80	384.08	449.11	574.89	73.66	86.17	100.99	128.90
C	Calaveras (MC)	Winter	2035	329.79	384.14	449.09	575.04	73.66	86.21	100.99	128.99
C	Colusa (SV)	Annual	2010	336.15	393.71	462.59	577.05	73.02	94.44	100.85	124.61
C	Colusa (SV)	Annual	2011	336.30	393.20	461.94	577.64	73.01	92.76	100.79	124.78
C	Colusa (SV)	Annual	2012	336.46	392.86	461.43	578.32	73.01	91.49	100.76	124.99
C	Colusa (SV)	Annual	2013	336.61	392.53	461.04	579.07	73.01	90.33	100.78	125.24
C	Colusa (SV)	Annual	2014	336.76	392.14	460.74	579.85	73.01	89.10	100.78	125.48
C	Colusa (SV)	Annual	2015	336.94	391.90	460.48	580.66	73.07	88.20	100.70	125.75
C	Colusa (SV)	Annual	2016	337.08	391.55	460.28	581.44	73.11	87.13	100.69	126.03
C	Colusa (SV)	Annual	2017	337.18	391.40	460.11	582.19	73.11	86.50	100.69	126.31
C	Colusa (SV)	Annual	2018	337.27	391.20	459.97	582.84	73.14	85.83	100.67	126.58
C	Colusa (SV)	Annual	2019	337.32	391.11	459.85	583.42	73.14	85.43	100.69	126.82
C	Colusa (SV)	Annual	2020	337.37	391.06	459.75	583.92	73.23	85.29	100.77	127.05
C	Colusa (SV)	Annual	2021	337.43	391.13	459.66	584.31	73.30	85.37	100.83	127.21
C	Colusa (SV)	Annual	2022	337.40	391.19	459.57	584.63	73.33	85.43	100.88	127.34
C	Colusa (SV)	Annual	2023	337.39	391.29	459.49	584.89	73.36	85.52	100.91	127.52
C	Colusa (SV)	Annual	2024	337.37	391.34	459.41	585.10	73.37	85.59	100.94	127.69
C	Colusa (SV)	Annual	2025	337.36	391.40	459.36	585.31	73.39	85.65	100.97	127.86
C	Colusa (SV)	Annual	2026	337.37	391.51	459.27	585.53	73.41	85.73	100.99	128.02
C	Colusa (SV)	Annual	2027	337.38	391.61	459.21	585.75	73.42	85.79	101.00	128.16
C	Colusa (SV)	Annual	2028	337.39	391.73	459.15	585.97	73.43	85.86	101.01	128.30
C	Colusa (SV)	Annual	2029	337.40	391.84	459.07	586.18	73.44	85.92	101.01	128.42
C	Colusa (SV)	Annual	2030	337.38	391.95	458.99	586.40	73.44	85.97	101.00	128.54
C	Colusa (SV)	Annual	2031	337.38	392.05	458.95	586.61	73.45	86.03	101.00	128.66
C	Colusa (SV)	Annual	2032	337.38	392.15	458.92	586.83	73.45	86.08	101.00	128.77
C	Colusa (SV)	Annual	2033	337.38	392.24	458.89	587.03	73.46	86.13	101.01	128.87
C	Colusa (SV)	Annual	2034	337.37	392.31	458.85	587.21	73.46	86.17	101.01	128.96
C	Colusa (SV)	Annual	2035	337.36	392.37	458.83	587.37	73.47	86.21	101.01	129.05
C	Colusa (SV)	Summer	2010	369.11	427.03	505.43	632.25	73.02	94.44	100.85	124.61
C	Colusa (SV)	Summer	2011	369.53	427.36	505.34	632.77	73.01	92.76	100.79	124.78
C	Colusa (SV)	Summer	2012	369.90	427.67	505.27	633.46	73.01	91.49	100.76	124.99
C	Colusa (SV)	Summer	2013	370.21	427.88	505.20	634.32	73.01	90.33	100.78	125.24

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Colusa (SV)	Summer	2014	370.47	427.99	505.17	635.26	73.01	89.10	100.78	125.48
C	Colusa (SV)	Summer	2015	370.74	428.12	505.15	636.30	73.07	88.20	100.70	125.75
C	Colusa (SV)	Summer	2016	370.94	428.19	505.10	637.33	73.11	87.13	100.69	126.03
C	Colusa (SV)	Summer	2017	371.07	428.29	505.00	638.32	73.11	86.50	100.69	126.31
C	Colusa (SV)	Summer	2018	371.17	428.34	504.89	639.18	73.14	85.83	100.67	126.58
C	Colusa (SV)	Summer	2019	371.22	428.46	504.77	639.93	73.14	85.43	100.69	126.82
C	Colusa (SV)	Summer	2020	371.26	428.58	504.65	640.57	73.23	85.29	100.77	127.05
C	Colusa (SV)	Summer	2021	371.31	428.73	504.55	641.07	73.30	85.37	100.83	127.21
C	Colusa (SV)	Summer	2022	371.28	428.87	504.46	641.49	73.33	85.43	100.88	127.34
C	Colusa (SV)	Summer	2023	371.27	429.02	504.39	641.81	73.36	85.52	100.91	127.52
C	Colusa (SV)	Summer	2024	371.27	429.15	504.32	642.06	73.37	85.59	100.94	127.69
C	Colusa (SV)	Summer	2025	371.27	429.27	504.27	642.28	73.39	85.65	100.97	127.86
C	Colusa (SV)	Summer	2026	371.29	429.45	504.21	642.53	73.41	85.73	100.99	128.02
C	Colusa (SV)	Summer	2027	371.32	429.59	504.17	642.78	73.42	85.79	101.00	128.16
C	Colusa (SV)	Summer	2028	371.34	429.79	504.14	643.02	73.43	85.86	101.01	128.30
C	Colusa (SV)	Summer	2029	371.35	429.96	504.09	643.27	73.44	85.92	101.01	128.42
C	Colusa (SV)	Summer	2030	371.36	430.13	504.04	643.51	73.44	85.97	101.00	128.54
C	Colusa (SV)	Summer	2031	371.36	430.29	504.05	643.74	73.45	86.03	101.00	128.66
C	Colusa (SV)	Summer	2032	371.36	430.43	504.04	643.98	73.45	86.08	101.00	128.77
C	Colusa (SV)	Summer	2033	371.36	430.55	504.04	644.21	73.46	86.13	101.01	128.87
C	Colusa (SV)	Summer	2034	371.36	430.64	504.02	644.42	73.46	86.17	101.01	128.96
C	Colusa (SV)	Summer	2035	371.35	430.71	504.00	644.62	73.47	86.21	101.01	129.05
C	Colusa (SV)	Winter	2010	325.06	382.50	448.17	558.47	73.02	94.44	100.85	124.61
C	Colusa (SV)	Winter	2011	325.11	381.70	447.33	559.09	73.01	92.76	100.79	124.78
C	Colusa (SV)	Winter	2012	325.20	381.15	446.68	559.76	73.01	91.49	100.76	124.99
C	Colusa (SV)	Winter	2013	325.30	380.64	446.18	560.48	73.01	90.33	100.78	125.24
C	Colusa (SV)	Winter	2014	325.41	380.08	445.78	561.20	73.01	89.10	100.78	125.48
C	Colusa (SV)	Winter	2015	325.57	379.70	445.45	561.93	73.07	88.20	100.70	125.75
C	Colusa (SV)	Winter	2016	325.69	379.22	445.20	562.63	73.11	87.13	100.69	126.03
C	Colusa (SV)	Winter	2017	325.77	378.98	445.00	563.29	73.11	86.50	100.69	126.31
C	Colusa (SV)	Winter	2018	325.86	378.69	444.85	563.88	73.14	85.83	100.67	126.58
C	Colusa (SV)	Winter	2019	325.91	378.54	444.73	564.40	73.14	85.43	100.69	126.82
C	Colusa (SV)	Winter	2020	325.96	378.43	444.64	564.86	73.23	85.29	100.77	127.05
C	Colusa (SV)	Winter	2021	326.03	378.48	444.56	565.20	73.30	85.37	100.83	127.21
C	Colusa (SV)	Winter	2022	326.00	378.50	444.46	565.49	73.33	85.43	100.88	127.34
C	Colusa (SV)	Winter	2023	325.99	378.59	444.38	565.73	73.36	85.52	100.91	127.52
C	Colusa (SV)	Winter	2024	325.96	378.62	444.30	565.93	73.37	85.59	100.94	127.69
C	Colusa (SV)	Winter	2025	325.94	378.65	444.24	566.14	73.39	85.65	100.97	127.86
C	Colusa (SV)	Winter	2026	325.95	378.74	444.15	566.35	73.41	85.73	100.99	128.02
C	Colusa (SV)	Winter	2027	325.96	378.83	444.08	566.56	73.42	85.79	101.00	128.16
C	Colusa (SV)	Winter	2028	325.96	378.92	444.01	566.77	73.43	85.86	101.01	128.30
C	Colusa (SV)	Winter	2029	325.97	379.01	443.92	566.97	73.44	85.92	101.01	128.42
C	Colusa (SV)	Winter	2030	325.95	379.10	443.83	567.18	73.44	85.97	101.00	128.54
C	Colusa (SV)	Winter	2031	325.95	379.18	443.78	567.38	73.45	86.03	101.00	128.66
C	Colusa (SV)	Winter	2032	325.95	379.27	443.73	567.59	73.45	86.08	101.00	128.77
C	Colusa (SV)	Winter	2033	325.94	379.34	443.70	567.78	73.46	86.13	101.01	128.87
C	Colusa (SV)	Winter	2034	325.93	379.41	443.65	567.95	73.46	86.17	101.01	128.96
C	Colusa (SV)	Winter	2035	325.92	379.46	443.62	568.10	73.47	86.21	101.01	129.05
C	Contra Costa (SF)	Annual	2010	337.72	388.00	461.97	582.83	73.09	84.25	99.46	124.66
C	Contra Costa (SF)	Annual	2011	337.88	388.46	461.87	583.33	73.11	84.14	99.56	124.86
C	Contra Costa (SF)	Annual	2012	338.04	388.95	461.80	583.91	73.13	84.12	99.66	125.09
C	Contra Costa (SF)	Annual	2013	338.24	389.39	461.74	584.52	73.18	84.12	99.78	125.33
C	Contra Costa (SF)	Annual	2014	338.41	389.81	461.71	585.13	73.21	84.13	99.88	125.58
C	Contra Costa (SF)	Annual	2015	338.60	390.21	461.69	585.76	73.27	84.16	99.98	125.84

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Contra Costa (SF)	Annual	2016	338.79	390.60	461.68	586.37	73.35	84.23	100.09	126.11
C	Contra Costa (SF)	Annual	2017	338.93	390.94	461.67	586.95	73.40	84.27	100.17	126.37
C	Contra Costa (SF)	Annual	2018	339.06	391.27	461.66	587.46	73.45	84.35	100.26	126.62
C	Contra Costa (SF)	Annual	2019	339.18	391.60	461.67	587.90	73.51	84.48	100.35	126.86
C	Contra Costa (SF)	Annual	2020	339.28	391.89	461.67	588.30	73.61	84.63	100.45	127.08
C	Contra Costa (SF)	Annual	2021	339.36	392.15	461.67	588.63	73.69	84.80	100.54	127.27
C	Contra Costa (SF)	Annual	2022	339.41	392.38	461.67	588.91	73.75	84.95	100.62	127.42
C	Contra Costa (SF)	Annual	2023	339.42	392.56	461.66	589.13	73.79	85.08	100.69	127.59
C	Contra Costa (SF)	Annual	2024	339.40	392.71	461.65	589.30	73.81	85.19	100.75	127.75
C	Contra Costa (SF)	Annual	2025	339.41	392.84	461.65	589.47	73.84	85.30	100.80	127.91
C	Contra Costa (SF)	Annual	2026	339.43	393.00	461.64	589.64	73.86	85.40	100.84	128.05
C	Contra Costa (SF)	Annual	2027	339.44	393.15	461.62	589.81	73.88	85.49	100.87	128.18
C	Contra Costa (SF)	Annual	2028	339.44	393.31	461.61	589.98	73.89	85.58	100.89	128.30
C	Contra Costa (SF)	Annual	2029	339.44	393.47	461.59	590.14	73.90	85.66	100.91	128.41
C	Contra Costa (SF)	Annual	2030	339.44	393.63	461.58	590.31	73.90	85.74	100.92	128.52
C	Contra Costa (SF)	Annual	2031	339.44	393.80	461.57	590.49	73.91	85.82	100.93	128.62
C	Contra Costa (SF)	Annual	2032	339.44	393.97	461.56	590.67	73.91	85.89	100.94	128.72
C	Contra Costa (SF)	Annual	2033	339.44	394.11	461.55	590.84	73.92	85.96	100.95	128.82
C	Contra Costa (SF)	Annual	2034	339.43	394.24	461.54	590.99	73.92	86.02	100.96	128.90
C	Contra Costa (SF)	Annual	2035	339.43	394.36	461.53	591.12	73.92	86.08	100.96	128.98
C	Contra Costa (SF)	Summer	2010	368.96	420.20	503.53	635.26	73.09	84.25	99.46	124.66
C	Contra Costa (SF)	Summer	2011	369.30	421.14	503.46	635.62	73.11	84.14	99.56	124.86
C	Contra Costa (SF)	Summer	2012	369.63	422.03	503.44	636.15	73.13	84.12	99.66	125.09
C	Contra Costa (SF)	Summer	2013	369.95	422.81	503.47	636.80	73.18	84.12	99.78	125.33
C	Contra Costa (SF)	Summer	2014	370.23	423.51	503.55	637.51	73.21	84.13	99.88	125.58
C	Contra Costa (SF)	Summer	2015	370.49	424.14	503.64	638.30	73.27	84.16	99.98	125.84
C	Contra Costa (SF)	Summer	2016	370.73	424.73	503.73	639.09	73.35	84.23	100.09	126.11
C	Contra Costa (SF)	Summer	2017	370.91	425.27	503.81	639.85	73.40	84.27	100.17	126.37
C	Contra Costa (SF)	Summer	2018	371.04	425.77	503.86	640.51	73.45	84.35	100.26	126.62
C	Contra Costa (SF)	Summer	2019	371.16	426.23	503.89	641.07	73.51	84.48	100.35	126.86
C	Contra Costa (SF)	Summer	2020	371.26	426.65	503.90	641.58	73.61	84.63	100.45	127.08
C	Contra Costa (SF)	Summer	2021	371.34	427.00	503.90	641.99	73.69	84.80	100.54	127.27
C	Contra Costa (SF)	Summer	2022	371.39	427.32	503.89	642.34	73.75	84.95	100.62	127.42
C	Contra Costa (SF)	Summer	2023	371.40	427.58	503.87	642.59	73.79	85.08	100.69	127.59
C	Contra Costa (SF)	Summer	2024	371.39	427.81	503.84	642.79	73.81	85.19	100.75	127.75
C	Contra Costa (SF)	Summer	2025	371.39	428.02	503.82	642.98	73.84	85.30	100.80	127.91
C	Contra Costa (SF)	Summer	2026	371.41	428.24	503.80	643.16	73.86	85.40	100.84	128.05
C	Contra Costa (SF)	Summer	2027	371.43	428.46	503.77	643.33	73.88	85.49	100.87	128.18
C	Contra Costa (SF)	Summer	2028	371.44	428.69	503.76	643.49	73.89	85.58	100.89	128.30
C	Contra Costa (SF)	Summer	2029	371.45	428.93	503.74	643.66	73.90	85.66	100.91	128.41
C	Contra Costa (SF)	Summer	2030	371.45	429.16	503.72	643.84	73.90	85.74	100.92	128.52
C	Contra Costa (SF)	Summer	2031	371.45	429.42	503.71	644.04	73.91	85.82	100.93	128.62
C	Contra Costa (SF)	Summer	2032	371.46	429.64	503.71	644.25	73.91	85.89	100.94	128.72
C	Contra Costa (SF)	Summer	2033	371.46	429.83	503.70	644.45	73.92	85.96	100.95	128.82
C	Contra Costa (SF)	Summer	2034	371.46	430.01	503.69	644.64	73.92	86.02	100.96	128.90
C	Contra Costa (SF)	Summer	2035	371.46	430.14	503.69	644.81	73.92	86.08	100.96	128.98
C	Contra Costa (SF)	Winter	2010	333.44	383.59	456.28	575.64	73.09	84.25	99.46	124.66
C	Contra Costa (SF)	Winter	2011	333.57	383.99	456.17	576.17	73.11	84.14	99.56	124.86
C	Contra Costa (SF)	Winter	2012	333.71	384.41	456.09	576.75	73.13	84.12	99.66	125.09
C	Contra Costa (SF)	Winter	2013	333.89	384.81	456.03	577.35	73.18	84.12	99.78	125.33
C	Contra Costa (SF)	Winter	2014	334.06	385.19	455.97	577.95	73.21	84.13	99.88	125.58
C	Contra Costa (SF)	Winter	2015	334.23	385.56	455.94	578.56	73.27	84.16	99.98	125.84
C	Contra Costa (SF)	Winter	2016	334.42	385.92	455.91	579.14	73.35	84.23	100.09	126.11
C	Contra Costa (SF)	Winter	2017	334.55	386.24	455.89	579.70	73.40	84.27	100.17	126.37

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Contra Costa (SF)	Winter	2018	334.68	386.55	455.88	580.19	73.45	84.35	100.26	126.62
C	Contra Costa (SF)	Winter	2019	334.80	386.85	455.88	580.61	73.51	84.48	100.35	126.86
C	Contra Costa (SF)	Winter	2020	334.90	387.12	455.88	581.00	73.61	84.63	100.45	127.08
C	Contra Costa (SF)	Winter	2021	334.98	387.38	455.89	581.32	73.69	84.80	100.54	127.27
C	Contra Costa (SF)	Winter	2022	335.03	387.59	455.89	581.59	73.75	84.95	100.62	127.42
C	Contra Costa (SF)	Winter	2023	335.04	387.76	455.88	581.80	73.79	85.08	100.69	127.59
C	Contra Costa (SF)	Winter	2024	335.02	387.90	455.87	581.97	73.81	85.19	100.75	127.75
C	Contra Costa (SF)	Winter	2025	335.02	388.02	455.87	582.14	73.84	85.30	100.80	127.91
C	Contra Costa (SF)	Winter	2026	335.04	388.17	455.86	582.31	73.86	85.40	100.84	128.05
C	Contra Costa (SF)	Winter	2027	335.06	388.31	455.85	582.48	73.88	85.49	100.87	128.18
C	Contra Costa (SF)	Winter	2028	335.06	388.46	455.84	582.64	73.89	85.58	100.89	128.30
C	Contra Costa (SF)	Winter	2029	335.06	388.61	455.82	582.81	73.90	85.66	100.91	128.41
C	Contra Costa (SF)	Winter	2030	335.05	388.77	455.80	582.97	73.90	85.74	100.92	128.52
C	Contra Costa (SF)	Winter	2031	335.05	388.93	455.80	583.15	73.91	85.82	100.93	128.62
C	Contra Costa (SF)	Winter	2032	335.05	389.08	455.79	583.33	73.91	85.89	100.94	128.72
C	Contra Costa (SF)	Winter	2033	335.05	389.22	455.78	583.49	73.92	85.96	100.95	128.82
C	Contra Costa (SF)	Winter	2034	335.04	389.34	455.77	583.64	73.92	86.02	100.96	128.90
C	Contra Costa (SF)	Winter	2035	335.04	389.45	455.76	583.77	73.92	86.08	100.96	128.98
C	Del Norte (NC)	Annual	2010	353.30	405.98	485.33	605.59	73.80	85.57	100.54	124.43
C	Del Norte (NC)	Annual	2011	353.26	406.47	484.59	606.29	73.68	85.27	100.49	124.61
C	Del Norte (NC)	Annual	2012	353.28	406.97	484.01	607.12	73.58	85.14	100.48	124.82
C	Del Norte (NC)	Annual	2013	353.37	407.31	483.54	607.97	73.54	84.86	100.50	125.08
C	Del Norte (NC)	Annual	2014	353.52	407.69	483.17	608.82	73.58	84.78	100.50	125.32
C	Del Norte (NC)	Annual	2015	353.58	408.04	482.87	609.68	73.49	84.68	100.48	125.58
C	Del Norte (NC)	Annual	2016	353.72	408.34	482.64	610.47	73.52	84.60	100.54	125.88
C	Del Norte (NC)	Annual	2017	353.79	408.62	482.46	611.23	73.50	84.54	100.61	126.18
C	Del Norte (NC)	Annual	2018	353.86	408.91	482.31	611.89	73.48	84.59	100.64	126.45
C	Del Norte (NC)	Annual	2019	353.93	409.17	482.19	612.44	73.50	84.69	100.67	126.70
C	Del Norte (NC)	Annual	2020	354.00	409.40	482.10	612.93	73.59	84.81	100.74	126.94
C	Del Norte (NC)	Annual	2021	354.01	409.58	482.02	613.29	73.64	84.94	100.81	127.14
C	Del Norte (NC)	Annual	2022	353.98	409.71	481.94	613.59	73.67	85.06	100.86	127.30
C	Del Norte (NC)	Annual	2023	353.92	409.83	481.85	613.81	73.68	85.17	100.89	127.49
C	Del Norte (NC)	Annual	2024	353.85	409.93	481.77	613.99	73.68	85.27	100.92	127.66
C	Del Norte (NC)	Annual	2025	353.80	410.06	481.71	614.17	73.69	85.38	100.96	127.83
C	Del Norte (NC)	Annual	2026	353.81	410.21	481.63	614.35	73.71	85.49	100.97	127.98
C	Del Norte (NC)	Annual	2027	353.82	410.35	481.57	614.55	73.72	85.59	100.99	128.13
C	Del Norte (NC)	Annual	2028	353.82	410.50	481.51	614.76	73.73	85.68	101.00	128.27
C	Del Norte (NC)	Annual	2029	353.81	410.65	481.44	614.96	73.74	85.77	101.00	128.39
C	Del Norte (NC)	Annual	2030	353.79	410.80	481.36	615.16	73.74	85.86	101.00	128.51
C	Del Norte (NC)	Annual	2031	353.79	410.94	481.32	615.37	73.75	85.94	101.00	128.63
C	Del Norte (NC)	Annual	2032	353.79	411.09	481.28	615.58	73.75	86.02	101.01	128.74
C	Del Norte (NC)	Annual	2033	353.78	411.21	481.24	615.77	73.76	86.09	101.01	128.84
C	Del Norte (NC)	Annual	2034	353.78	411.32	481.21	615.94	73.76	86.15	101.01	128.93
C	Del Norte (NC)	Annual	2035	353.77	411.41	481.19	616.08	73.77	86.20	101.02	129.01
C	Del Norte (NC)	Summer	2010	356.62	409.26	489.68	611.00	73.80	85.57	100.54	124.43
C	Del Norte (NC)	Summer	2011	356.62	409.85	488.99	611.70	73.68	85.27	100.49	124.61
C	Del Norte (NC)	Summer	2012	356.66	410.43	488.44	612.56	73.58	85.14	100.48	124.82
C	Del Norte (NC)	Summer	2013	356.78	410.84	488.01	613.44	73.54	84.86	100.50	125.08
C	Del Norte (NC)	Summer	2014	356.95	411.27	487.66	614.32	73.58	84.78	100.50	125.32
C	Del Norte (NC)	Summer	2015	357.01	411.66	487.38	615.22	73.49	84.68	100.48	125.58
C	Del Norte (NC)	Summer	2016	357.16	412.00	487.17	616.05	73.52	84.60	100.54	125.88
C	Del Norte (NC)	Summer	2017	357.24	412.31	487.00	616.84	73.50	84.54	100.61	126.18
C	Del Norte (NC)	Summer	2018	357.30	412.61	486.86	617.53	73.48	84.59	100.64	126.45
C	Del Norte (NC)	Summer	2019	357.37	412.90	486.74	618.11	73.50	84.69	100.67	126.70

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Del Norte (NC)	Summer	2020	357.44	413.14	486.65	618.61	73.59	84.81	100.74	126.94
C	Del Norte (NC)	Summer	2021	357.45	413.33	486.57	618.99	73.64	84.94	100.81	127.14
C	Del Norte (NC)	Summer	2022	357.42	413.48	486.48	619.30	73.67	85.06	100.86	127.30
C	Del Norte (NC)	Summer	2023	357.36	413.62	486.39	619.53	73.68	85.17	100.89	127.49
C	Del Norte (NC)	Summer	2024	357.29	413.72	486.32	619.72	73.68	85.27	100.92	127.66
C	Del Norte (NC)	Summer	2025	357.24	413.86	486.26	619.90	73.69	85.38	100.96	127.83
C	Del Norte (NC)	Summer	2026	357.26	414.02	486.18	620.09	73.71	85.49	100.97	127.98
C	Del Norte (NC)	Summer	2027	357.26	414.18	486.12	620.29	73.72	85.59	100.99	128.13
C	Del Norte (NC)	Summer	2028	357.27	414.33	486.06	620.50	73.73	85.68	101.00	128.27
C	Del Norte (NC)	Summer	2029	357.26	414.49	485.99	620.71	73.74	85.77	101.00	128.39
C	Del Norte (NC)	Summer	2030	357.24	414.65	485.91	620.91	73.74	85.86	101.00	128.51
C	Del Norte (NC)	Summer	2031	357.24	414.80	485.87	621.13	73.75	85.94	101.00	128.63
C	Del Norte (NC)	Summer	2032	357.24	414.95	485.84	621.34	73.75	86.02	101.01	128.74
C	Del Norte (NC)	Summer	2033	357.23	415.08	485.80	621.53	73.76	86.09	101.01	128.84
C	Del Norte (NC)	Summer	2034	357.23	415.20	485.78	621.71	73.76	86.15	101.01	128.93
C	Del Norte (NC)	Summer	2035	357.22	415.29	485.75	621.85	73.77	86.20	101.02	129.01
C	Del Norte (NC)	Winter	2010	351.96	404.67	483.59	603.42	73.80	85.57	100.54	124.43
C	Del Norte (NC)	Winter	2011	351.91	405.12	482.83	604.11	73.68	85.27	100.49	124.61
C	Del Norte (NC)	Winter	2012	351.92	405.58	482.23	604.93	73.58	85.14	100.48	124.82
C	Del Norte (NC)	Winter	2013	352.00	405.90	481.75	605.77	73.54	84.86	100.50	125.08
C	Del Norte (NC)	Winter	2014	352.15	406.26	481.37	606.61	73.58	84.78	100.50	125.32
C	Del Norte (NC)	Winter	2015	352.20	406.58	481.06	607.45	73.49	84.68	100.48	125.58
C	Del Norte (NC)	Winter	2016	352.34	406.87	480.82	608.23	73.52	84.60	100.54	125.88
C	Del Norte (NC)	Winter	2017	352.41	407.14	480.64	608.97	73.50	84.54	100.61	126.18
C	Del Norte (NC)	Winter	2018	352.47	407.42	480.49	609.63	73.48	84.59	100.64	126.45
C	Del Norte (NC)	Winter	2019	352.55	407.68	480.37	610.17	73.50	84.69	100.67	126.70
C	Del Norte (NC)	Winter	2020	352.62	407.90	480.28	610.65	73.59	84.81	100.74	126.94
C	Del Norte (NC)	Winter	2021	352.63	408.07	480.20	611.00	73.64	84.94	100.81	127.14
C	Del Norte (NC)	Winter	2022	352.60	408.20	480.11	611.29	73.67	85.06	100.86	127.30
C	Del Norte (NC)	Winter	2023	352.53	408.31	480.02	611.52	73.68	85.17	100.89	127.49
C	Del Norte (NC)	Winter	2024	352.46	408.40	479.94	611.69	73.68	85.27	100.92	127.66
C	Del Norte (NC)	Winter	2025	352.42	408.53	479.89	611.86	73.69	85.38	100.96	127.83
C	Del Norte (NC)	Winter	2026	352.43	408.68	479.81	612.05	73.71	85.49	100.97	127.98
C	Del Norte (NC)	Winter	2027	352.43	408.82	479.75	612.25	73.72	85.59	100.99	128.13
C	Del Norte (NC)	Winter	2028	352.44	408.96	479.68	612.45	73.73	85.68	101.00	128.27
C	Del Norte (NC)	Winter	2029	352.43	409.11	479.61	612.65	73.74	85.77	101.00	128.39
C	Del Norte (NC)	Winter	2030	352.41	409.25	479.53	612.85	73.74	85.86	101.00	128.51
C	Del Norte (NC)	Winter	2031	352.41	409.39	479.49	613.06	73.75	85.94	101.00	128.63
C	Del Norte (NC)	Winter	2032	352.40	409.53	479.45	613.27	73.75	86.02	101.01	128.74
C	Del Norte (NC)	Winter	2033	352.40	409.66	479.41	613.45	73.76	86.09	101.01	128.84
C	Del Norte (NC)	Winter	2034	352.39	409.77	479.38	613.62	73.76	86.15	101.01	128.93
C	Del Norte (NC)	Winter	2035	352.38	409.86	479.36	613.76	73.77	86.20	101.02	129.01
C	El Dorado (LT)	Annual	2010	363.47	420.59	499.06	619.88	74.08	86.91	99.84	122.94
C	El Dorado (LT)	Annual	2011	363.51	420.75	498.59	620.83	73.91	86.42	99.87	123.15
C	El Dorado (LT)	Annual	2012	363.61	420.94	498.22	621.97	73.79	86.06	99.97	123.43
C	El Dorado (LT)	Annual	2013	363.76	421.15	497.91	623.17	73.76	85.79	100.05	123.76
C	El Dorado (LT)	Annual	2014	363.85	421.29	497.66	624.33	73.56	85.48	100.11	124.10
C	El Dorado (LT)	Annual	2015	363.99	421.51	497.47	625.56	73.53	85.30	100.19	124.47
C	El Dorado (LT)	Annual	2016	364.13	421.67	497.31	626.72	73.54	85.07	100.27	124.86
C	El Dorado (LT)	Annual	2017	364.23	421.87	497.19	627.80	73.55	84.93	100.33	125.23
C	El Dorado (LT)	Annual	2018	364.27	422.03	497.10	628.75	73.43	84.84	100.40	125.59
C	El Dorado (LT)	Annual	2019	364.31	422.23	497.04	629.59	73.36	84.85	100.48	125.93
C	El Dorado (LT)	Annual	2020	364.34	422.39	496.99	630.30	73.43	84.91	100.58	126.25
C	El Dorado (LT)	Annual	2021	364.31	422.53	496.95	630.87	73.45	85.03	100.67	126.51

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	El Dorado (LT)	Annual	2022	364.27	422.64	496.89	631.38	73.45	85.13	100.74	126.75
C	El Dorado (LT)	Annual	2023	364.23	422.72	496.84	631.78	73.45	85.22	100.79	127.00
C	El Dorado (LT)	Annual	2024	364.12	422.76	496.80	632.08	73.39	85.30	100.84	127.22
C	El Dorado (LT)	Annual	2025	364.10	422.89	496.76	632.37	73.40	85.40	100.89	127.42
C	El Dorado (LT)	Annual	2026	364.10	423.07	496.72	632.65	73.42	85.51	100.92	127.61
C	El Dorado (LT)	Annual	2027	364.11	423.22	496.68	632.93	73.43	85.61	100.94	127.79
C	El Dorado (LT)	Annual	2028	364.11	423.39	496.64	633.22	73.44	85.71	100.96	127.95
C	El Dorado (LT)	Annual	2029	364.10	423.55	496.60	633.51	73.44	85.80	100.98	128.11
C	El Dorado (LT)	Annual	2030	364.09	423.70	496.55	633.80	73.44	85.88	100.98	128.26
C	El Dorado (LT)	Annual	2031	364.10	423.86	496.51	634.10	73.45	85.96	100.99	128.40
C	El Dorado (LT)	Annual	2032	364.10	424.01	496.48	634.41	73.45	86.03	101.00	128.54
C	El Dorado (LT)	Annual	2033	364.10	424.14	496.46	634.69	73.46	86.10	101.00	128.66
C	El Dorado (LT)	Annual	2034	364.10	424.26	496.43	634.93	73.46	86.16	101.01	128.78
C	El Dorado (LT)	Annual	2035	364.09	424.36	496.41	635.15	73.47	86.21	101.01	128.88
C	El Dorado (LT)	Summer	2010	362.83	419.96	498.22	618.85	74.08	86.91	99.84	122.94
C	El Dorado (LT)	Summer	2011	362.86	420.10	497.75	619.79	73.91	86.42	99.87	123.15
C	El Dorado (LT)	Summer	2012	362.96	420.28	497.37	620.93	73.79	86.06	99.97	123.43
C	El Dorado (LT)	Summer	2013	363.10	420.47	497.05	622.12	73.76	85.79	100.05	123.76
C	El Dorado (LT)	Summer	2014	363.19	420.61	496.80	623.28	73.56	85.48	100.11	124.10
C	El Dorado (LT)	Summer	2015	363.33	420.82	496.60	624.50	73.53	85.30	100.19	124.47
C	El Dorado (LT)	Summer	2016	363.47	420.97	496.44	625.65	73.54	85.07	100.27	124.86
C	El Dorado (LT)	Summer	2017	363.57	421.16	496.32	626.72	73.55	84.93	100.33	125.23
C	El Dorado (LT)	Summer	2018	363.61	421.32	496.23	627.67	73.43	84.84	100.40	125.59
C	El Dorado (LT)	Summer	2019	363.65	421.51	496.16	628.50	73.36	84.85	100.48	125.93
C	El Dorado (LT)	Summer	2020	363.67	421.67	496.12	629.21	73.43	84.91	100.58	126.25
C	El Dorado (LT)	Summer	2021	363.65	421.81	496.07	629.78	73.45	85.03	100.67	126.51
C	El Dorado (LT)	Summer	2022	363.61	421.92	496.02	630.28	73.45	85.13	100.74	126.75
C	El Dorado (LT)	Summer	2023	363.57	421.99	495.97	630.68	73.45	85.22	100.79	127.00
C	El Dorado (LT)	Summer	2024	363.46	422.03	495.92	630.99	73.39	85.30	100.84	127.22
C	El Dorado (LT)	Summer	2025	363.44	422.16	495.89	631.27	73.40	85.40	100.89	127.42
C	El Dorado (LT)	Summer	2026	363.44	422.33	495.85	631.55	73.42	85.51	100.92	127.61
C	El Dorado (LT)	Summer	2027	363.45	422.49	495.80	631.83	73.43	85.61	100.94	127.79
C	El Dorado (LT)	Summer	2028	363.44	422.65	495.77	632.12	73.44	85.71	100.96	127.95
C	El Dorado (LT)	Summer	2029	363.44	422.81	495.73	632.41	73.44	85.80	100.98	128.11
C	El Dorado (LT)	Summer	2030	363.43	422.96	495.68	632.70	73.44	85.88	100.98	128.26
C	El Dorado (LT)	Summer	2031	363.43	423.12	495.64	633.00	73.45	85.96	100.99	128.40
C	El Dorado (LT)	Summer	2032	363.43	423.26	495.61	633.31	73.45	86.03	101.00	128.54
C	El Dorado (LT)	Summer	2033	363.43	423.40	495.58	633.58	73.46	86.10	101.00	128.66
C	El Dorado (LT)	Summer	2034	363.43	423.51	495.56	633.82	73.46	86.16	101.01	128.78
C	El Dorado (LT)	Summer	2035	363.43	423.62	495.53	634.04	73.47	86.21	101.01	128.88
C	El Dorado (LT)	Winter	2010	362.83	419.96	498.22	618.85	74.08	86.91	99.84	122.94
C	El Dorado (LT)	Winter	2011	362.86	420.10	497.75	619.79	73.91	86.42	99.87	123.15
C	El Dorado (LT)	Winter	2012	362.96	420.28	497.37	620.93	73.79	86.06	99.97	123.43
C	El Dorado (LT)	Winter	2013	363.10	420.47	497.05	622.12	73.76	85.79	100.05	123.76
C	El Dorado (LT)	Winter	2014	363.19	420.61	496.80	623.28	73.56	85.48	100.11	124.10
C	El Dorado (LT)	Winter	2015	363.33	420.82	496.60	624.50	73.53	85.30	100.19	124.47
C	El Dorado (LT)	Winter	2016	363.47	420.97	496.44	625.65	73.54	85.07	100.27	124.86
C	El Dorado (LT)	Winter	2017	363.57	421.16	496.32	626.72	73.55	84.93	100.33	125.23
C	El Dorado (LT)	Winter	2018	363.61	421.32	496.23	627.67	73.43	84.84	100.40	125.59
C	El Dorado (LT)	Winter	2019	363.65	421.51	496.16	628.50	73.36	84.85	100.48	125.93
C	El Dorado (LT)	Winter	2020	363.67	421.67	496.12	629.21	73.43	84.91	100.58	126.25
C	El Dorado (LT)	Winter	2021	363.65	421.81	496.07	629.78	73.45	85.03	100.67	126.51
C	El Dorado (LT)	Winter	2022	363.61	421.92	496.02	630.28	73.45	85.13	100.74	126.75
C	El Dorado (LT)	Winter	2023	363.57	421.99	495.97	630.68	73.45	85.22	100.79	127.00

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	El Dorado (LT)	Winter	2024	363.46	422.03	495.92	630.99	73.39	85.30	100.84	127.22
C	El Dorado (LT)	Winter	2025	363.44	422.16	495.89	631.27	73.40	85.40	100.89	127.42
C	El Dorado (LT)	Winter	2026	363.44	422.33	495.85	631.55	73.42	85.51	100.92	127.61
C	El Dorado (LT)	Winter	2027	363.45	422.49	495.80	631.83	73.43	85.61	100.94	127.79
C	El Dorado (LT)	Winter	2028	363.44	422.65	495.77	632.12	73.44	85.71	100.96	127.95
C	El Dorado (LT)	Winter	2029	363.44	422.81	495.73	632.41	73.44	85.80	100.98	128.11
C	El Dorado (LT)	Winter	2030	363.43	422.96	495.68	632.70	73.44	85.88	100.98	128.26
C	El Dorado (LT)	Winter	2031	363.43	423.12	495.64	633.00	73.45	85.96	100.99	128.40
C	El Dorado (LT)	Winter	2032	363.43	423.26	495.61	633.31	73.45	86.03	101.00	128.54
C	El Dorado (LT)	Winter	2033	363.43	423.40	495.58	633.58	73.46	86.10	101.00	128.66
C	El Dorado (LT)	Winter	2034	363.43	423.51	495.56	633.82	73.46	86.16	101.01	128.78
C	El Dorado (LT)	Winter	2035	363.43	423.62	495.53	634.04	73.47	86.21	101.01	128.88
C	El Dorado (MC)	Annual	2010	341.76	395.46	468.95	590.66	73.77	88.15	100.13	125.49
C	El Dorado (MC)	Annual	2011	342.05	395.72	468.70	591.19	73.66	87.38	100.12	125.61
C	El Dorado (MC)	Annual	2012	342.34	396.02	468.51	591.78	73.58	86.83	100.17	125.76
C	El Dorado (MC)	Annual	2013	342.60	396.27	468.36	592.41	73.49	86.35	100.21	125.94
C	El Dorado (MC)	Annual	2014	342.84	396.49	468.26	593.06	73.40	85.94	100.24	126.13
C	El Dorado (MC)	Annual	2015	343.06	396.70	468.18	593.72	73.38	85.57	100.28	126.34
C	El Dorado (MC)	Annual	2016	343.27	396.90	468.13	594.34	73.40	85.26	100.33	126.56
C	El Dorado (MC)	Annual	2017	343.44	397.07	468.08	594.94	73.42	84.99	100.35	126.78
C	El Dorado (MC)	Annual	2018	343.57	397.22	468.03	595.46	73.41	84.78	100.39	126.99
C	El Dorado (MC)	Annual	2019	339.95	393.13	462.91	589.40	73.43	84.80	100.45	127.18
C	El Dorado (MC)	Annual	2020	340.04	393.35	462.88	589.78	73.52	84.89	100.54	127.35
C	El Dorado (MC)	Annual	2021	340.11	393.57	462.85	590.02	73.60	85.04	100.62	127.46
C	El Dorado (MC)	Annual	2022	340.16	393.76	462.81	590.22	73.66	85.17	100.69	127.54
C	El Dorado (MC)	Annual	2023	340.19	393.90	462.78	590.36	73.70	85.27	100.74	127.69
C	El Dorado (MC)	Annual	2024	340.20	394.02	462.75	590.47	73.72	85.37	100.79	127.82
C	El Dorado (MC)	Annual	2025	340.22	394.12	462.73	590.61	73.75	85.46	100.83	127.96
C	El Dorado (MC)	Annual	2026	340.23	394.26	462.70	590.76	73.77	85.55	100.87	128.09
C	El Dorado (MC)	Annual	2027	340.24	394.39	462.67	590.90	73.78	85.64	100.89	128.21
C	El Dorado (MC)	Annual	2028	340.25	394.53	462.65	591.06	73.79	85.72	100.91	128.32
C	El Dorado (MC)	Annual	2029	340.25	394.66	462.61	591.21	73.80	85.79	100.92	128.43
C	El Dorado (MC)	Annual	2030	340.25	394.80	462.58	591.37	73.81	85.86	100.93	128.53
C	El Dorado (MC)	Annual	2031	340.26	394.95	462.56	591.56	73.81	85.93	100.94	128.63
C	El Dorado (MC)	Annual	2032	340.26	395.08	462.54	591.75	73.82	86.00	100.94	128.73
C	El Dorado (MC)	Annual	2033	340.26	395.20	462.53	591.93	73.82	86.06	100.95	128.82
C	El Dorado (MC)	Annual	2034	340.26	395.30	462.51	592.08	73.82	86.11	100.96	128.91
C	El Dorado (MC)	Annual	2035	340.26	395.39	462.50	592.22	73.83	86.16	100.96	128.99
C	El Dorado (MC)	Summer	2010	375.93	429.67	513.60	646.77	73.77	88.15	100.13	125.49
C	El Dorado (MC)	Summer	2011	376.40	430.73	513.53	647.24	73.66	87.38	100.12	125.61
C	El Dorado (MC)	Summer	2012	376.82	431.64	513.49	647.88	73.58	86.83	100.17	125.76
C	El Dorado (MC)	Summer	2013	377.19	432.39	513.51	648.63	73.49	86.35	100.21	125.94
C	El Dorado (MC)	Summer	2014	377.52	433.03	513.58	649.46	73.40	85.94	100.24	126.13
C	El Dorado (MC)	Summer	2015	377.80	433.58	513.65	650.36	73.38	85.57	100.28	126.34
C	El Dorado (MC)	Summer	2016	378.06	434.07	513.72	651.21	73.40	85.26	100.33	126.56
C	El Dorado (MC)	Summer	2017	378.25	434.50	513.77	652.04	73.42	84.99	100.35	126.78
C	El Dorado (MC)	Summer	2018	378.38	434.84	513.78	652.74	73.41	84.78	100.39	126.99
C	El Dorado (MC)	Summer	2019	374.39	430.51	508.19	646.23	73.43	84.80	100.45	127.18
C	El Dorado (MC)	Summer	2020	374.46	430.84	508.14	646.71	73.52	84.89	100.54	127.35
C	El Dorado (MC)	Summer	2021	374.53	431.14	508.05	646.99	73.60	85.04	100.62	127.46
C	El Dorado (MC)	Summer	2022	374.58	431.41	507.98	647.24	73.66	85.17	100.69	127.54
C	El Dorado (MC)	Summer	2023	374.61	431.64	507.91	647.42	73.70	85.27	100.74	127.69
C	El Dorado (MC)	Summer	2024	374.62	431.82	507.88	647.54	73.72	85.37	100.79	127.82
C	El Dorado (MC)	Summer	2025	374.63	432.00	507.85	647.66	73.75	85.46	100.83	127.96

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	El Dorado (MC)	Summer	2026	374.64	432.19	507.84	647.82	73.77	85.55	100.87	128.09
C	El Dorado (MC)	Summer	2027	374.65	432.39	507.84	647.97	73.78	85.64	100.89	128.21
C	El Dorado (MC)	Summer	2028	374.65	432.59	507.83	648.14	73.79	85.72	100.91	128.32
C	El Dorado (MC)	Summer	2029	374.66	432.80	507.82	648.31	73.80	85.79	100.92	128.43
C	El Dorado (MC)	Summer	2030	374.67	433.02	507.80	648.50	73.81	85.86	100.93	128.53
C	El Dorado (MC)	Summer	2031	374.67	433.23	507.79	648.74	73.81	85.93	100.94	128.63
C	El Dorado (MC)	Summer	2032	374.68	433.42	507.77	648.97	73.82	86.00	100.94	128.73
C	El Dorado (MC)	Summer	2033	374.68	433.57	507.76	649.20	73.82	86.06	100.95	128.82
C	El Dorado (MC)	Summer	2034	374.68	433.70	507.74	649.41	73.82	86.11	100.96	128.91
C	El Dorado (MC)	Summer	2035	374.68	433.81	507.72	649.60	73.83	86.16	100.96	128.99
C	El Dorado (MC)	Winter	2010	333.35	387.05	457.96	576.85	73.77	88.15	100.13	125.49
C	El Dorado (MC)	Winter	2011	333.60	387.11	457.67	577.39	73.66	87.38	100.12	125.61
C	El Dorado (MC)	Winter	2012	333.85	387.25	457.44	577.98	73.58	86.83	100.17	125.76
C	El Dorado (MC)	Winter	2013	334.09	387.38	457.26	578.58	73.49	86.35	100.21	125.94
C	El Dorado (MC)	Winter	2014	334.30	387.50	457.11	579.18	73.40	85.94	100.24	126.13
C	El Dorado (MC)	Winter	2015	334.51	387.62	457.00	579.79	73.38	85.57	100.28	126.34
C	El Dorado (MC)	Winter	2016	334.71	387.75	456.91	580.35	73.40	85.26	100.33	126.56
C	El Dorado (MC)	Winter	2017	334.88	387.86	456.83	580.89	73.42	84.99	100.35	126.78
C	El Dorado (MC)	Winter	2018	335.00	387.97	456.78	581.36	73.41	84.78	100.39	126.99
C	El Dorado (MC)	Winter	2019	331.47	383.93	451.76	575.41	73.43	84.80	100.45	127.18
C	El Dorado (MC)	Winter	2020	331.56	384.12	451.74	575.77	73.52	84.89	100.54	127.35
C	El Dorado (MC)	Winter	2021	331.64	384.32	451.72	575.99	73.60	85.04	100.62	127.46
C	El Dorado (MC)	Winter	2022	331.69	384.49	451.69	576.18	73.66	85.17	100.69	127.54
C	El Dorado (MC)	Winter	2023	331.72	384.61	451.67	576.32	73.70	85.27	100.74	127.69
C	El Dorado (MC)	Winter	2024	331.73	384.71	451.64	576.42	73.72	85.37	100.79	127.82
C	El Dorado (MC)	Winter	2025	331.74	384.80	451.62	576.56	73.75	85.46	100.83	127.96
C	El Dorado (MC)	Winter	2026	331.76	384.92	451.58	576.71	73.77	85.55	100.87	128.09
C	El Dorado (MC)	Winter	2027	331.77	385.03	451.55	576.86	73.78	85.64	100.89	128.21
C	El Dorado (MC)	Winter	2028	331.78	385.15	451.52	577.01	73.79	85.72	100.91	128.32
C	El Dorado (MC)	Winter	2029	331.78	385.27	451.48	577.15	73.80	85.79	100.92	128.43
C	El Dorado (MC)	Winter	2030	331.78	385.40	451.44	577.31	73.81	85.86	100.93	128.53
C	El Dorado (MC)	Winter	2031	331.78	385.52	451.42	577.49	73.81	85.93	100.94	128.63
C	El Dorado (MC)	Winter	2032	331.78	385.64	451.41	577.67	73.82	86.00	100.94	128.73
C	El Dorado (MC)	Winter	2033	331.78	385.75	451.39	577.83	73.82	86.06	100.95	128.82
C	El Dorado (MC)	Winter	2034	331.79	385.85	451.38	577.97	73.82	86.11	100.96	128.91
C	El Dorado (MC)	Winter	2035	331.78	385.93	451.36	578.10	73.83	86.16	100.96	128.99
C	Fresno (SJV)	Annual	2010	332.59	381.43	455.63	572.39	73.33	85.16	100.40	124.69
C	Fresno (SJV)	Annual	2011	332.92	382.33	455.40	573.13	73.36	84.93	100.38	124.93
C	Fresno (SJV)	Annual	2012	333.28	383.14	455.34	574.01	73.39	84.78	100.39	125.18
C	Fresno (SJV)	Annual	2013	333.73	383.96	455.45	575.09	73.44	84.70	100.41	125.46
C	Fresno (SJV)	Annual	2014	333.96	384.49	455.36	575.85	73.49	84.64	100.42	125.73
C	Fresno (SJV)	Annual	2015	334.75	385.63	456.06	577.60	73.55	84.63	100.44	126.02
C	Fresno (SJV)	Annual	2016	334.94	386.04	456.00	578.34	73.62	84.61	100.47	126.31
C	Fresno (SJV)	Annual	2017	335.07	386.40	455.95	579.02	73.64	84.59	100.48	126.59
C	Fresno (SJV)	Annual	2018	336.24	387.94	457.37	581.46	73.67	84.60	100.50	126.85
C	Fresno (SJV)	Annual	2019	336.33	388.23	457.33	581.97	73.72	84.71	100.53	127.09
C	Fresno (SJV)	Annual	2020	336.41	388.50	457.29	582.43	73.81	84.86	100.60	127.31
C	Fresno (SJV)	Annual	2021	336.48	388.79	457.28	582.85	73.87	85.02	100.68	127.50
C	Fresno (SJV)	Annual	2022	336.50	389.03	457.25	583.19	73.92	85.17	100.74	127.66
C	Fresno (SJV)	Annual	2023	336.51	389.23	457.23	583.46	73.95	85.29	100.80	127.85
C	Fresno (SJV)	Annual	2024	336.38	389.25	457.03	583.43	73.97	85.40	100.84	128.01
C	Fresno (SJV)	Annual	2025	336.38	389.39	457.00	583.60	73.99	85.50	100.87	128.16
C	Fresno (SJV)	Annual	2026	338.35	391.81	459.63	587.16	74.01	85.60	100.90	128.30
C	Fresno (SJV)	Annual	2027	338.36	391.96	459.61	587.32	74.02	85.68	100.92	128.43

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Fresno (SJV)	Annual	2028	338.36	392.10	459.58	587.48	74.03	85.76	100.94	128.54
C	Fresno (SJV)	Annual	2029	338.36	392.24	459.56	587.63	74.04	85.84	100.95	128.65
C	Fresno (SJV)	Annual	2030	338.36	392.37	459.53	587.79	74.04	85.91	100.96	128.75
C	Fresno (SJV)	Annual	2031	338.36	392.50	459.52	587.96	74.05	85.98	100.96	128.84
C	Fresno (SJV)	Annual	2032	338.36	392.62	459.51	588.13	74.05	86.04	100.97	128.93
C	Fresno (SJV)	Annual	2033	338.36	392.72	459.49	588.28	74.05	86.09	100.97	129.01
C	Fresno (SJV)	Annual	2034	338.36	392.81	459.48	588.42	74.06	86.14	100.98	129.09
C	Fresno (SJV)	Annual	2035	338.35	392.88	459.47	588.54	74.06	86.18	100.98	129.16
C	Fresno (SJV)	Summer	2010	365.89	415.42	499.30	627.61	73.33	85.16	100.40	124.69
C	Fresno (SJV)	Summer	2011	366.50	417.15	499.37	628.38	73.36	84.93	100.38	124.93
C	Fresno (SJV)	Summer	2012	367.06	418.57	499.55	629.35	73.39	84.78	100.39	125.18
C	Fresno (SJV)	Summer	2013	367.66	419.86	499.87	630.59	73.44	84.70	100.41	125.46
C	Fresno (SJV)	Summer	2014	368.00	420.76	499.96	631.54	73.49	84.64	100.42	125.73
C	Fresno (SJV)	Summer	2015	368.92	422.24	500.90	633.61	73.55	84.63	100.44	126.02
C	Fresno (SJV)	Summer	2016	369.16	422.88	500.97	634.57	73.62	84.61	100.47	126.31
C	Fresno (SJV)	Summer	2017	369.31	423.43	501.00	635.46	73.64	84.59	100.48	126.59
C	Fresno (SJV)	Summer	2018	370.58	425.21	502.58	638.22	73.67	84.60	100.50	126.85
C	Fresno (SJV)	Summer	2019	370.66	425.60	502.55	638.86	73.72	84.71	100.53	127.09
C	Fresno (SJV)	Summer	2020	370.71	425.96	502.50	639.43	73.81	84.86	100.60	127.31
C	Fresno (SJV)	Summer	2021	370.80	426.40	502.51	640.00	73.87	85.02	100.68	127.50
C	Fresno (SJV)	Summer	2022	370.85	426.76	502.50	640.46	73.92	85.17	100.74	127.66
C	Fresno (SJV)	Summer	2023	370.87	427.06	502.48	640.80	73.95	85.29	100.80	127.85
C	Fresno (SJV)	Summer	2024	370.73	427.16	502.25	640.76	73.97	85.40	100.84	128.01
C	Fresno (SJV)	Summer	2025	370.73	427.39	502.21	640.93	73.99	85.50	100.87	128.16
C	Fresno (SJV)	Summer	2026	372.91	430.11	505.12	644.84	74.01	85.60	100.90	128.30
C	Fresno (SJV)	Summer	2027	372.92	430.32	505.10	644.98	74.02	85.68	100.92	128.43
C	Fresno (SJV)	Summer	2028	372.93	430.52	505.08	645.13	74.03	85.76	100.94	128.54
C	Fresno (SJV)	Summer	2029	372.94	430.72	505.05	645.28	74.04	85.84	100.95	128.65
C	Fresno (SJV)	Summer	2030	372.94	430.92	505.03	645.45	74.04	85.91	100.96	128.75
C	Fresno (SJV)	Summer	2031	372.93	431.10	505.02	645.63	74.05	85.98	100.96	128.84
C	Fresno (SJV)	Summer	2032	372.93	431.26	505.01	645.82	74.05	86.04	100.97	128.93
C	Fresno (SJV)	Summer	2033	372.93	431.39	505.00	646.00	74.05	86.09	100.97	129.01
C	Fresno (SJV)	Summer	2034	372.93	431.50	504.99	646.18	74.06	86.14	100.98	129.09
C	Fresno (SJV)	Summer	2035	372.92	431.58	504.98	646.33	74.06	86.18	100.98	129.16
C	Fresno (SJV)	Winter	2010	319.21	367.78	438.09	550.22	73.33	85.16	100.40	124.69
C	Fresno (SJV)	Winter	2011	319.43	368.35	437.74	550.95	73.36	84.93	100.38	124.93
C	Fresno (SJV)	Winter	2012	319.71	368.92	437.59	551.79	73.39	84.78	100.39	125.18
C	Fresno (SJV)	Winter	2013	320.09	369.54	437.61	552.79	73.44	84.70	100.41	125.46
C	Fresno (SJV)	Winter	2014	320.29	369.93	437.44	553.49	73.49	84.64	100.42	125.73
C	Fresno (SJV)	Winter	2015	321.02	370.92	438.04	555.11	73.55	84.63	100.44	126.02
C	Fresno (SJV)	Winter	2016	321.20	371.25	437.94	555.75	73.62	84.61	100.47	126.31
C	Fresno (SJV)	Winter	2017	321.32	371.53	437.86	556.36	73.64	84.59	100.48	126.59
C	Fresno (SJV)	Winter	2018	322.45	372.96	439.21	558.66	73.67	84.60	100.50	126.85
C	Fresno (SJV)	Winter	2019	322.55	373.22	439.16	559.12	73.72	84.71	100.53	127.09
C	Fresno (SJV)	Winter	2020	322.63	373.45	439.13	559.54	73.81	84.86	100.60	127.31
C	Fresno (SJV)	Winter	2021	322.69	373.69	439.11	559.90	73.87	85.02	100.68	127.50
C	Fresno (SJV)	Winter	2022	322.71	373.88	439.08	560.19	73.92	85.17	100.74	127.66
C	Fresno (SJV)	Winter	2023	322.72	374.03	439.05	560.43	73.95	85.29	100.80	127.85
C	Fresno (SJV)	Winter	2024	322.58	374.02	438.86	560.40	73.97	85.40	100.84	128.01
C	Fresno (SJV)	Winter	2025	322.58	374.13	438.84	560.57	73.99	85.50	100.87	128.16
C	Fresno (SJV)	Winter	2026	324.46	376.42	441.35	563.99	74.01	85.60	100.90	128.30
C	Fresno (SJV)	Winter	2027	324.47	376.54	441.33	564.15	74.02	85.68	100.92	128.43
C	Fresno (SJV)	Winter	2028	324.47	376.66	441.30	564.31	74.03	85.76	100.94	128.54
C	Fresno (SJV)	Winter	2029	324.47	376.77	441.27	564.47	74.04	85.84	100.95	128.65

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Fresno (SJV)	Winter	2030	324.46	376.88	441.25	564.63	74.04	85.91	100.96	128.75
C	Fresno (SJV)	Winter	2031	324.47	376.99	441.24	564.79	74.05	85.98	100.96	128.84
C	Fresno (SJV)	Winter	2032	324.46	377.09	441.22	564.95	74.05	86.04	100.97	128.93
C	Fresno (SJV)	Winter	2033	324.46	377.18	441.21	565.09	74.05	86.09	100.97	129.01
C	Fresno (SJV)	Winter	2034	324.46	377.26	441.20	565.21	74.06	86.14	100.98	129.09
C	Fresno (SJV)	Winter	2035	324.46	377.33	441.18	565.32	74.06	86.18	100.98	129.16
C	Glenn (SV)	Annual	2010	347.61	407.24	479.18	597.47	73.80	101.05	102.36	125.05
C	Glenn (SV)	Annual	2011	347.94	406.83	478.46	597.84	73.70	98.07	102.06	125.06
C	Glenn (SV)	Annual	2012	348.25	406.57	477.93	598.43	73.59	95.83	101.82	125.13
C	Glenn (SV)	Annual	2013	348.56	406.34	477.52	599.20	73.54	93.69	101.62	125.27
C	Glenn (SV)	Annual	2014	348.81	406.16	477.20	600.00	73.43	91.83	101.37	125.43
C	Glenn (SV)	Annual	2015	349.05	406.03	476.95	600.89	73.38	90.19	101.22	125.64
C	Glenn (SV)	Annual	2016	349.27	405.92	476.74	601.81	73.41	88.68	101.09	125.88
C	Glenn (SV)	Annual	2017	349.44	405.85	476.57	602.68	73.41	87.43	101.01	126.13
C	Glenn (SV)	Annual	2018	349.58	405.77	476.41	603.43	73.43	86.26	100.91	126.38
C	Glenn (SV)	Annual	2019	349.68	405.76	476.29	604.10	73.46	85.63	100.80	126.62
C	Glenn (SV)	Annual	2020	349.77	405.79	476.19	604.70	73.56	85.43	100.85	126.85
C	Glenn (SV)	Annual	2021	349.82	405.88	476.10	605.14	73.62	85.50	100.90	126.97
C	Glenn (SV)	Annual	2022	349.86	405.97	476.01	605.47	73.68	85.55	100.94	127.04
C	Glenn (SV)	Annual	2023	349.88	406.04	475.94	605.72	73.71	85.61	100.98	127.23
C	Glenn (SV)	Annual	2024	349.89	406.11	475.87	605.91	73.71	85.66	101.00	127.41
C	Glenn (SV)	Annual	2025	349.89	406.19	475.82	606.12	73.72	85.74	101.02	127.59
C	Glenn (SV)	Annual	2026	349.91	406.27	475.76	606.32	73.75	85.81	101.03	127.77
C	Glenn (SV)	Annual	2027	349.93	406.34	475.71	606.53	73.76	85.87	101.03	127.93
C	Glenn (SV)	Annual	2028	349.94	406.42	475.66	606.74	73.77	85.93	101.03	128.07
C	Glenn (SV)	Annual	2029	349.94	406.49	475.61	606.94	73.78	85.99	101.02	128.21
C	Glenn (SV)	Annual	2030	349.94	406.57	475.56	607.16	73.78	86.04	101.01	128.34
C	Glenn (SV)	Annual	2031	349.94	406.64	475.55	607.42	73.79	86.10	101.01	128.47
C	Glenn (SV)	Annual	2032	349.94	406.69	475.53	607.68	73.79	86.15	101.01	128.60
C	Glenn (SV)	Annual	2033	349.94	406.75	475.52	607.92	73.80	86.19	101.01	128.71
C	Glenn (SV)	Annual	2034	349.94	406.79	475.50	608.14	73.80	86.23	101.01	128.82
C	Glenn (SV)	Annual	2035	349.93	406.82	475.49	608.33	73.81	86.26	101.01	128.92
C	Glenn (SV)	Summer	2010	384.83	445.81	527.20	657.56	73.80	101.05	102.36	125.05
C	Glenn (SV)	Summer	2011	385.51	446.50	527.25	657.84	73.70	98.07	102.06	125.06
C	Glenn (SV)	Summer	2012	386.08	446.98	527.28	658.52	73.59	95.83	101.82	125.13
C	Glenn (SV)	Summer	2013	386.56	447.34	527.28	659.58	73.54	93.69	101.62	125.27
C	Glenn (SV)	Summer	2014	386.94	447.60	527.29	660.69	73.43	91.83	101.37	125.43
C	Glenn (SV)	Summer	2015	387.27	447.83	527.25	661.99	73.38	90.19	101.22	125.64
C	Glenn (SV)	Summer	2016	387.55	448.01	527.19	663.37	73.41	88.68	101.09	125.88
C	Glenn (SV)	Summer	2017	387.74	448.13	527.06	664.65	73.41	87.43	101.01	126.13
C	Glenn (SV)	Summer	2018	387.86	448.22	526.91	665.76	73.43	86.26	100.91	126.38
C	Glenn (SV)	Summer	2019	387.96	448.30	526.79	666.74	73.46	85.63	100.80	126.62
C	Glenn (SV)	Summer	2020	388.02	448.37	526.65	667.59	73.56	85.43	100.85	126.85
C	Glenn (SV)	Summer	2021	388.06	448.51	526.53	668.25	73.62	85.50	100.90	126.97
C	Glenn (SV)	Summer	2022	388.09	448.64	526.43	668.76	73.68	85.55	100.94	127.04
C	Glenn (SV)	Summer	2023	388.10	448.75	526.35	669.12	73.71	85.61	100.98	127.23
C	Glenn (SV)	Summer	2024	388.12	448.88	526.29	669.37	73.71	85.66	101.00	127.41
C	Glenn (SV)	Summer	2025	388.13	449.00	526.24	669.61	73.72	85.74	101.02	127.59
C	Glenn (SV)	Summer	2026	388.17	449.13	526.19	669.78	73.75	85.81	101.03	127.77
C	Glenn (SV)	Summer	2027	388.21	449.21	526.15	669.97	73.76	85.87	101.03	127.93
C	Glenn (SV)	Summer	2028	388.24	449.33	526.12	670.17	73.77	85.93	101.03	128.07
C	Glenn (SV)	Summer	2029	388.26	449.45	526.10	670.39	73.78	85.99	101.02	128.21
C	Glenn (SV)	Summer	2030	388.28	449.57	526.08	670.64	73.78	86.04	101.01	128.34
C	Glenn (SV)	Summer	2031	388.27	449.67	526.12	670.94	73.79	86.10	101.01	128.47

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Glenn (SV)	Summer	2032	388.27	449.74	526.13	671.26	73.79	86.15	101.01	128.60
C	Glenn (SV)	Summer	2033	388.26	449.81	526.14	671.55	73.80	86.19	101.01	128.71
C	Glenn (SV)	Summer	2034	388.25	449.85	526.14	671.85	73.80	86.23	101.01	128.82
C	Glenn (SV)	Summer	2035	388.24	449.87	526.13	672.11	73.81	86.26	101.01	128.92
C	Glenn (SV)	Winter	2010	335.44	394.64	463.49	577.83	73.80	101.05	102.36	125.05
C	Glenn (SV)	Winter	2011	335.66	393.87	462.51	578.23	73.70	98.07	102.06	125.06
C	Glenn (SV)	Winter	2012	335.89	393.37	461.80	578.79	73.59	95.83	101.82	125.13
C	Glenn (SV)	Winter	2013	336.14	392.94	461.25	579.47	73.54	93.69	101.62	125.27
C	Glenn (SV)	Winter	2014	336.35	392.62	460.83	580.17	73.43	91.83	101.37	125.43
C	Glenn (SV)	Winter	2015	336.56	392.37	460.51	580.92	73.38	90.19	101.22	125.64
C	Glenn (SV)	Winter	2016	336.76	392.17	460.25	581.69	73.41	88.68	101.09	125.88
C	Glenn (SV)	Winter	2017	336.93	392.03	460.06	582.43	73.41	87.43	101.01	126.13
C	Glenn (SV)	Winter	2018	337.06	391.89	459.91	583.06	73.43	86.26	100.91	126.38
C	Glenn (SV)	Winter	2019	337.18	391.86	459.79	583.63	73.46	85.63	100.80	126.62
C	Glenn (SV)	Winter	2020	337.27	391.87	459.70	584.15	73.56	85.43	100.85	126.85
C	Glenn (SV)	Winter	2021	337.33	391.95	459.61	584.51	73.62	85.50	100.90	126.97
C	Glenn (SV)	Winter	2022	337.37	392.02	459.54	584.78	73.68	85.55	100.94	127.04
C	Glenn (SV)	Winter	2023	337.39	392.08	459.47	585.00	73.71	85.61	100.98	127.23
C	Glenn (SV)	Winter	2024	337.39	392.13	459.40	585.17	73.71	85.66	101.00	127.41
C	Glenn (SV)	Winter	2025	337.39	392.20	459.34	585.37	73.72	85.74	101.02	127.59
C	Glenn (SV)	Winter	2026	337.41	392.27	459.27	585.58	73.75	85.81	101.03	127.77
C	Glenn (SV)	Winter	2027	337.42	392.32	459.22	585.80	73.76	85.87	101.03	127.93
C	Glenn (SV)	Winter	2028	337.42	392.39	459.16	586.00	73.77	85.93	101.03	128.07
C	Glenn (SV)	Winter	2029	337.42	392.46	459.10	586.21	73.78	85.99	101.02	128.21
C	Glenn (SV)	Winter	2030	337.42	392.52	459.05	586.42	73.78	86.04	101.01	128.34
C	Glenn (SV)	Winter	2031	337.42	392.58	459.02	586.66	73.79	86.10	101.01	128.47
C	Glenn (SV)	Winter	2032	337.42	392.63	459.00	586.91	73.79	86.15	101.01	128.60
C	Glenn (SV)	Winter	2033	337.41	392.67	458.97	587.13	73.80	86.19	101.01	128.71
C	Glenn (SV)	Winter	2034	337.41	392.71	458.95	587.32	73.80	86.23	101.01	128.82
C	Glenn (SV)	Winter	2035	337.41	392.75	458.94	587.49	73.81	86.26	101.01	128.92
C	Humboldt (NC)	Annual	2010	328.57	377.52	451.16	562.78	72.92	85.59	100.40	123.74
C	Humboldt (NC)	Annual	2011	328.60	377.95	450.57	563.46	72.88	85.26	100.35	123.95
C	Humboldt (NC)	Annual	2012	328.67	378.37	450.10	564.24	72.86	85.04	100.37	124.22
C	Humboldt (NC)	Annual	2013	328.79	378.74	449.73	565.09	72.87	84.87	100.40	124.52
C	Humboldt (NC)	Annual	2014	328.88	379.06	449.44	565.92	72.82	84.72	100.41	124.81
C	Humboldt (NC)	Annual	2015	329.00	379.39	449.21	566.76	72.83	84.63	100.44	125.14
C	Humboldt (NC)	Annual	2016	329.16	379.71	449.03	567.57	72.89	84.61	100.49	125.48
C	Humboldt (NC)	Annual	2017	329.26	379.97	448.88	568.32	72.91	84.54	100.52	125.81
C	Humboldt (NC)	Annual	2018	329.35	380.20	448.76	568.98	72.94	84.52	100.55	126.12
C	Humboldt (NC)	Annual	2019	329.43	380.44	448.67	569.54	72.98	84.60	100.61	126.42
C	Humboldt (NC)	Annual	2020	329.49	380.65	448.59	570.03	73.07	84.71	100.67	126.69
C	Humboldt (NC)	Annual	2021	329.54	380.81	448.52	570.42	73.13	84.84	100.74	126.93
C	Humboldt (NC)	Annual	2022	329.54	380.94	448.44	570.75	73.18	84.95	100.79	127.13
C	Humboldt (NC)	Annual	2023	329.49	381.04	448.37	571.00	73.20	85.06	100.83	127.34
C	Humboldt (NC)	Annual	2024	329.42	381.10	448.30	571.20	73.19	85.15	100.87	127.53
C	Humboldt (NC)	Annual	2025	329.38	381.21	448.25	571.38	73.20	85.25	100.90	127.70
C	Humboldt (NC)	Annual	2026	329.39	381.36	448.19	571.56	73.22	85.36	100.92	127.86
C	Humboldt (NC)	Annual	2027	329.39	381.51	448.13	571.75	73.24	85.47	100.94	128.01
C	Humboldt (NC)	Annual	2028	329.39	381.66	448.08	571.95	73.25	85.56	100.95	128.15
C	Humboldt (NC)	Annual	2029	329.38	381.80	448.02	572.14	73.25	85.65	100.96	128.28
C	Humboldt (NC)	Annual	2030	329.36	381.95	447.93	572.34	73.25	85.74	100.95	128.41
C	Humboldt (NC)	Annual	2031	329.35	382.09	447.90	572.56	73.26	85.82	100.95	128.53
C	Humboldt (NC)	Annual	2032	329.34	382.22	447.86	572.78	73.27	85.90	100.96	128.65
C	Humboldt (NC)	Annual	2033	329.34	382.34	447.84	572.97	73.27	85.97	100.96	128.76

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Humboldt (NC)	Annual	2034	329.33	382.45	447.82	573.15	73.28	86.03	100.97	128.86
C	Humboldt (NC)	Annual	2035	329.32	382.53	447.80	573.30	73.28	86.09	100.97	128.95
C	Humboldt (NC)	Summer	2010	328.37	377.33	450.90	562.46	72.92	85.59	100.40	123.74
C	Humboldt (NC)	Summer	2011	328.40	377.76	450.31	563.15	72.88	85.26	100.35	123.95
C	Humboldt (NC)	Summer	2012	328.47	378.17	449.85	563.92	72.86	85.04	100.37	124.22
C	Humboldt (NC)	Summer	2013	328.60	378.54	449.48	564.78	72.87	84.87	100.40	124.52
C	Humboldt (NC)	Summer	2014	328.68	378.86	449.18	565.60	72.82	84.72	100.41	124.81
C	Humboldt (NC)	Summer	2015	328.81	379.18	448.95	566.44	72.83	84.63	100.44	125.14
C	Humboldt (NC)	Summer	2016	328.96	379.50	448.77	567.25	72.89	84.61	100.49	125.48
C	Humboldt (NC)	Summer	2017	329.06	379.76	448.61	568.00	72.91	84.54	100.52	125.81
C	Humboldt (NC)	Summer	2018	329.15	379.99	448.50	568.65	72.94	84.52	100.55	126.12
C	Humboldt (NC)	Summer	2019	329.23	380.22	448.41	569.21	72.98	84.60	100.61	126.42
C	Humboldt (NC)	Summer	2020	329.30	380.43	448.33	569.70	73.07	84.71	100.67	126.69
C	Humboldt (NC)	Summer	2021	329.34	380.59	448.26	570.09	73.13	84.84	100.74	126.93
C	Humboldt (NC)	Summer	2022	329.34	380.72	448.18	570.42	73.18	84.95	100.79	127.13
C	Humboldt (NC)	Summer	2023	329.30	380.82	448.11	570.67	73.20	85.06	100.83	127.34
C	Humboldt (NC)	Summer	2024	329.22	380.89	448.04	570.87	73.19	85.15	100.87	127.53
C	Humboldt (NC)	Summer	2025	329.18	380.99	447.99	571.05	73.20	85.25	100.90	127.70
C	Humboldt (NC)	Summer	2026	329.19	381.14	447.93	571.23	73.22	85.36	100.92	127.86
C	Humboldt (NC)	Summer	2027	329.20	381.29	447.87	571.42	73.24	85.47	100.94	128.01
C	Humboldt (NC)	Summer	2028	329.19	381.43	447.82	571.62	73.25	85.56	100.95	128.15
C	Humboldt (NC)	Summer	2029	329.18	381.58	447.75	571.81	73.25	85.65	100.96	128.28
C	Humboldt (NC)	Summer	2030	329.16	381.72	447.67	572.00	73.25	85.74	100.95	128.41
C	Humboldt (NC)	Summer	2031	329.15	381.87	447.63	572.23	73.26	85.82	100.95	128.53
C	Humboldt (NC)	Summer	2032	329.15	382.00	447.60	572.45	73.27	85.90	100.96	128.65
C	Humboldt (NC)	Summer	2033	329.14	382.12	447.58	572.64	73.27	85.97	100.96	128.76
C	Humboldt (NC)	Summer	2034	329.13	382.22	447.55	572.81	73.28	86.03	100.97	128.86
C	Humboldt (NC)	Summer	2035	329.13	382.31	447.53	572.97	73.28	86.09	100.97	128.95
C	Humboldt (NC)	Winter	2010	327.32	376.27	449.51	560.73	72.92	85.59	100.40	123.74
C	Humboldt (NC)	Winter	2011	327.34	376.67	448.90	561.41	72.88	85.26	100.35	123.95
C	Humboldt (NC)	Winter	2012	327.40	377.05	448.43	562.18	72.86	85.04	100.37	124.22
C	Humboldt (NC)	Winter	2013	327.52	377.40	448.05	563.02	72.87	84.87	100.40	124.52
C	Humboldt (NC)	Winter	2014	327.59	377.71	447.75	563.84	72.82	84.72	100.41	124.81
C	Humboldt (NC)	Winter	2015	327.71	378.02	447.51	564.67	72.83	84.63	100.44	125.14
C	Humboldt (NC)	Winter	2016	327.86	378.33	447.32	565.46	72.89	84.61	100.49	125.48
C	Humboldt (NC)	Winter	2017	327.97	378.58	447.16	566.20	72.91	84.54	100.52	125.81
C	Humboldt (NC)	Winter	2018	328.06	378.80	447.04	566.84	72.94	84.52	100.55	126.12
C	Humboldt (NC)	Winter	2019	328.14	379.03	446.95	567.40	72.98	84.60	100.61	126.42
C	Humboldt (NC)	Winter	2020	328.20	379.23	446.88	567.88	73.07	84.71	100.67	126.69
C	Humboldt (NC)	Winter	2021	328.25	379.39	446.80	568.27	73.13	84.84	100.74	126.93
C	Humboldt (NC)	Winter	2022	328.25	379.51	446.73	568.60	73.18	84.95	100.79	127.13
C	Humboldt (NC)	Winter	2023	328.20	379.61	446.65	568.84	73.20	85.06	100.83	127.34
C	Humboldt (NC)	Winter	2024	328.13	379.67	446.58	569.04	73.19	85.15	100.87	127.53
C	Humboldt (NC)	Winter	2025	328.09	379.77	446.53	569.21	73.20	85.25	100.90	127.70
C	Humboldt (NC)	Winter	2026	328.10	379.92	446.47	569.40	73.22	85.36	100.92	127.86
C	Humboldt (NC)	Winter	2027	328.10	380.06	446.42	569.59	73.24	85.47	100.94	128.01
C	Humboldt (NC)	Winter	2028	328.10	380.21	446.36	569.78	73.25	85.56	100.95	128.15
C	Humboldt (NC)	Winter	2029	328.08	380.35	446.30	569.97	73.25	85.65	100.96	128.28
C	Humboldt (NC)	Winter	2030	328.06	380.49	446.22	570.17	73.25	85.74	100.95	128.41
C	Humboldt (NC)	Winter	2031	328.06	380.63	446.18	570.39	73.26	85.82	100.95	128.53
C	Humboldt (NC)	Winter	2032	328.05	380.76	446.14	570.61	73.27	85.90	100.96	128.65
C	Humboldt (NC)	Winter	2033	328.04	380.88	446.12	570.80	73.27	85.97	100.96	128.76
C	Humboldt (NC)	Winter	2034	328.04	380.98	446.10	570.97	73.28	86.03	100.97	128.86
C	Humboldt (NC)	Winter	2035	328.03	381.07	446.08	571.12	73.28	86.09	100.97	128.95

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Imperial (SS)	Annual	2010	333.06	382.51	456.21	575.78	72.99	86.06	100.65	125.48
C	Imperial (SS)	Annual	2011	332.74	382.65	455.12	575.21	73.04	85.73	100.60	125.71
C	Imperial (SS)	Annual	2012	333.03	383.36	454.93	575.79	73.14	85.50	100.60	125.97
C	Imperial (SS)	Annual	2013	331.75	382.30	452.68	573.90	73.23	85.37	100.58	126.29
C	Imperial (SS)	Annual	2014	331.98	382.91	452.61	574.66	73.31	85.29	100.59	126.61
C	Imperial (SS)	Annual	2015	327.26	377.77	445.90	566.93	73.39	85.24	100.62	126.91
C	Imperial (SS)	Annual	2016	327.36	378.16	445.86	567.56	73.41	85.18	100.65	127.20
C	Imperial (SS)	Annual	2017	327.39	378.50	445.81	568.11	73.41	85.15	100.65	127.47
C	Imperial (SS)	Annual	2018	327.40	378.76	445.76	568.55	73.39	85.16	100.65	127.71
C	Imperial (SS)	Annual	2019	327.23	378.80	445.47	568.62	73.39	85.24	100.69	127.93
C	Imperial (SS)	Annual	2020	327.21	379.01	445.41	568.92	73.41	85.34	100.76	128.13
C	Imperial (SS)	Annual	2021	327.15	379.11	445.34	569.08	73.42	85.44	100.80	128.28
C	Imperial (SS)	Annual	2022	327.03	379.19	445.26	569.20	73.39	85.52	100.84	128.40
C	Imperial (SS)	Annual	2023	326.91	379.26	445.18	569.30	73.35	85.60	100.87	128.53
C	Imperial (SS)	Annual	2024	329.56	382.51	448.87	574.16	73.32	85.66	100.89	128.63
C	Imperial (SS)	Annual	2025	329.46	382.58	448.83	574.22	73.28	85.73	100.92	128.73
C	Imperial (SS)	Annual	2026	329.42	382.67	448.77	574.27	73.26	85.80	100.94	128.82
C	Imperial (SS)	Annual	2027	329.39	382.76	448.73	574.32	73.24	85.86	100.95	128.90
C	Imperial (SS)	Annual	2028	329.37	382.86	448.71	574.39	73.23	85.92	100.96	128.97
C	Imperial (SS)	Annual	2029	329.36	382.96	448.68	574.47	73.21	85.97	100.96	129.04
C	Imperial (SS)	Annual	2030	329.34	383.07	448.66	574.55	73.20	86.02	100.97	129.10
C	Imperial (SS)	Annual	2031	329.66	383.57	449.13	575.24	73.19	86.07	100.97	129.15
C	Imperial (SS)	Annual	2032	329.64	383.67	449.12	575.31	73.18	86.11	100.97	129.21
C	Imperial (SS)	Annual	2033	329.63	383.75	449.11	575.38	73.18	86.15	100.98	129.26
C	Imperial (SS)	Annual	2034	329.63	383.82	449.11	575.45	73.18	86.19	100.98	129.30
C	Imperial (SS)	Annual	2035	329.62	383.88	449.10	575.52	73.18	86.22	100.98	129.34
C	Imperial (SS)	Summer	2010	341.49	391.06	467.38	590.08	72.99	86.06	100.65	125.48
C	Imperial (SS)	Summer	2011	341.29	391.47	466.40	589.55	73.04	85.73	100.60	125.71
C	Imperial (SS)	Summer	2012	341.64	392.37	466.28	590.14	73.14	85.50	100.60	125.97
C	Imperial (SS)	Summer	2013	340.37	391.46	464.05	588.24	73.23	85.37	100.58	126.29
C	Imperial (SS)	Summer	2014	340.64	392.20	464.05	589.07	73.31	85.29	100.59	126.61
C	Imperial (SS)	Summer	2015	335.82	387.05	457.23	581.20	73.39	85.24	100.62	126.91
C	Imperial (SS)	Summer	2016	335.93	387.53	457.23	581.90	73.41	85.18	100.65	127.20
C	Imperial (SS)	Summer	2017	335.98	387.93	457.21	582.52	73.41	85.15	100.65	127.47
C	Imperial (SS)	Summer	2018	335.99	388.23	457.17	583.00	73.39	85.16	100.65	127.71
C	Imperial (SS)	Summer	2019	335.83	388.32	456.89	583.10	73.39	85.24	100.69	127.93
C	Imperial (SS)	Summer	2020	335.80	388.55	456.83	583.42	73.41	85.34	100.76	128.13
C	Imperial (SS)	Summer	2021	335.69	388.62	456.70	583.51	73.42	85.44	100.80	128.28
C	Imperial (SS)	Summer	2022	335.56	388.70	456.60	583.62	73.39	85.52	100.84	128.40
C	Imperial (SS)	Summer	2023	335.42	388.78	456.51	583.70	73.35	85.60	100.87	128.53
C	Imperial (SS)	Summer	2024	338.10	392.07	460.23	588.61	73.32	85.66	100.89	128.63
C	Imperial (SS)	Summer	2025	338.00	392.15	460.18	588.66	73.28	85.73	100.92	128.73
C	Imperial (SS)	Summer	2026	337.95	392.24	460.11	588.69	73.26	85.80	100.94	128.82
C	Imperial (SS)	Summer	2027	337.92	392.33	460.07	588.73	73.24	85.86	100.95	128.90
C	Imperial (SS)	Summer	2028	337.91	392.44	460.04	588.80	73.23	85.92	100.96	128.97
C	Imperial (SS)	Summer	2029	337.90	392.56	460.02	588.88	73.21	85.97	100.96	129.04
C	Imperial (SS)	Summer	2030	337.89	392.68	460.00	588.96	73.20	86.02	100.97	129.10
C	Imperial (SS)	Summer	2031	338.20	393.18	460.46	589.62	73.19	86.07	100.97	129.15
C	Imperial (SS)	Summer	2032	338.17	393.28	460.45	589.69	73.18	86.11	100.97	129.21
C	Imperial (SS)	Summer	2033	338.16	393.37	460.44	589.76	73.18	86.15	100.98	129.26
C	Imperial (SS)	Summer	2034	338.16	393.45	460.44	589.84	73.18	86.19	100.98	129.30
C	Imperial (SS)	Summer	2035	338.15	393.51	460.44	589.91	73.18	86.22	100.98	129.34
C	Imperial (SS)	Winter	2010	314.45	363.62	431.53	544.19	72.99	86.06	100.65	125.48
C	Imperial (SS)	Winter	2011	313.97	363.27	430.33	543.72	73.04	85.73	100.60	125.71

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Imperial (SS)	Winter	2012	314.13	363.55	430.01	544.27	73.14	85.50	100.60	125.97
C	Imperial (SS)	Winter	2013	312.79	362.16	427.68	542.37	73.23	85.37	100.58	126.29
C	Imperial (SS)	Winter	2014	312.93	362.45	427.46	542.97	73.31	85.29	100.59	126.61
C	Imperial (SS)	Winter	2015	308.44	357.38	421.00	535.54	73.39	85.24	100.62	126.91
C	Imperial (SS)	Winter	2016	308.50	357.58	420.87	536.02	73.41	85.18	100.65	127.20
C	Imperial (SS)	Winter	2017	308.52	357.77	420.75	536.45	73.41	85.15	100.65	127.47
C	Imperial (SS)	Winter	2018	308.53	357.93	420.67	536.81	73.39	85.16	100.65	127.71
C	Imperial (SS)	Winter	2019	308.38	357.91	420.39	536.83	73.39	85.24	100.69	127.93
C	Imperial (SS)	Winter	2020	308.36	358.06	420.34	537.09	73.41	85.34	100.76	128.13
C	Imperial (SS)	Winter	2021	308.33	358.16	420.31	537.29	73.42	85.44	100.80	128.28
C	Imperial (SS)	Winter	2022	308.24	358.22	420.27	537.43	73.39	85.52	100.84	128.40
C	Imperial (SS)	Winter	2023	308.13	358.28	420.22	537.54	73.35	85.60	100.87	128.53
C	Imperial (SS)	Winter	2024	310.65	361.33	423.72	542.17	73.32	85.66	100.89	128.63
C	Imperial (SS)	Winter	2025	310.55	361.39	423.70	542.25	73.28	85.73	100.92	128.73
C	Imperial (SS)	Winter	2026	310.52	361.47	423.66	542.33	73.26	85.80	100.94	128.82
C	Imperial (SS)	Winter	2027	310.48	361.55	423.63	542.41	73.24	85.86	100.95	128.90
C	Imperial (SS)	Winter	2028	310.46	361.64	423.61	542.49	73.23	85.92	100.96	128.97
C	Imperial (SS)	Winter	2029	310.44	361.71	423.57	542.57	73.21	85.97	100.96	129.04
C	Imperial (SS)	Winter	2030	310.42	361.79	423.54	542.64	73.20	86.02	100.97	129.10
C	Imperial (SS)	Winter	2031	310.73	362.26	423.98	543.31	73.19	86.07	100.97	129.15
C	Imperial (SS)	Winter	2032	310.71	362.33	423.97	543.39	73.18	86.11	100.97	129.21
C	Imperial (SS)	Winter	2033	310.71	362.40	423.97	543.46	73.18	86.15	100.98	129.26
C	Imperial (SS)	Winter	2034	310.70	362.46	423.96	543.52	73.18	86.19	100.98	129.30
C	Imperial (SS)	Winter	2035	310.70	362.51	423.95	543.58	73.18	86.22	100.98	129.34
C	Inyo (GBV)	Annual	2010	356.66	415.27	486.92	609.08	74.86	92.72	102.09	125.24
C	Inyo (GBV)	Annual	2011	356.50	414.78	486.39	609.72	74.57	91.41	101.86	125.33
C	Inyo (GBV)	Annual	2012	356.50	414.32	485.97	610.47	74.43	90.24	101.67	125.47
C	Inyo (GBV)	Annual	2013	356.41	413.93	485.65	611.26	74.15	89.28	101.48	125.65
C	Inyo (GBV)	Annual	2014	356.31	413.56	485.39	612.03	73.85	88.38	101.20	125.84
C	Inyo (GBV)	Annual	2015	356.32	413.22	485.18	612.87	73.72	87.54	101.16	126.06
C	Inyo (GBV)	Annual	2016	356.43	413.02	485.02	613.71	73.74	86.96	101.06	126.28
C	Inyo (GBV)	Annual	2017	356.44	412.83	484.88	614.47	73.66	86.43	100.99	126.51
C	Inyo (GBV)	Annual	2018	356.41	412.64	484.77	615.10	73.56	85.95	100.90	126.74
C	Inyo (GBV)	Annual	2019	356.43	412.52	484.66	615.66	73.55	85.62	100.82	126.95
C	Inyo (GBV)	Annual	2020	356.41	412.45	484.57	616.15	73.60	85.52	100.83	127.15
C	Inyo (GBV)	Annual	2021	356.36	412.35	484.47	616.45	73.62	85.52	100.87	127.29
C	Inyo (GBV)	Annual	2022	356.25	412.28	484.37	616.71	73.62	85.52	100.90	127.41
C	Inyo (GBV)	Annual	2023	356.15	412.19	484.26	616.90	73.62	85.53	100.92	127.57
C	Inyo (GBV)	Annual	2024	356.06	412.13	484.17	617.04	73.61	85.55	100.93	127.72
C	Inyo (GBV)	Annual	2025	355.99	412.20	484.11	617.17	73.61	85.62	100.96	127.86
C	Inyo (GBV)	Annual	2026	356.00	412.34	484.04	617.36	73.63	85.70	100.98	128.02
C	Inyo (GBV)	Annual	2027	356.00	412.49	483.97	617.56	73.64	85.78	101.00	128.16
C	Inyo (GBV)	Annual	2028	355.99	412.64	483.91	617.74	73.64	85.86	101.00	128.29
C	Inyo (GBV)	Annual	2029	355.98	412.78	483.84	617.93	73.65	85.93	101.01	128.40
C	Inyo (GBV)	Annual	2030	355.96	412.92	483.77	618.12	73.65	85.99	101.00	128.52
C	Inyo (GBV)	Annual	2031	355.95	413.07	483.74	618.34	73.65	86.06	101.01	128.63
C	Inyo (GBV)	Annual	2032	355.94	413.20	483.70	618.56	73.66	86.12	101.01	128.75
C	Inyo (GBV)	Annual	2033	355.94	413.32	483.67	618.76	73.66	86.17	101.01	128.85
C	Inyo (GBV)	Annual	2034	355.93	413.42	483.64	618.94	73.67	86.22	101.02	128.94
C	Inyo (GBV)	Annual	2035	355.93	413.51	483.62	619.10	73.67	86.27	101.02	129.02
C	Inyo (GBV)	Summer	2010	381.10	438.56	518.79	649.11	74.86	92.72	102.09	125.24
C	Inyo (GBV)	Summer	2011	381.22	438.92	518.54	649.84	74.57	91.41	101.86	125.33
C	Inyo (GBV)	Summer	2012	381.40	439.18	518.36	650.75	74.43	90.24	101.67	125.47
C	Inyo (GBV)	Summer	2013	381.47	439.37	518.27	651.73	74.15	89.28	101.48	125.65

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Inyo (GBV)	Summer	2014	381.49	439.47	518.25	652.71	73.85	88.38	101.20	125.84
C	Inyo (GBV)	Summer	2015	381.58	439.58	518.19	653.82	73.72	87.54	101.16	126.06
C	Inyo (GBV)	Summer	2016	381.72	439.71	518.18	654.92	73.74	86.96	101.06	126.28
C	Inyo (GBV)	Summer	2017	381.76	439.81	518.15	655.93	73.66	86.43	100.99	126.51
C	Inyo (GBV)	Summer	2018	381.73	439.85	518.11	656.75	73.56	85.95	100.90	126.74
C	Inyo (GBV)	Summer	2019	381.76	439.93	518.07	657.48	73.55	85.62	100.82	126.95
C	Inyo (GBV)	Summer	2020	381.74	440.02	518.02	658.12	73.60	85.52	100.83	127.15
C	Inyo (GBV)	Summer	2021	381.69	440.06	517.94	658.52	73.62	85.52	100.87	127.29
C	Inyo (GBV)	Summer	2022	381.59	440.10	517.85	658.87	73.62	85.52	100.90	127.41
C	Inyo (GBV)	Summer	2023	381.50	440.13	517.78	659.12	73.62	85.53	100.92	127.57
C	Inyo (GBV)	Summer	2024	381.41	440.18	517.72	659.32	73.61	85.55	100.93	127.72
C	Inyo (GBV)	Summer	2025	381.36	440.29	517.67	659.49	73.61	85.62	100.96	127.86
C	Inyo (GBV)	Summer	2026	381.37	440.49	517.60	659.72	73.63	85.70	100.98	128.02
C	Inyo (GBV)	Summer	2027	381.38	440.72	517.54	659.94	73.64	85.78	101.00	128.16
C	Inyo (GBV)	Summer	2028	381.39	440.92	517.49	660.17	73.64	85.86	101.00	128.29
C	Inyo (GBV)	Summer	2029	381.39	441.13	517.43	660.40	73.65	85.93	101.01	128.40
C	Inyo (GBV)	Summer	2030	381.38	441.32	517.38	660.64	73.65	85.99	101.00	128.52
C	Inyo (GBV)	Summer	2031	381.38	441.54	517.35	660.90	73.65	86.06	101.01	128.63
C	Inyo (GBV)	Summer	2032	381.38	441.71	517.32	661.15	73.66	86.12	101.01	128.75
C	Inyo (GBV)	Summer	2033	381.37	441.88	517.29	661.39	73.66	86.17	101.01	128.85
C	Inyo (GBV)	Summer	2034	381.37	442.01	517.27	661.61	73.67	86.22	101.02	128.94
C	Inyo (GBV)	Summer	2035	381.36	442.11	517.25	661.80	73.67	86.27	101.02	129.02
C	Inyo (GBV)	Winter	2010	379.51	437.04	516.71	646.50	74.86	92.72	102.09	125.24
C	Inyo (GBV)	Winter	2011	379.61	437.35	516.44	647.23	74.57	91.41	101.86	125.33
C	Inyo (GBV)	Winter	2012	379.78	437.56	516.26	648.13	74.43	90.24	101.67	125.47
C	Inyo (GBV)	Winter	2013	379.84	437.71	516.14	649.10	74.15	89.28	101.48	125.65
C	Inyo (GBV)	Winter	2014	379.85	437.79	516.11	650.06	73.85	88.38	101.20	125.84
C	Inyo (GBV)	Winter	2015	379.93	437.87	516.04	651.15	73.72	87.54	101.16	126.06
C	Inyo (GBV)	Winter	2016	380.08	437.97	516.02	652.24	73.74	86.96	101.06	126.28
C	Inyo (GBV)	Winter	2017	380.11	438.05	515.98	653.23	73.66	86.43	100.99	126.51
C	Inyo (GBV)	Winter	2018	380.09	438.08	515.94	654.04	73.56	85.95	100.90	126.74
C	Inyo (GBV)	Winter	2019	380.11	438.15	515.90	654.76	73.55	85.62	100.82	126.95
C	Inyo (GBV)	Winter	2020	380.09	438.23	515.84	655.39	73.60	85.52	100.83	127.15
C	Inyo (GBV)	Winter	2021	380.04	438.26	515.76	655.79	73.62	85.52	100.87	127.29
C	Inyo (GBV)	Winter	2022	379.94	438.29	515.68	656.13	73.62	85.52	100.90	127.41
C	Inyo (GBV)	Winter	2023	379.85	438.32	515.60	656.37	73.62	85.53	100.92	127.57
C	Inyo (GBV)	Winter	2024	379.76	438.35	515.54	656.57	73.61	85.55	100.93	127.72
C	Inyo (GBV)	Winter	2025	379.71	438.46	515.49	656.74	73.61	85.62	100.96	127.86
C	Inyo (GBV)	Winter	2026	379.72	438.66	515.42	656.96	73.63	85.70	100.98	128.02
C	Inyo (GBV)	Winter	2027	379.73	438.88	515.36	657.18	73.64	85.78	101.00	128.16
C	Inyo (GBV)	Winter	2028	379.73	439.08	515.30	657.41	73.64	85.86	101.00	128.29
C	Inyo (GBV)	Winter	2029	379.73	439.29	515.25	657.64	73.65	85.93	101.01	128.40
C	Inyo (GBV)	Winter	2030	379.72	439.47	515.19	657.87	73.65	85.99	101.00	128.52
C	Inyo (GBV)	Winter	2031	379.72	439.68	515.16	658.13	73.65	86.06	101.01	128.63
C	Inyo (GBV)	Winter	2032	379.72	439.86	515.13	658.38	73.66	86.12	101.01	128.75
C	Inyo (GBV)	Winter	2033	379.72	440.02	515.11	658.62	73.66	86.17	101.01	128.85
C	Inyo (GBV)	Winter	2034	379.71	440.15	515.08	658.83	73.67	86.22	101.02	128.94
C	Inyo (GBV)	Winter	2035	379.71	440.25	515.06	659.02	73.67	86.27	101.02	129.02
C	Kern (MD)	Annual	2010	336.08	392.10	460.74	577.53	74.06	93.66	100.99	125.79
C	Kern (MD)	Annual	2011	336.60	392.15	460.74	578.88	73.94	91.90	100.87	125.91
C	Kern (MD)	Annual	2012	336.72	391.78	460.32	579.53	73.83	90.38	100.77	126.04
C	Kern (MD)	Annual	2013	336.85	391.46	460.00	580.23	73.76	89.06	100.75	126.20
C	Kern (MD)	Annual	2014	336.97	391.23	459.75	580.93	73.68	88.03	100.72	126.38
C	Kern (MD)	Annual	2015	337.07	391.05	459.55	581.63	73.61	87.19	100.70	126.58

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Kern (MD)	Annual	2016	337.08	390.85	459.24	582.18	73.59	86.61	100.72	126.80
C	Kern (MD)	Annual	2017	337.18	390.73	459.10	582.87	73.57	85.95	100.70	127.03
C	Kern (MD)	Annual	2018	337.24	390.67	458.98	583.45	73.54	85.51	100.67	127.24
C	Kern (MD)	Annual	2019	337.31	390.73	458.89	583.95	73.55	85.38	100.69	127.44
C	Kern (MD)	Annual	2020	337.37	390.79	458.81	584.40	73.62	85.36	100.74	127.63
C	Kern (MD)	Annual	2021	338.50	392.19	460.25	586.62	73.68	85.47	100.80	127.74
C	Kern (MD)	Annual	2022	338.52	392.29	460.18	586.87	73.72	85.56	100.85	127.82
C	Kern (MD)	Annual	2023	338.51	392.38	460.12	587.07	73.75	85.64	100.89	127.98
C	Kern (MD)	Annual	2024	338.48	392.46	460.06	587.20	73.76	85.71	100.92	128.12
C	Kern (MD)	Annual	2025	338.48	392.53	460.01	587.35	73.78	85.78	100.95	128.26
C	Kern (MD)	Annual	2026	338.50	392.63	459.97	587.56	73.79	85.84	100.97	128.40
C	Kern (MD)	Annual	2027	338.52	392.72	459.92	587.75	73.81	85.90	100.98	128.53
C	Kern (MD)	Annual	2028	338.53	392.80	459.88	587.93	73.82	85.95	100.99	128.65
C	Kern (MD)	Annual	2029	338.53	392.88	459.83	588.10	73.82	86.00	100.99	128.75
C	Kern (MD)	Annual	2030	338.52	392.95	459.78	588.27	73.82	86.04	100.98	128.85
C	Kern (MD)	Annual	2031	338.52	393.02	459.75	588.42	73.83	86.08	100.99	128.94
C	Kern (MD)	Annual	2032	338.52	393.08	459.73	588.57	73.83	86.12	100.99	129.02
C	Kern (MD)	Annual	2033	338.52	393.13	459.71	588.70	73.84	86.16	100.99	129.09
C	Kern (MD)	Annual	2034	338.52	393.17	459.69	588.81	73.84	86.19	101.00	129.16
C	Kern (MD)	Annual	2035	338.52	393.20	459.67	588.91	73.84	86.21	101.00	129.22
C	Kern (MD)	Summer	2010	370.45	428.06	505.41	634.10	74.06	93.66	100.99	125.79
C	Kern (MD)	Summer	2011	371.25	428.88	505.98	635.59	73.94	91.90	100.87	125.91
C	Kern (MD)	Summer	2012	371.53	429.08	505.93	636.35	73.83	90.38	100.77	126.04
C	Kern (MD)	Summer	2013	371.80	429.22	505.88	637.24	73.76	89.06	100.75	126.20
C	Kern (MD)	Summer	2014	372.02	429.32	505.86	638.18	73.68	88.03	100.72	126.38
C	Kern (MD)	Summer	2015	372.21	429.42	505.83	639.13	73.61	87.19	100.70	126.58
C	Kern (MD)	Summer	2016	372.30	429.42	505.66	640.02	73.59	86.61	100.72	126.80
C	Kern (MD)	Summer	2017	372.46	429.55	505.63	641.01	73.57	85.95	100.70	127.03
C	Kern (MD)	Summer	2018	372.55	429.66	505.57	641.83	73.54	85.51	100.67	127.24
C	Kern (MD)	Summer	2019	372.63	429.83	505.50	642.53	73.55	85.38	100.69	127.44
C	Kern (MD)	Summer	2020	372.70	430.00	505.43	643.14	73.62	85.36	100.74	127.63
C	Kern (MD)	Summer	2021	373.95	431.58	507.02	645.71	73.68	85.47	100.80	127.74
C	Kern (MD)	Summer	2022	373.96	431.73	506.96	646.06	73.72	85.56	100.85	127.82
C	Kern (MD)	Summer	2023	373.95	431.88	506.89	646.33	73.75	85.64	100.89	127.98
C	Kern (MD)	Summer	2024	373.93	431.99	506.83	646.50	73.76	85.71	100.92	128.12
C	Kern (MD)	Summer	2025	373.93	432.11	506.78	646.66	73.78	85.78	100.95	128.26
C	Kern (MD)	Summer	2026	373.97	432.28	506.79	646.94	73.79	85.84	100.97	128.40
C	Kern (MD)	Summer	2027	374.00	432.43	506.79	647.19	73.81	85.90	100.98	128.53
C	Kern (MD)	Summer	2028	374.02	432.56	506.79	647.41	73.82	85.95	100.99	128.65
C	Kern (MD)	Summer	2029	374.04	432.69	506.77	647.62	73.82	86.00	100.99	128.75
C	Kern (MD)	Summer	2030	374.04	432.80	506.75	647.82	73.82	86.04	100.98	128.85
C	Kern (MD)	Summer	2031	374.04	432.90	506.73	647.98	73.83	86.08	100.99	128.94
C	Kern (MD)	Summer	2032	374.04	432.98	506.71	648.14	73.83	86.12	100.99	129.02
C	Kern (MD)	Summer	2033	374.04	433.05	506.68	648.28	73.84	86.16	100.99	129.09
C	Kern (MD)	Summer	2034	374.04	433.09	506.66	648.41	73.84	86.19	101.00	129.16
C	Kern (MD)	Summer	2035	374.03	433.12	506.63	648.53	73.84	86.21	101.00	129.22
C	Kern (MD)	Winter	2010	325.30	380.82	446.72	559.78	74.06	93.66	100.99	125.79
C	Kern (MD)	Winter	2011	325.73	380.63	446.54	561.09	73.94	91.90	100.87	125.91
C	Kern (MD)	Winter	2012	325.80	380.08	446.01	561.70	73.83	90.38	100.77	126.04
C	Kern (MD)	Winter	2013	325.89	379.61	445.61	562.35	73.76	89.06	100.75	126.20
C	Kern (MD)	Winter	2014	325.97	379.28	445.29	562.97	73.68	88.03	100.72	126.38
C	Kern (MD)	Winter	2015	326.05	379.02	445.03	563.59	73.61	87.19	100.70	126.58
C	Kern (MD)	Winter	2016	326.03	378.75	444.68	564.04	73.59	86.61	100.72	126.80
C	Kern (MD)	Winter	2017	326.12	378.55	444.51	564.64	73.57	85.95	100.70	127.03

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Kern (MD)	Winter	2018	326.17	378.44	444.37	565.14	73.54	85.51	100.67	127.24
C	Kern (MD)	Winter	2019	326.23	378.47	444.27	565.58	73.55	85.38	100.69	127.44
C	Kern (MD)	Winter	2020	326.29	378.49	444.19	565.97	73.62	85.36	100.74	127.63
C	Kern (MD)	Winter	2021	327.38	379.84	445.58	568.09	73.68	85.47	100.80	127.74
C	Kern (MD)	Winter	2022	327.40	379.92	445.51	568.30	73.72	85.56	100.85	127.82
C	Kern (MD)	Winter	2023	327.39	379.99	445.45	568.48	73.75	85.64	100.89	127.98
C	Kern (MD)	Winter	2024	327.36	380.05	445.39	568.60	73.76	85.71	100.92	128.12
C	Kern (MD)	Winter	2025	327.36	380.12	445.34	568.75	73.78	85.78	100.95	128.26
C	Kern (MD)	Winter	2026	327.38	380.19	445.29	568.94	73.79	85.84	100.97	128.40
C	Kern (MD)	Winter	2027	327.39	380.27	445.22	569.11	73.81	85.90	100.98	128.53
C	Kern (MD)	Winter	2028	327.39	380.33	445.17	569.28	73.82	85.95	100.99	128.65
C	Kern (MD)	Winter	2029	327.39	380.39	445.11	569.43	73.82	86.00	100.99	128.75
C	Kern (MD)	Winter	2030	327.38	380.45	445.05	569.59	73.82	86.04	100.98	128.85
C	Kern (MD)	Winter	2031	327.38	380.51	445.02	569.73	73.83	86.08	100.99	128.94
C	Kern (MD)	Winter	2032	327.38	380.56	445.00	569.88	73.83	86.12	100.99	129.02
C	Kern (MD)	Winter	2033	327.38	380.61	444.98	570.01	73.84	86.16	100.99	129.09
C	Kern (MD)	Winter	2034	327.38	380.65	444.96	570.12	73.84	86.19	101.00	129.16
C	Kern (MD)	Winter	2035	327.38	380.68	444.94	570.22	73.84	86.21	101.00	129.22
C	Kern (SJV)	Annual	2010	372.18	426.19	509.12	641.67	73.42	84.89	100.24	125.09
C	Kern (SJV)	Annual	2011	372.44	427.30	508.94	642.35	73.43	84.72	100.24	125.33
C	Kern (SJV)	Annual	2012	372.69	428.18	508.79	643.02	73.45	84.62	100.27	125.57
C	Kern (SJV)	Annual	2013	372.35	428.23	507.88	642.72	73.49	84.53	100.30	125.82
C	Kern (SJV)	Annual	2014	372.56	428.86	507.81	643.44	73.51	84.49	100.33	126.07
C	Kern (SJV)	Annual	2015	373.51	430.29	508.76	645.47	73.56	84.48	100.37	126.34
C	Kern (SJV)	Annual	2016	373.71	430.80	508.73	646.20	73.62	84.50	100.43	126.61
C	Kern (SJV)	Annual	2017	373.86	431.24	508.70	646.89	73.66	84.50	100.45	126.87
C	Kern (SJV)	Annual	2018	373.04	430.53	507.39	645.86	73.69	84.54	100.48	127.12
C	Kern (SJV)	Annual	2019	373.15	430.90	507.37	646.40	73.74	84.68	100.53	127.34
C	Kern (SJV)	Annual	2020	373.24	431.23	507.35	646.87	73.83	84.85	100.60	127.55
C	Kern (SJV)	Annual	2021	373.14	431.29	507.08	646.94	73.89	85.01	100.67	127.72
C	Kern (SJV)	Annual	2022	373.18	431.51	507.05	647.25	73.94	85.15	100.74	127.87
C	Kern (SJV)	Annual	2023	373.19	431.70	507.02	647.49	73.97	85.27	100.79	128.04
C	Kern (SJV)	Annual	2024	373.41	432.15	507.32	648.08	73.99	85.38	100.83	128.18
C	Kern (SJV)	Annual	2025	373.41	432.31	507.30	648.26	74.01	85.48	100.87	128.32
C	Kern (SJV)	Annual	2026	371.83	430.65	505.11	645.67	74.03	85.58	100.89	128.45
C	Kern (SJV)	Annual	2027	371.84	430.82	505.09	645.83	74.04	85.67	100.92	128.57
C	Kern (SJV)	Annual	2028	371.85	430.99	505.08	645.99	74.05	85.75	100.93	128.67
C	Kern (SJV)	Annual	2029	371.85	431.15	505.06	646.15	74.05	85.83	100.94	128.77
C	Kern (SJV)	Annual	2030	371.85	431.30	505.04	646.31	74.06	85.90	100.95	128.86
C	Kern (SJV)	Annual	2031	371.85	431.44	505.03	646.46	74.06	85.96	100.96	128.95
C	Kern (SJV)	Annual	2032	371.85	431.57	505.02	646.61	74.07	86.03	100.96	129.03
C	Kern (SJV)	Annual	2033	371.85	431.68	505.01	646.74	74.07	86.08	100.97	129.10
C	Kern (SJV)	Annual	2034	371.85	431.78	505.00	646.87	74.07	86.13	100.97	129.16
C	Kern (SJV)	Annual	2035	371.84	431.85	504.99	646.98	74.07	86.18	100.98	129.22
C	Kern (SJV)	Summer	2010	412.69	467.79	562.40	709.14	73.42	84.89	100.24	125.09
C	Kern (SJV)	Summer	2011	413.18	469.85	562.48	709.74	73.43	84.72	100.24	125.33
C	Kern (SJV)	Summer	2012	413.59	471.41	562.52	710.40	73.45	84.62	100.27	125.57
C	Kern (SJV)	Summer	2013	413.29	471.91	561.69	710.05	73.49	84.53	100.30	125.82
C	Kern (SJV)	Summer	2014	413.60	472.94	561.79	710.92	73.51	84.49	100.33	126.07
C	Kern (SJV)	Summer	2015	414.72	474.79	563.00	713.30	73.56	84.48	100.37	126.34
C	Kern (SJV)	Summer	2016	414.99	475.56	563.10	714.28	73.62	84.50	100.43	126.61
C	Kern (SJV)	Summer	2017	415.18	476.21	563.17	715.20	73.66	84.50	100.45	126.87
C	Kern (SJV)	Summer	2018	414.27	475.56	561.78	714.21	73.69	84.54	100.48	127.12
C	Kern (SJV)	Summer	2019	414.39	476.05	561.78	714.92	73.74	84.68	100.53	127.34

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Kern (SJV)	Summer	2020	414.49	476.49	561.77	715.54	73.83	84.85	100.60	127.55
C	Kern (SJV)	Summer	2021	414.38	476.59	561.45	715.68	73.89	85.01	100.67	127.72
C	Kern (SJV)	Summer	2022	414.42	476.88	561.40	716.07	73.94	85.15	100.74	127.87
C	Kern (SJV)	Summer	2023	414.43	477.14	561.35	716.37	73.97	85.27	100.79	128.04
C	Kern (SJV)	Summer	2024	414.68	477.72	561.68	717.04	73.99	85.38	100.83	128.18
C	Kern (SJV)	Summer	2025	414.69	477.97	561.66	717.23	74.01	85.48	100.87	128.32
C	Kern (SJV)	Summer	2026	412.93	476.21	559.25	714.34	74.03	85.58	100.89	128.45
C	Kern (SJV)	Summer	2027	412.94	476.48	559.24	714.51	74.04	85.67	100.92	128.57
C	Kern (SJV)	Summer	2028	412.95	476.73	559.24	714.67	74.05	85.75	100.93	128.67
C	Kern (SJV)	Summer	2029	412.96	476.98	559.23	714.83	74.05	85.83	100.94	128.77
C	Kern (SJV)	Summer	2030	412.96	477.21	559.23	715.00	74.06	85.90	100.95	128.86
C	Kern (SJV)	Summer	2031	412.96	477.42	559.21	715.15	74.06	85.96	100.96	128.95
C	Kern (SJV)	Summer	2032	412.95	477.60	559.19	715.31	74.07	86.03	100.96	129.03
C	Kern (SJV)	Summer	2033	412.95	477.75	559.18	715.46	74.07	86.08	100.97	129.10
C	Kern (SJV)	Summer	2034	412.95	477.86	559.17	715.61	74.07	86.13	100.97	129.16
C	Kern (SJV)	Summer	2035	412.95	477.95	559.16	715.75	74.07	86.18	100.98	129.22
C	Kern (SJV)	Winter	2010	356.46	410.05	488.44	615.49	73.42	84.89	100.24	125.09
C	Kern (SJV)	Winter	2011	356.63	410.79	488.16	616.20	73.43	84.72	100.24	125.33
C	Kern (SJV)	Winter	2012	356.82	411.41	487.95	616.88	73.45	84.62	100.27	125.57
C	Kern (SJV)	Winter	2013	356.46	411.28	487.00	616.59	73.49	84.53	100.30	125.82
C	Kern (SJV)	Winter	2014	356.64	411.75	486.87	617.26	73.51	84.49	100.33	126.07
C	Kern (SJV)	Winter	2015	357.52	413.02	487.71	619.15	73.56	84.48	100.37	126.34
C	Kern (SJV)	Winter	2016	357.70	413.43	487.64	619.79	73.62	84.50	100.43	126.61
C	Kern (SJV)	Winter	2017	357.83	413.79	487.57	620.38	73.66	84.50	100.45	126.87
C	Kern (SJV)	Winter	2018	357.04	413.06	486.29	619.34	73.69	84.54	100.48	127.12
C	Kern (SJV)	Winter	2019	357.14	413.38	486.26	619.81	73.74	84.68	100.53	127.34
C	Kern (SJV)	Winter	2020	357.23	413.67	486.23	620.23	73.83	84.85	100.60	127.55
C	Kern (SJV)	Winter	2021	357.14	413.71	485.99	620.27	73.89	85.01	100.67	127.72
C	Kern (SJV)	Winter	2022	357.17	413.91	485.97	620.54	73.94	85.15	100.74	127.87
C	Kern (SJV)	Winter	2023	357.18	414.07	485.95	620.76	73.97	85.27	100.79	128.04
C	Kern (SJV)	Winter	2024	357.39	414.47	486.23	621.33	73.99	85.38	100.83	128.18
C	Kern (SJV)	Winter	2025	357.39	414.59	486.21	621.50	74.01	85.48	100.87	128.32
C	Kern (SJV)	Winter	2026	355.88	412.97	484.11	619.02	74.03	85.58	100.89	128.45
C	Kern (SJV)	Winter	2027	355.89	413.11	484.08	619.19	74.04	85.67	100.92	128.57
C	Kern (SJV)	Winter	2028	355.90	413.24	484.06	619.35	74.05	85.75	100.93	128.67
C	Kern (SJV)	Winter	2029	355.90	413.37	484.04	619.50	74.05	85.83	100.94	128.77
C	Kern (SJV)	Winter	2030	355.90	413.49	484.02	619.65	74.06	85.90	100.95	128.86
C	Kern (SJV)	Winter	2031	355.90	413.60	484.01	619.80	74.06	85.96	100.96	128.95
C	Kern (SJV)	Winter	2032	355.90	413.71	484.00	619.95	74.07	86.03	100.96	129.03
C	Kern (SJV)	Winter	2033	355.90	413.81	483.99	620.08	74.07	86.08	100.97	129.10
C	Kern (SJV)	Winter	2034	355.90	413.89	483.98	620.20	74.07	86.13	100.97	129.16
C	Kern (SJV)	Winter	2035	355.89	413.96	483.97	620.30	74.07	86.18	100.98	129.22
C	Kings (SJV)	Annual	2010	334.26	384.18	458.54	576.15	73.37	85.91	100.56	124.91
C	Kings (SJV)	Annual	2011	334.55	384.83	458.24	576.82	73.38	85.51	100.52	125.14
C	Kings (SJV)	Annual	2012	335.48	386.17	458.92	578.63	73.41	85.28	100.50	125.38
C	Kings (SJV)	Annual	2013	335.97	386.90	459.08	579.74	73.44	85.03	100.49	125.62
C	Kings (SJV)	Annual	2014	336.19	387.33	458.94	580.41	73.47	84.93	100.47	125.88
C	Kings (SJV)	Annual	2015	335.98	387.22	458.26	580.38	73.53	84.82	100.48	126.14
C	Kings (SJV)	Annual	2016	336.16	387.56	458.18	581.05	73.58	84.77	100.51	126.40
C	Kings (SJV)	Annual	2017	336.30	387.85	458.10	581.67	73.62	84.69	100.52	126.66
C	Kings (SJV)	Annual	2018	332.59	383.72	452.87	575.68	73.63	84.63	100.54	126.91
C	Kings (SJV)	Annual	2019	332.68	384.00	452.82	576.19	73.68	84.71	100.55	127.14
C	Kings (SJV)	Annual	2020	332.75	384.27	452.78	576.64	73.76	84.84	100.62	127.35
C	Kings (SJV)	Annual	2021	334.26	386.18	454.72	579.52	73.83	84.98	100.69	127.52

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Kings (SJV)	Annual	2022	334.29	386.41	454.68	579.81	73.88	85.12	100.75	127.67
C	Kings (SJV)	Annual	2023	334.30	386.59	454.64	580.04	73.91	85.24	100.80	127.84
C	Kings (SJV)	Annual	2024	334.92	387.49	455.46	581.31	73.93	85.35	100.84	127.99
C	Kings (SJV)	Annual	2025	334.93	387.63	455.43	581.48	73.95	85.45	100.87	128.14
C	Kings (SJV)	Annual	2026	337.32	390.57	458.64	585.81	73.97	85.55	100.90	128.28
C	Kings (SJV)	Annual	2027	337.33	390.73	458.61	585.98	73.98	85.64	100.92	128.41
C	Kings (SJV)	Annual	2028	337.33	390.90	458.57	586.15	73.99	85.73	100.94	128.53
C	Kings (SJV)	Annual	2029	337.33	391.07	458.54	586.31	74.00	85.80	100.95	128.63
C	Kings (SJV)	Annual	2030	337.33	391.23	458.51	586.48	74.01	85.88	100.95	128.74
C	Kings (SJV)	Annual	2031	337.33	391.39	458.49	586.65	74.01	85.95	100.96	128.83
C	Kings (SJV)	Annual	2032	337.33	391.54	458.47	586.81	74.01	86.02	100.97	128.92
C	Kings (SJV)	Annual	2033	337.33	391.67	458.45	586.96	74.02	86.08	100.97	129.01
C	Kings (SJV)	Annual	2034	337.33	391.78	458.43	587.10	74.02	86.13	100.98	129.08
C	Kings (SJV)	Annual	2035	337.33	391.87	458.41	587.22	74.02	86.17	100.98	129.15
C	Kings (SJV)	Summer	2010	367.72	417.56	501.93	631.65	73.37	85.91	100.56	124.91
C	Kings (SJV)	Summer	2011	368.24	419.09	501.96	632.31	73.38	85.51	100.52	125.14
C	Kings (SJV)	Summer	2012	369.40	421.14	502.98	634.26	73.41	85.28	100.50	125.38
C	Kings (SJV)	Summer	2013	370.02	422.41	503.38	635.49	73.44	85.03	100.49	125.62
C	Kings (SJV)	Summer	2014	370.32	423.21	503.44	636.29	73.47	84.93	100.47	125.88
C	Kings (SJV)	Summer	2015	370.13	423.37	502.86	636.36	73.53	84.82	100.48	126.14
C	Kings (SJV)	Summer	2016	370.35	423.95	502.90	637.22	73.58	84.77	100.51	126.40
C	Kings (SJV)	Summer	2017	370.51	424.45	502.92	638.03	73.62	84.69	100.52	126.66
C	Kings (SJV)	Summer	2018	366.42	420.10	497.24	631.57	73.63	84.63	100.54	126.91
C	Kings (SJV)	Summer	2019	366.52	420.52	497.24	632.24	73.68	84.71	100.55	127.14
C	Kings (SJV)	Summer	2020	366.59	420.92	497.21	632.82	73.76	84.84	100.62	127.35
C	Kings (SJV)	Summer	2021	368.26	423.12	499.35	636.05	73.83	84.98	100.69	127.52
C	Kings (SJV)	Summer	2022	368.30	423.46	499.31	636.43	73.88	85.12	100.75	127.67
C	Kings (SJV)	Summer	2023	368.32	423.74	499.27	636.71	73.91	85.24	100.80	127.84
C	Kings (SJV)	Summer	2024	369.01	424.82	500.17	638.12	73.93	85.35	100.84	127.99
C	Kings (SJV)	Summer	2025	369.02	425.07	500.14	638.31	73.95	85.45	100.87	128.14
C	Kings (SJV)	Summer	2026	371.65	428.36	503.68	643.07	73.97	85.55	100.90	128.28
C	Kings (SJV)	Summer	2027	371.66	428.60	503.66	643.25	73.98	85.64	100.92	128.41
C	Kings (SJV)	Summer	2028	371.66	428.85	503.63	643.43	73.99	85.73	100.94	128.53
C	Kings (SJV)	Summer	2029	371.66	429.09	503.61	643.61	74.00	85.80	100.95	128.63
C	Kings (SJV)	Summer	2030	371.67	429.33	503.59	643.80	74.01	85.88	100.95	128.74
C	Kings (SJV)	Summer	2031	371.67	429.58	503.58	643.97	74.01	85.95	100.96	128.83
C	Kings (SJV)	Summer	2032	371.67	429.79	503.57	644.15	74.01	86.02	100.97	128.92
C	Kings (SJV)	Summer	2033	371.67	429.97	503.55	644.32	74.02	86.08	100.97	129.01
C	Kings (SJV)	Summer	2034	371.67	430.11	503.54	644.49	74.02	86.13	100.98	129.08
C	Kings (SJV)	Summer	2035	371.67	430.22	503.52	644.64	74.02	86.17	100.98	129.15
C	Kings (SJV)	Winter	2010	320.60	370.56	440.84	553.50	73.37	85.91	100.56	124.91
C	Kings (SJV)	Winter	2011	320.80	370.85	440.40	554.17	73.38	85.51	100.52	125.14
C	Kings (SJV)	Winter	2012	321.64	371.90	440.94	555.92	73.41	85.28	100.50	125.38
C	Kings (SJV)	Winter	2013	322.08	372.41	441.00	556.98	73.44	85.03	100.49	125.62
C	Kings (SJV)	Winter	2014	322.26	372.69	440.78	557.60	73.47	84.93	100.47	125.88
C	Kings (SJV)	Winter	2015	322.05	372.46	440.06	557.54	73.53	84.82	100.48	126.14
C	Kings (SJV)	Winter	2016	322.20	372.71	439.92	558.12	73.58	84.77	100.51	126.40
C	Kings (SJV)	Winter	2017	322.34	372.91	439.81	558.67	73.62	84.69	100.52	126.66
C	Kings (SJV)	Winter	2018	318.78	368.87	434.77	552.87	73.63	84.63	100.54	126.91
C	Kings (SJV)	Winter	2019	318.87	369.09	434.70	553.31	73.68	84.71	100.55	127.14
C	Kings (SJV)	Winter	2020	318.94	369.31	434.65	553.71	73.76	84.84	100.62	127.35
C	Kings (SJV)	Winter	2021	320.39	371.11	436.51	556.44	73.83	84.98	100.69	127.52
C	Kings (SJV)	Winter	2022	320.42	371.30	436.47	556.70	73.88	85.12	100.75	127.67
C	Kings (SJV)	Winter	2023	320.42	371.43	436.43	556.91	73.91	85.24	100.80	127.84

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Kings (SJV)	Winter	2024	321.01	372.25	437.21	558.12	73.93	85.35	100.84	127.99
C	Kings (SJV)	Winter	2025	321.02	372.35	437.18	558.28	73.95	85.45	100.87	128.14
C	Kings (SJV)	Winter	2026	323.31	375.15	440.26	562.45	73.97	85.55	100.90	128.28
C	Kings (SJV)	Winter	2027	323.32	375.28	440.22	562.61	73.98	85.64	100.92	128.41
C	Kings (SJV)	Winter	2028	323.32	375.41	440.18	562.78	73.99	85.73	100.94	128.53
C	Kings (SJV)	Winter	2029	323.32	375.55	440.15	562.93	74.00	85.80	100.95	128.63
C	Kings (SJV)	Winter	2030	323.32	375.68	440.11	563.09	74.01	85.88	100.95	128.74
C	Kings (SJV)	Winter	2031	323.32	375.81	440.09	563.25	74.01	85.95	100.96	128.83
C	Kings (SJV)	Winter	2032	323.32	375.94	440.07	563.41	74.01	86.02	100.97	128.92
C	Kings (SJV)	Winter	2033	323.32	376.05	440.04	563.56	74.02	86.08	100.97	129.01
C	Kings (SJV)	Winter	2034	323.32	376.14	440.02	563.68	74.02	86.13	100.98	129.08
C	Kings (SJV)	Winter	2035	323.32	376.23	440.00	563.79	74.02	86.17	100.98	129.15
C	Lake (LC)	Annual	2010	342.07	393.50	467.77	584.22	74.77	89.34	101.91	124.46
C	Lake (LC)	Annual	2011	342.02	394.05	467.30	584.79	74.52	88.47	101.71	124.54
C	Lake (LC)	Annual	2012	342.06	394.51	466.93	585.54	74.36	87.81	101.56	124.69
C	Lake (LC)	Annual	2013	342.12	394.89	466.63	586.41	74.20	87.25	101.40	124.90
C	Lake (LC)	Annual	2014	342.14	395.21	466.41	587.25	73.98	86.77	101.22	125.12
C	Lake (LC)	Annual	2015	342.23	395.51	466.24	588.17	73.90	86.33	101.09	125.37
C	Lake (LC)	Annual	2016	342.33	395.78	466.10	589.06	73.88	85.99	101.00	125.66
C	Lake (LC)	Annual	2017	342.36	396.00	465.97	589.89	73.79	85.60	100.88	125.95
C	Lake (LC)	Annual	2018	342.39	396.17	465.87	590.62	73.73	85.27	100.83	126.22
C	Lake (LC)	Annual	2019	342.41	396.35	465.79	591.26	73.69	85.13	100.79	126.48
C	Lake (LC)	Annual	2020	342.44	396.52	465.72	591.82	73.77	85.14	100.79	126.73
C	Lake (LC)	Annual	2021	342.39	396.64	465.65	592.21	73.79	85.21	100.84	126.90
C	Lake (LC)	Annual	2022	342.31	396.75	465.57	592.55	73.78	85.27	100.85	127.07
C	Lake (LC)	Annual	2023	342.19	396.83	465.51	592.77	73.76	85.32	100.87	127.26
C	Lake (LC)	Annual	2024	342.07	396.89	465.44	592.97	73.71	85.36	100.88	127.45
C	Lake (LC)	Annual	2025	342.01	396.99	465.40	593.14	73.71	85.45	100.91	127.61
C	Lake (LC)	Annual	2026	342.02	397.10	465.36	593.32	73.73	85.55	100.93	127.78
C	Lake (LC)	Annual	2027	342.03	397.21	465.31	593.53	73.74	85.64	100.94	127.94
C	Lake (LC)	Annual	2028	342.03	397.32	465.27	593.73	73.75	85.72	100.95	128.09
C	Lake (LC)	Annual	2029	342.02	397.43	465.24	593.93	73.75	85.80	100.96	128.22
C	Lake (LC)	Annual	2030	342.00	397.54	465.21	594.14	73.75	85.88	100.95	128.35
C	Lake (LC)	Annual	2031	342.00	397.66	465.19	594.38	73.76	85.96	100.95	128.48
C	Lake (LC)	Annual	2032	341.99	397.76	465.18	594.62	73.76	86.03	100.96	128.61
C	Lake (LC)	Annual	2033	341.99	397.84	465.18	594.84	73.77	86.09	100.96	128.72
C	Lake (LC)	Annual	2034	341.98	397.92	465.17	595.03	73.77	86.15	100.97	128.82
C	Lake (LC)	Annual	2035	341.97	397.97	465.16	595.21	73.78	86.20	100.97	128.92
C	Lake (LC)	Summer	2010	365.54	417.38	498.77	621.97	74.77	89.34	101.91	124.46
C	Lake (LC)	Summer	2011	365.78	418.72	498.60	622.61	74.52	88.47	101.71	124.54
C	Lake (LC)	Summer	2012	366.03	419.77	498.49	623.54	74.36	87.81	101.56	124.69
C	Lake (LC)	Summer	2013	366.25	420.60	498.41	624.68	74.20	87.25	101.40	124.90
C	Lake (LC)	Summer	2014	366.39	421.26	498.37	625.78	73.98	86.77	101.22	125.12
C	Lake (LC)	Summer	2015	366.55	421.85	498.36	627.02	73.90	86.33	101.09	125.37
C	Lake (LC)	Summer	2016	366.69	422.33	498.33	628.23	73.88	85.99	101.00	125.66
C	Lake (LC)	Summer	2017	366.75	422.72	498.28	629.33	73.79	85.60	100.88	125.95
C	Lake (LC)	Summer	2018	366.77	423.03	498.21	630.31	73.73	85.27	100.83	126.22
C	Lake (LC)	Summer	2019	366.79	423.31	498.14	631.16	73.69	85.13	100.79	126.48
C	Lake (LC)	Summer	2020	366.81	423.55	498.08	631.89	73.77	85.14	100.79	126.73
C	Lake (LC)	Summer	2021	366.76	423.74	498.00	632.43	73.79	85.21	100.84	126.90
C	Lake (LC)	Summer	2022	366.67	423.91	497.93	632.88	73.78	85.27	100.85	127.07
C	Lake (LC)	Summer	2023	366.57	424.04	497.87	633.19	73.76	85.32	100.87	127.26
C	Lake (LC)	Summer	2024	366.46	424.16	497.81	633.47	73.71	85.36	100.88	127.45
C	Lake (LC)	Summer	2025	366.41	424.28	497.76	633.69	73.71	85.45	100.91	127.61

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Lake (LC)	Summer	2026	366.43	424.42	497.70	633.89	73.73	85.55	100.93	127.78
C	Lake (LC)	Summer	2027	366.46	424.56	497.65	634.10	73.74	85.64	100.94	127.94
C	Lake (LC)	Summer	2028	366.47	424.70	497.62	634.32	73.75	85.72	100.95	128.09
C	Lake (LC)	Summer	2029	366.48	424.86	497.59	634.55	73.75	85.80	100.96	128.22
C	Lake (LC)	Summer	2030	366.48	425.00	497.56	634.80	73.75	85.88	100.95	128.35
C	Lake (LC)	Summer	2031	366.48	425.18	497.58	635.06	73.76	85.96	100.95	128.48
C	Lake (LC)	Summer	2032	366.47	425.33	497.59	635.34	73.76	86.03	100.96	128.61
C	Lake (LC)	Summer	2033	366.46	425.44	497.60	635.60	73.77	86.09	100.96	128.72
C	Lake (LC)	Summer	2034	366.45	425.54	497.60	635.84	73.77	86.15	100.97	128.82
C	Lake (LC)	Summer	2035	366.44	425.60	497.60	636.06	73.78	86.20	100.97	128.92
C	Lake (LC)	Winter	2010	355.28	406.94	485.21	605.47	74.77	89.34	101.91	124.46
C	Lake (LC)	Winter	2011	355.39	407.93	484.91	606.07	74.52	88.47	101.71	124.54
C	Lake (LC)	Winter	2012	355.55	408.73	484.69	606.93	74.36	87.81	101.56	124.69
C	Lake (LC)	Winter	2013	355.70	409.36	484.52	607.95	74.20	87.25	101.40	124.90
C	Lake (LC)	Winter	2014	355.79	409.87	484.39	608.93	73.98	86.77	101.22	125.12
C	Lake (LC)	Winter	2015	355.91	410.33	484.31	610.03	73.90	86.33	101.09	125.37
C	Lake (LC)	Winter	2016	356.04	410.72	484.24	611.10	73.88	85.99	101.00	125.66
C	Lake (LC)	Winter	2017	356.08	411.04	484.15	612.08	73.79	85.60	100.88	125.95
C	Lake (LC)	Winter	2018	356.11	411.29	484.07	612.96	73.73	85.27	100.83	126.22
C	Lake (LC)	Winter	2019	356.13	411.52	484.00	613.71	73.69	85.13	100.79	126.48
C	Lake (LC)	Winter	2020	356.15	411.73	483.93	614.36	73.77	85.14	100.79	126.73
C	Lake (LC)	Winter	2021	356.11	411.89	483.85	614.84	73.79	85.21	100.84	126.90
C	Lake (LC)	Winter	2022	356.02	412.03	483.78	615.25	73.78	85.27	100.85	127.07
C	Lake (LC)	Winter	2023	355.91	412.15	483.72	615.52	73.76	85.32	100.87	127.26
C	Lake (LC)	Winter	2024	355.79	412.24	483.66	615.76	73.71	85.36	100.88	127.45
C	Lake (LC)	Winter	2025	355.74	412.35	483.61	615.96	73.71	85.45	100.91	127.61
C	Lake (LC)	Winter	2026	355.76	412.47	483.56	616.15	73.73	85.55	100.93	127.78
C	Lake (LC)	Winter	2027	355.78	412.60	483.51	616.36	73.74	85.64	100.94	127.94
C	Lake (LC)	Winter	2028	355.78	412.73	483.47	616.58	73.75	85.72	100.95	128.09
C	Lake (LC)	Winter	2029	355.78	412.87	483.44	616.79	73.75	85.80	100.96	128.22
C	Lake (LC)	Winter	2030	355.78	412.99	483.41	617.02	73.75	85.88	100.95	128.35
C	Lake (LC)	Winter	2031	355.77	413.15	483.42	617.27	73.76	85.96	100.95	128.48
C	Lake (LC)	Winter	2032	355.77	413.27	483.42	617.53	73.76	86.03	100.96	128.61
C	Lake (LC)	Winter	2033	355.76	413.37	483.42	617.77	73.77	86.09	100.96	128.72
C	Lake (LC)	Winter	2034	355.75	413.46	483.42	618.00	73.77	86.15	100.97	128.82
C	Lake (LC)	Winter	2035	355.74	413.52	483.42	618.20	73.78	86.20	100.97	128.92
C	Lassen (NEP)	Annual	2010	366.63	428.55	501.21	626.78	75.03	93.49	101.72	124.85
C	Lassen (NEP)	Annual	2011	366.52	427.89	500.66	627.52	74.78	92.04	101.44	124.99
C	Lassen (NEP)	Annual	2012	366.51	427.37	500.23	628.37	74.62	90.87	101.30	125.17
C	Lassen (NEP)	Annual	2013	366.45	426.93	499.88	629.27	74.35	89.90	101.18	125.38
C	Lassen (NEP)	Annual	2014	366.47	426.50	499.61	630.13	74.18	88.91	101.02	125.60
C	Lassen (NEP)	Annual	2015	366.54	426.15	499.39	631.03	74.11	88.06	100.90	125.84
C	Lassen (NEP)	Annual	2016	366.63	425.82	499.23	631.85	74.09	87.24	100.87	126.11
C	Lassen (NEP)	Annual	2017	366.62	425.58	499.09	632.62	73.95	86.60	100.80	126.37
C	Lassen (NEP)	Annual	2018	366.60	425.38	498.97	633.29	73.84	86.10	100.79	126.62
C	Lassen (NEP)	Annual	2019	366.62	425.22	498.88	633.88	73.81	85.71	100.76	126.84
C	Lassen (NEP)	Annual	2020	366.64	425.15	498.80	634.35	73.88	85.60	100.80	127.07
C	Lassen (NEP)	Annual	2021	366.58	425.05	498.73	634.71	73.90	85.58	100.85	127.25
C	Lassen (NEP)	Annual	2022	366.46	424.97	498.64	635.00	73.88	85.58	100.88	127.38
C	Lassen (NEP)	Annual	2023	366.37	424.91	498.56	635.19	73.88	85.59	100.91	127.55
C	Lassen (NEP)	Annual	2024	366.23	424.85	498.49	635.34	73.85	85.60	100.93	127.70
C	Lassen (NEP)	Annual	2025	366.17	424.91	498.44	635.47	73.85	85.67	100.96	127.84
C	Lassen (NEP)	Annual	2026	366.19	425.03	498.40	635.65	73.87	85.75	100.99	127.99
C	Lassen (NEP)	Annual	2027	366.19	425.15	498.34	635.84	73.88	85.83	101.00	128.13

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Lassen (NEP)	Annual	2028	366.19	425.28	498.29	636.04	73.89	85.91	101.01	128.26
C	Lassen (NEP)	Annual	2029	366.17	425.41	498.23	636.23	73.89	85.98	101.01	128.38
C	Lassen (NEP)	Annual	2030	366.16	425.52	498.17	636.41	73.89	86.04	101.01	128.49
C	Lassen (NEP)	Annual	2031	366.15	425.65	498.14	636.65	73.90	86.10	101.01	128.61
C	Lassen (NEP)	Annual	2032	366.15	425.76	498.12	636.90	73.90	86.16	101.01	128.73
C	Lassen (NEP)	Annual	2033	366.15	425.86	498.09	637.12	73.91	86.22	101.02	128.83
C	Lassen (NEP)	Annual	2034	366.14	425.94	498.07	637.31	73.91	86.26	101.02	128.92
C	Lassen (NEP)	Annual	2035	366.13	426.00	498.05	637.48	73.92	86.30	101.02	129.01
C	Lassen (NEP)	Summer	2010	385.95	446.82	526.65	657.83	75.03	93.49	101.72	124.85
C	Lassen (NEP)	Summer	2011	386.07	446.99	526.29	658.69	74.78	92.04	101.44	124.99
C	Lassen (NEP)	Summer	2012	386.23	447.10	526.01	659.72	74.62	90.87	101.30	125.17
C	Lassen (NEP)	Summer	2013	386.31	447.13	525.80	660.84	74.35	89.90	101.18	125.38
C	Lassen (NEP)	Summer	2014	386.41	447.10	525.66	661.92	74.18	88.91	101.02	125.60
C	Lassen (NEP)	Summer	2015	386.54	447.07	525.57	663.05	74.11	88.06	100.90	125.84
C	Lassen (NEP)	Summer	2016	386.67	447.02	525.50	664.09	74.09	87.24	100.87	126.11
C	Lassen (NEP)	Summer	2017	386.67	446.98	525.44	665.06	73.95	86.60	100.80	126.37
C	Lassen (NEP)	Summer	2018	386.66	446.94	525.37	665.90	73.84	86.10	100.79	126.62
C	Lassen (NEP)	Summer	2019	386.67	446.92	525.31	666.64	73.81	85.71	100.76	126.84
C	Lassen (NEP)	Summer	2020	386.68	446.95	525.25	667.23	73.88	85.60	100.80	127.07
C	Lassen (NEP)	Summer	2021	386.62	446.96	525.18	667.70	73.90	85.58	100.85	127.25
C	Lassen (NEP)	Summer	2022	386.49	446.97	525.10	668.07	73.88	85.58	100.88	127.38
C	Lassen (NEP)	Summer	2023	386.41	446.99	525.03	668.33	73.88	85.59	100.91	127.55
C	Lassen (NEP)	Summer	2024	386.28	447.01	524.97	668.54	73.85	85.60	100.93	127.70
C	Lassen (NEP)	Summer	2025	386.22	447.11	524.92	668.73	73.85	85.67	100.96	127.84
C	Lassen (NEP)	Summer	2026	386.24	447.28	524.88	668.93	73.87	85.75	100.99	127.99
C	Lassen (NEP)	Summer	2027	386.26	447.44	524.83	669.14	73.88	85.83	101.00	128.13
C	Lassen (NEP)	Summer	2028	386.27	447.61	524.79	669.37	73.89	85.91	101.01	128.26
C	Lassen (NEP)	Summer	2029	386.27	447.79	524.74	669.59	73.89	85.98	101.01	128.38
C	Lassen (NEP)	Summer	2030	386.26	447.96	524.69	669.81	73.89	86.04	101.01	128.49
C	Lassen (NEP)	Summer	2031	386.26	448.12	524.66	670.10	73.90	86.10	101.01	128.61
C	Lassen (NEP)	Summer	2032	386.26	448.27	524.64	670.38	73.90	86.16	101.01	128.73
C	Lassen (NEP)	Summer	2033	386.25	448.40	524.62	670.64	73.91	86.22	101.02	128.83
C	Lassen (NEP)	Summer	2034	386.25	448.50	524.60	670.87	73.91	86.26	101.02	128.92
C	Lassen (NEP)	Summer	2035	386.24	448.57	524.58	671.07	73.92	86.30	101.02	129.01
C	Lassen (NEP)	Winter	2010	359.88	422.17	492.33	615.94	75.03	93.49	101.72	124.85
C	Lassen (NEP)	Winter	2011	359.69	421.22	491.71	616.64	74.78	92.04	101.44	124.99
C	Lassen (NEP)	Winter	2012	359.63	420.48	491.23	617.43	74.62	90.87	101.30	125.17
C	Lassen (NEP)	Winter	2013	359.52	419.89	490.84	618.25	74.35	89.90	101.18	125.38
C	Lassen (NEP)	Winter	2014	359.51	419.32	490.52	619.04	74.18	88.91	101.02	125.60
C	Lassen (NEP)	Winter	2015	359.57	418.85	490.26	619.85	74.11	88.06	100.90	125.84
C	Lassen (NEP)	Winter	2016	359.64	418.43	490.06	620.60	74.09	87.24	100.87	126.11
C	Lassen (NEP)	Winter	2017	359.62	418.11	489.89	621.30	73.95	86.60	100.80	126.37
C	Lassen (NEP)	Winter	2018	359.60	417.85	489.77	621.91	73.84	86.10	100.79	126.62
C	Lassen (NEP)	Winter	2019	359.62	417.65	489.66	622.44	73.81	85.71	100.76	126.84
C	Lassen (NEP)	Winter	2020	359.65	417.54	489.58	622.88	73.88	85.60	100.80	127.07
C	Lassen (NEP)	Winter	2021	359.59	417.41	489.50	623.21	73.90	85.58	100.85	127.25
C	Lassen (NEP)	Winter	2022	359.47	417.29	489.40	623.46	73.88	85.58	100.88	127.38
C	Lassen (NEP)	Winter	2023	359.38	417.21	489.33	623.63	73.88	85.59	100.91	127.55
C	Lassen (NEP)	Winter	2024	359.24	417.11	489.25	623.75	73.85	85.60	100.93	127.70
C	Lassen (NEP)	Winter	2025	359.18	417.16	489.20	623.86	73.85	85.67	100.96	127.84
C	Lassen (NEP)	Winter	2026	359.19	417.27	489.16	624.04	73.87	85.75	100.99	127.99
C	Lassen (NEP)	Winter	2027	359.18	417.38	489.10	624.22	73.88	85.83	101.00	128.13
C	Lassen (NEP)	Winter	2028	359.18	417.49	489.05	624.41	73.89	85.91	101.01	128.26
C	Lassen (NEP)	Winter	2029	359.16	417.59	488.98	624.59	73.89	85.98	101.01	128.38

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Lassen (NEP)	Winter	2030	359.14	417.70	488.92	624.75	73.89	86.04	101.01	128.49
C	Lassen (NEP)	Winter	2031	359.14	417.80	488.89	624.98	73.90	86.10	101.01	128.61
C	Lassen (NEP)	Winter	2032	359.14	417.90	488.86	625.22	73.90	86.16	101.01	128.73
C	Lassen (NEP)	Winter	2033	359.13	417.99	488.84	625.43	73.91	86.22	101.02	128.83
C	Lassen (NEP)	Winter	2034	359.13	418.06	488.82	625.61	73.91	86.26	101.02	128.92
C	Lassen (NEP)	Winter	2035	359.12	418.13	488.80	625.76	73.92	86.30	101.02	129.01
C	Los Angeles (MD)	Annual	2010	345.89	395.46	472.51	595.78	73.36	84.38	99.72	125.11
C	Los Angeles (MD)	Annual	2011	348.87	399.45	476.26	601.40	73.38	84.28	99.78	125.35
C	Los Angeles (MD)	Annual	2012	349.04	400.17	476.18	602.17	73.40	84.27	99.87	125.60
C	Los Angeles (MD)	Annual	2013	350.49	402.29	477.89	605.21	73.42	84.25	99.97	125.87
C	Los Angeles (MD)	Annual	2014	350.66	402.85	477.86	605.99	73.46	84.24	100.05	126.14
C	Los Angeles (MD)	Annual	2015	355.63	408.92	484.44	615.13	73.50	84.26	100.16	126.42
C	Los Angeles (MD)	Annual	2016	355.79	409.41	484.43	615.82	73.56	84.33	100.25	126.69
C	Los Angeles (MD)	Annual	2017	355.91	409.84	484.42	616.46	73.60	84.36	100.32	126.95
C	Los Angeles (MD)	Annual	2018	356.00	410.20	484.40	617.00	73.63	84.42	100.38	127.20
C	Los Angeles (MD)	Annual	2019	357.84	412.61	486.79	620.54	73.67	84.58	100.46	127.42
C	Los Angeles (MD)	Annual	2020	357.92	412.97	486.78	620.97	73.75	84.76	100.55	127.62
C	Los Angeles (MD)	Annual	2021	360.97	416.79	490.85	626.51	73.82	84.94	100.64	127.79
C	Los Angeles (MD)	Annual	2022	361.00	417.09	490.84	626.80	73.87	85.10	100.71	127.92
C	Los Angeles (MD)	Annual	2023	361.00	417.34	490.82	627.02	73.90	85.24	100.77	128.08
C	Los Angeles (MD)	Annual	2024	361.28	417.87	491.15	627.65	73.91	85.37	100.81	128.23
C	Los Angeles (MD)	Annual	2025	361.29	418.06	491.14	627.84	73.93	85.48	100.86	128.37
C	Los Angeles (MD)	Annual	2026	361.30	418.26	491.12	628.01	73.95	85.58	100.89	128.50
C	Los Angeles (MD)	Annual	2027	361.31	418.44	491.10	628.17	73.97	85.67	100.91	128.62
C	Los Angeles (MD)	Annual	2028	361.32	418.63	491.09	628.32	73.97	85.76	100.93	128.72
C	Los Angeles (MD)	Annual	2029	361.32	418.81	491.07	628.47	73.98	85.84	100.94	128.81
C	Los Angeles (MD)	Annual	2030	361.31	418.99	491.06	628.62	73.98	85.91	100.95	128.90
C	Los Angeles (MD)	Annual	2031	366.94	425.72	498.73	638.58	73.99	85.98	100.96	128.98
C	Los Angeles (MD)	Annual	2032	366.93	425.88	498.72	638.71	73.99	86.05	100.97	129.05
C	Los Angeles (MD)	Annual	2033	366.93	426.03	498.71	638.83	74.00	86.10	100.98	129.12
C	Los Angeles (MD)	Annual	2034	366.92	426.15	498.70	638.94	74.00	86.15	100.98	129.18
C	Los Angeles (MD)	Annual	2035	366.92	426.26	498.69	639.04	74.00	86.20	100.99	129.24
C	Los Angeles (MD)	Summer	2010	381.87	431.89	519.76	655.58	73.36	84.38	99.72	125.11
C	Los Angeles (MD)	Summer	2011	385.34	436.89	524.09	661.69	73.38	84.28	99.78	125.35
C	Los Angeles (MD)	Summer	2012	385.66	438.19	524.18	662.56	73.40	84.27	99.87	125.60
C	Los Angeles (MD)	Summer	2013	387.37	440.97	526.26	666.03	73.42	84.25	99.97	125.87
C	Los Angeles (MD)	Summer	2014	387.63	441.94	526.42	667.04	73.46	84.24	100.05	126.14
C	Los Angeles (MD)	Summer	2015	393.20	448.92	533.87	677.32	73.50	84.26	100.16	126.42
C	Los Angeles (MD)	Summer	2016	393.41	449.67	534.00	678.24	73.56	84.33	100.25	126.69
C	Los Angeles (MD)	Summer	2017	393.56	450.33	534.08	679.07	73.60	84.36	100.32	126.95
C	Los Angeles (MD)	Summer	2018	393.65	450.86	534.11	679.75	73.63	84.42	100.38	127.20
C	Los Angeles (MD)	Summer	2019	395.68	453.61	536.75	683.71	73.67	84.58	100.46	127.42
C	Los Angeles (MD)	Summer	2020	395.75	454.07	536.73	684.25	73.75	84.76	100.55	127.62
C	Los Angeles (MD)	Summer	2021	399.16	458.42	541.24	690.46	73.82	84.94	100.64	127.79
C	Los Angeles (MD)	Summer	2022	399.20	458.86	541.22	690.83	73.87	85.10	100.71	127.92
C	Los Angeles (MD)	Summer	2023	399.21	459.24	541.20	691.10	73.90	85.24	100.77	128.08
C	Los Angeles (MD)	Summer	2024	399.46	459.85	541.48	691.72	73.91	85.37	100.81	128.23
C	Los Angeles (MD)	Summer	2025	399.48	460.16	541.47	691.93	73.93	85.48	100.86	128.37
C	Los Angeles (MD)	Summer	2026	399.50	460.45	541.44	692.11	73.95	85.58	100.89	128.50
C	Los Angeles (MD)	Summer	2027	399.52	460.73	541.42	692.27	73.97	85.67	100.91	128.62
C	Los Angeles (MD)	Summer	2028	399.53	461.00	541.41	692.44	73.97	85.76	100.93	128.72
C	Los Angeles (MD)	Summer	2029	399.53	461.26	541.39	692.59	73.98	85.84	100.94	128.81
C	Los Angeles (MD)	Summer	2030	399.53	461.50	541.38	692.75	73.98	85.91	100.95	128.90
C	Los Angeles (MD)	Summer	2031	405.74	468.99	549.84	703.69	73.99	85.98	100.96	128.98

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Los Angeles (MD)	Summer	2032	405.72	469.23	549.82	703.80	73.99	86.05	100.97	129.05
C	Los Angeles (MD)	Summer	2033	405.71	469.41	549.81	703.92	74.00	86.10	100.98	129.12
C	Los Angeles (MD)	Summer	2034	405.70	469.58	549.80	704.05	74.00	86.15	100.98	129.18
C	Los Angeles (MD)	Summer	2035	405.69	469.70	549.79	704.16	74.00	86.20	100.99	129.24
C	Los Angeles (MD)	Winter	2010	335.14	384.58	458.40	577.92	73.36	84.38	99.72	125.11
C	Los Angeles (MD)	Winter	2011	337.98	388.27	461.98	583.39	73.38	84.28	99.78	125.35
C	Los Angeles (MD)	Winter	2012	338.10	388.82	461.84	584.13	73.40	84.27	99.87	125.60
C	Los Angeles (MD)	Winter	2013	339.47	390.73	463.43	587.03	73.42	84.25	99.97	125.87
C	Los Angeles (MD)	Winter	2014	339.61	391.17	463.35	587.75	73.46	84.24	100.05	126.14
C	Los Angeles (MD)	Winter	2015	344.39	396.95	469.65	596.52	73.50	84.26	100.16	126.42
C	Los Angeles (MD)	Winter	2016	344.53	397.37	469.60	597.15	73.56	84.33	100.25	126.69
C	Los Angeles (MD)	Winter	2017	344.65	397.72	469.56	597.73	73.60	84.36	100.32	126.95
C	Los Angeles (MD)	Winter	2018	344.74	398.03	469.53	598.23	73.63	84.42	100.38	127.20
C	Los Angeles (MD)	Winter	2019	346.52	400.35	471.84	601.64	73.67	84.58	100.46	127.42
C	Los Angeles (MD)	Winter	2020	346.60	400.67	471.84	602.04	73.75	84.76	100.55	127.62
C	Los Angeles (MD)	Winter	2021	349.54	404.32	475.76	607.37	73.82	84.94	100.64	127.79
C	Los Angeles (MD)	Winter	2022	349.57	404.59	475.75	607.63	73.87	85.10	100.71	127.92
C	Los Angeles (MD)	Winter	2023	349.56	404.80	475.74	607.83	73.90	85.24	100.77	128.08
C	Los Angeles (MD)	Winter	2024	349.86	405.31	476.10	608.49	73.91	85.37	100.81	128.23
C	Los Angeles (MD)	Winter	2025	349.87	405.47	476.09	608.67	73.93	85.48	100.86	128.37
C	Los Angeles (MD)	Winter	2026	349.88	405.64	476.07	608.84	73.95	85.58	100.89	128.50
C	Los Angeles (MD)	Winter	2027	349.89	405.80	476.06	609.00	73.97	85.67	100.91	128.62
C	Los Angeles (MD)	Winter	2028	349.89	405.96	476.04	609.15	73.97	85.76	100.93	128.72
C	Los Angeles (MD)	Winter	2029	349.89	406.12	476.02	609.30	73.98	85.84	100.94	128.81
C	Los Angeles (MD)	Winter	2030	349.88	406.27	476.01	609.44	73.98	85.91	100.95	128.90
C	Los Angeles (MD)	Winter	2031	355.33	412.77	483.44	619.10	73.99	85.98	100.96	128.98
C	Los Angeles (MD)	Winter	2032	355.33	412.92	483.43	619.24	73.99	86.05	100.97	129.05
C	Los Angeles (MD)	Winter	2033	355.33	413.05	483.42	619.36	74.00	86.10	100.98	129.12
C	Los Angeles (MD)	Winter	2034	355.32	413.16	483.41	619.46	74.00	86.15	100.98	129.18
C	Los Angeles (MD)	Winter	2035	355.32	413.26	483.40	619.56	74.00	86.20	100.99	129.24
C	Los Angeles (SC)	Annual	2010	368.81	423.35	504.31	636.79	73.23	84.17	99.44	125.24
C	Los Angeles (SC)	Annual	2011	369.19	424.14	504.55	637.78	73.25	84.09	99.54	125.41
C	Los Angeles (SC)	Annual	2012	369.32	424.57	504.44	638.29	73.29	84.06	99.65	125.59
C	Los Angeles (SC)	Annual	2013	369.90	425.46	504.92	639.56	73.35	84.06	99.77	125.78
C	Los Angeles (SC)	Annual	2014	370.06	425.83	504.86	640.12	73.40	84.06	99.88	125.98
C	Los Angeles (SC)	Annual	2015	371.03	427.14	505.91	642.13	73.46	84.09	99.99	126.20
C	Los Angeles (SC)	Annual	2016	371.20	427.50	505.88	642.73	73.53	84.14	100.10	126.42
C	Los Angeles (SC)	Annual	2017	371.33	427.85	505.86	643.32	73.57	84.19	100.20	126.66
C	Los Angeles (SC)	Annual	2018	371.43	428.15	505.85	643.83	73.60	84.26	100.28	126.87
C	Los Angeles (SC)	Annual	2019	370.16	426.91	503.97	641.92	73.64	84.41	100.37	127.07
C	Los Angeles (SC)	Annual	2020	370.25	427.21	503.98	642.35	73.73	84.57	100.47	127.26
C	Los Angeles (SC)	Annual	2021	371.05	428.35	504.98	643.97	73.79	84.73	100.56	127.42
C	Los Angeles (SC)	Annual	2022	371.07	428.59	504.97	644.26	73.84	84.87	100.64	127.56
C	Los Angeles (SC)	Annual	2023	371.07	428.78	504.96	644.47	73.87	84.99	100.70	127.72
C	Los Angeles (SC)	Annual	2024	373.71	432.03	508.59	649.29	73.88	85.10	100.76	127.86
C	Los Angeles (SC)	Annual	2025	373.69	432.17	508.58	649.46	73.90	85.21	100.80	128.00
C	Los Angeles (SC)	Annual	2026	373.71	432.36	508.56	649.64	73.92	85.31	100.84	128.14
C	Los Angeles (SC)	Annual	2027	373.72	432.53	508.54	649.80	73.93	85.40	100.87	128.26
C	Los Angeles (SC)	Annual	2028	373.72	432.70	508.51	649.97	73.94	85.49	100.89	128.37
C	Los Angeles (SC)	Annual	2029	373.72	432.89	508.49	650.13	73.95	85.57	100.91	128.48
C	Los Angeles (SC)	Annual	2030	373.71	433.07	508.47	650.30	73.95	85.65	100.92	128.58
C	Los Angeles (SC)	Annual	2031	374.43	434.12	509.44	651.74	73.96	85.73	100.93	128.68
C	Los Angeles (SC)	Annual	2032	374.42	434.31	509.43	651.93	73.96	85.81	100.94	128.77
C	Los Angeles (SC)	Annual	2033	374.42	434.47	509.42	652.10	73.97	85.88	100.95	128.86

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Los Angeles (SC)	Annual	2034	374.42	434.62	509.41	652.26	73.97	85.94	100.96	128.94
C	Los Angeles (SC)	Annual	2035	374.41	434.74	509.40	652.40	73.97	85.99	100.96	129.01
C	Los Angeles (SC)	Summer	2010	385.28	440.09	525.98	664.19	73.23	84.17	99.44	125.24
C	Los Angeles (SC)	Summer	2011	385.73	441.13	526.29	665.13	73.25	84.09	99.54	125.41
C	Los Angeles (SC)	Summer	2012	385.91	441.75	526.21	665.60	73.29	84.06	99.65	125.59
C	Los Angeles (SC)	Summer	2013	386.55	442.81	526.76	666.89	73.35	84.06	99.77	125.78
C	Los Angeles (SC)	Summer	2014	386.73	443.32	526.74	667.48	73.40	84.06	99.88	125.98
C	Los Angeles (SC)	Summer	2015	387.76	444.78	527.89	669.62	73.46	84.09	99.99	126.20
C	Los Angeles (SC)	Summer	2016	387.94	445.24	527.91	670.32	73.53	84.14	100.10	126.42
C	Los Angeles (SC)	Summer	2017	388.08	445.68	527.93	671.01	73.57	84.19	100.20	126.66
C	Los Angeles (SC)	Summer	2018	388.19	446.07	527.94	671.60	73.60	84.26	100.28	126.87
C	Los Angeles (SC)	Summer	2019	386.86	444.82	526.01	669.67	73.64	84.41	100.37	127.07
C	Los Angeles (SC)	Summer	2020	386.96	445.19	526.01	670.16	73.73	84.57	100.47	127.26
C	Los Angeles (SC)	Summer	2021	387.79	446.44	527.07	671.91	73.79	84.73	100.56	127.42
C	Los Angeles (SC)	Summer	2022	387.82	446.75	527.06	672.25	73.84	84.87	100.64	127.56
C	Los Angeles (SC)	Summer	2023	387.81	447.00	527.05	672.49	73.87	84.99	100.70	127.72
C	Los Angeles (SC)	Summer	2024	390.60	450.47	530.86	677.57	73.88	85.10	100.76	127.86
C	Los Angeles (SC)	Summer	2025	390.59	450.66	530.84	677.76	73.90	85.21	100.80	128.00
C	Los Angeles (SC)	Summer	2026	390.61	450.90	530.82	677.94	73.92	85.31	100.84	128.14
C	Los Angeles (SC)	Summer	2027	390.62	451.11	530.79	678.11	73.93	85.40	100.87	128.26
C	Los Angeles (SC)	Summer	2028	390.63	451.34	530.77	678.27	73.94	85.49	100.89	128.37
C	Los Angeles (SC)	Summer	2029	390.63	451.57	530.74	678.44	73.95	85.57	100.91	128.48
C	Los Angeles (SC)	Summer	2030	390.62	451.80	530.72	678.61	73.95	85.65	100.92	128.58
C	Los Angeles (SC)	Summer	2031	391.38	452.94	531.76	680.13	73.96	85.73	100.93	128.68
C	Los Angeles (SC)	Summer	2032	391.37	453.18	531.75	680.32	73.96	85.81	100.94	128.77
C	Los Angeles (SC)	Summer	2033	391.37	453.37	531.74	680.50	73.97	85.88	100.95	128.86
C	Los Angeles (SC)	Summer	2034	391.37	453.55	531.73	680.67	73.97	85.94	100.96	128.94
C	Los Angeles (SC)	Summer	2035	391.36	453.68	531.72	680.83	73.97	85.99	100.96	129.01
C	Los Angeles (SC)	Winter	2010	362.71	417.15	496.28	626.64	73.23	84.17	99.44	125.24
C	Los Angeles (SC)	Winter	2011	363.06	417.84	496.50	627.65	73.25	84.09	99.54	125.41
C	Los Angeles (SC)	Winter	2012	363.18	418.21	496.38	628.18	73.29	84.06	99.65	125.59
C	Los Angeles (SC)	Winter	2013	363.74	419.03	496.84	629.44	73.35	84.06	99.77	125.78
C	Los Angeles (SC)	Winter	2014	363.89	419.36	496.75	629.99	73.40	84.06	99.88	125.98
C	Los Angeles (SC)	Winter	2015	364.84	420.60	497.77	631.94	73.46	84.09	99.99	126.20
C	Los Angeles (SC)	Winter	2016	365.00	420.93	497.72	632.51	73.53	84.14	100.10	126.42
C	Los Angeles (SC)	Winter	2017	365.12	421.25	497.69	633.06	73.57	84.19	100.20	126.66
C	Los Angeles (SC)	Winter	2018	365.22	421.52	497.66	633.55	73.60	84.26	100.28	126.87
C	Los Angeles (SC)	Winter	2019	363.97	420.27	495.81	631.65	73.64	84.41	100.37	127.07
C	Los Angeles (SC)	Winter	2020	364.06	420.56	495.81	632.05	73.73	84.57	100.47	127.26
C	Los Angeles (SC)	Winter	2021	364.85	421.65	496.80	633.62	73.79	84.73	100.56	127.42
C	Los Angeles (SC)	Winter	2022	364.87	421.87	496.79	633.89	73.84	84.87	100.64	127.56
C	Los Angeles (SC)	Winter	2023	364.86	422.03	496.78	634.09	73.87	84.99	100.70	127.72
C	Los Angeles (SC)	Winter	2024	367.45	425.20	500.34	638.81	73.88	85.10	100.76	127.86
C	Los Angeles (SC)	Winter	2025	367.44	425.32	500.33	638.98	73.90	85.21	100.80	128.00
C	Los Angeles (SC)	Winter	2026	367.45	425.49	500.31	639.15	73.92	85.31	100.84	128.14
C	Los Angeles (SC)	Winter	2027	367.46	425.64	500.29	639.32	73.93	85.40	100.87	128.26
C	Los Angeles (SC)	Winter	2028	367.46	425.80	500.27	639.48	73.94	85.49	100.89	128.37
C	Los Angeles (SC)	Winter	2029	367.45	425.97	500.24	639.64	73.95	85.57	100.91	128.48
C	Los Angeles (SC)	Winter	2030	367.44	426.13	500.22	639.81	73.95	85.65	100.92	128.58
C	Los Angeles (SC)	Winter	2031	368.15	427.14	501.18	641.22	73.96	85.73	100.93	128.68
C	Los Angeles (SC)	Winter	2032	368.14	427.31	501.17	641.41	73.96	85.81	100.94	128.77
C	Los Angeles (SC)	Winter	2033	368.14	427.47	501.15	641.57	73.97	85.88	100.95	128.86
C	Los Angeles (SC)	Winter	2034	368.14	427.61	501.14	641.73	73.97	85.94	100.96	128.94
C	Los Angeles (SC)	Winter	2035	368.13	427.73	501.13	641.86	73.97	85.99	100.96	129.01

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Madera (SJV)	Annual	2010	344.30	396.00	471.44	591.13	73.51	87.22	100.74	124.58
C	Madera (SJV)	Annual	2011	344.51	396.95	471.16	592.07	73.49	86.59	100.69	124.83
C	Madera (SJV)	Annual	2012	344.50	397.37	470.74	592.52	73.45	86.21	100.68	125.06
C	Madera (SJV)	Annual	2013	348.08	401.83	475.18	599.25	73.49	85.88	100.68	125.34
C	Madera (SJV)	Annual	2014	348.25	402.31	475.06	600.13	73.49	85.60	100.63	125.63
C	Madera (SJV)	Annual	2015	354.35	409.56	483.11	611.24	73.50	85.34	100.61	125.91
C	Madera (SJV)	Annual	2016	354.51	409.87	483.03	612.02	73.54	85.14	100.62	126.19
C	Madera (SJV)	Annual	2017	354.59	410.14	482.95	612.76	73.53	84.97	100.56	126.47
C	Madera (SJV)	Annual	2018	362.06	419.14	493.00	626.51	73.54	84.94	100.58	126.81
C	Madera (SJV)	Annual	2019	362.17	419.50	492.97	627.30	73.58	84.99	100.61	127.12
C	Madera (SJV)	Annual	2020	362.26	419.80	492.94	627.97	73.67	85.10	100.68	127.40
C	Madera (SJV)	Annual	2021	357.55	414.48	486.41	620.11	73.74	85.25	100.75	127.59
C	Madera (SJV)	Annual	2022	357.57	414.65	486.37	620.44	73.79	85.37	100.81	127.75
C	Madera (SJV)	Annual	2023	357.55	414.78	486.33	620.71	73.81	85.48	100.86	127.94
C	Madera (SJV)	Annual	2024	364.97	423.58	496.48	633.93	73.82	85.58	100.89	128.11
C	Madera (SJV)	Annual	2025	364.97	423.69	496.44	634.14	73.84	85.67	100.92	128.28
C	Madera (SJV)	Annual	2026	374.82	435.22	509.83	651.42	73.86	85.75	100.94	128.40
C	Madera (SJV)	Annual	2027	374.81	435.26	509.77	651.51	73.87	85.81	100.96	128.52
C	Madera (SJV)	Annual	2028	374.80	435.33	509.72	651.63	73.88	85.88	100.97	128.62
C	Madera (SJV)	Annual	2029	374.79	435.42	509.68	651.76	73.89	85.94	100.97	128.71
C	Madera (SJV)	Annual	2030	374.78	435.50	509.65	651.90	73.89	85.99	100.98	128.81
C	Madera (SJV)	Annual	2031	374.77	435.59	509.63	652.06	73.89	86.05	100.98	128.89
C	Madera (SJV)	Annual	2032	374.77	435.67	509.62	652.22	73.90	86.10	100.99	128.97
C	Madera (SJV)	Annual	2033	374.77	435.74	509.61	652.38	73.90	86.14	100.99	129.05
C	Madera (SJV)	Annual	2034	374.77	435.81	509.62	652.54	73.90	86.18	100.99	129.12
C	Madera (SJV)	Annual	2035	374.77	435.86	509.62	652.67	73.91	86.22	101.00	129.18
C	Madera (SJV)	Summer	2010	377.25	430.41	514.94	645.71	73.51	87.22	100.74	124.58
C	Madera (SJV)	Summer	2011	377.78	432.35	515.17	646.80	73.49	86.59	100.69	124.83
C	Madera (SJV)	Summer	2012	377.94	433.28	514.98	647.29	73.45	86.21	100.68	125.06
C	Madera (SJV)	Summer	2013	382.01	438.58	520.11	654.78	73.49	85.88	100.68	125.34
C	Madera (SJV)	Summer	2014	382.31	439.41	520.20	655.90	73.49	85.60	100.63	125.63
C	Madera (SJV)	Summer	2015	389.06	447.53	529.15	668.18	73.50	85.34	100.61	125.91
C	Madera (SJV)	Summer	2016	389.25	447.99	529.13	669.19	73.54	85.14	100.62	126.19
C	Madera (SJV)	Summer	2017	389.36	448.39	529.09	670.12	73.53	84.97	100.56	126.47
C	Madera (SJV)	Summer	2018	397.65	458.50	540.25	685.49	73.54	84.94	100.58	126.81
C	Madera (SJV)	Summer	2019	397.83	459.10	540.32	686.62	73.58	84.99	100.61	127.12
C	Madera (SJV)	Summer	2020	397.96	459.58	540.34	687.54	73.67	85.10	100.68	127.40
C	Madera (SJV)	Summer	2021	392.77	453.78	533.14	678.99	73.74	85.25	100.75	127.59
C	Madera (SJV)	Summer	2022	392.78	454.00	533.07	679.41	73.79	85.37	100.81	127.75
C	Madera (SJV)	Summer	2023	392.75	454.19	533.01	679.71	73.81	85.48	100.86	127.94
C	Madera (SJV)	Summer	2024	400.91	463.86	544.13	694.20	73.82	85.58	100.89	128.11
C	Madera (SJV)	Summer	2025	400.90	464.00	544.08	694.41	73.84	85.67	100.92	128.28
C	Madera (SJV)	Summer	2026	411.64	476.53	558.60	713.13	73.86	85.75	100.94	128.40
C	Madera (SJV)	Summer	2027	411.58	476.53	558.44	713.08	73.87	85.81	100.96	128.52
C	Madera (SJV)	Summer	2028	411.54	476.57	558.32	713.10	73.88	85.88	100.97	128.62
C	Madera (SJV)	Summer	2029	411.52	476.66	558.26	713.17	73.89	85.94	100.97	128.71
C	Madera (SJV)	Summer	2030	411.52	476.77	558.22	713.28	73.89	85.99	100.98	128.81
C	Madera (SJV)	Summer	2031	411.48	476.87	558.17	713.41	73.89	86.05	100.98	128.89
C	Madera (SJV)	Summer	2032	411.47	476.97	558.15	713.58	73.90	86.10	100.99	128.97
C	Madera (SJV)	Summer	2033	411.47	477.07	558.17	713.77	73.90	86.14	100.99	129.05
C	Madera (SJV)	Summer	2034	411.48	477.17	558.20	713.98	73.90	86.18	100.99	129.12
C	Madera (SJV)	Summer	2035	411.50	477.24	558.23	714.17	73.91	86.22	101.00	129.18
C	Madera (SJV)	Winter	2010	331.74	382.88	454.86	570.33	73.51	87.22	100.74	124.58
C	Madera (SJV)	Winter	2011	331.82	383.46	454.38	571.21	73.49	86.59	100.69	124.83

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Madera (SJV)	Winter	2012	331.75	383.68	453.87	571.65	73.45	86.21	100.68	125.06
C	Madera (SJV)	Winter	2013	335.14	387.83	458.06	578.08	73.49	85.88	100.68	125.34
C	Madera (SJV)	Winter	2014	335.27	388.17	457.85	578.87	73.49	85.60	100.63	125.63
C	Madera (SJV)	Winter	2015	341.12	395.09	465.56	589.53	73.50	85.34	100.61	125.91
C	Madera (SJV)	Winter	2016	341.26	395.33	465.45	590.23	73.54	85.14	100.62	126.19
C	Madera (SJV)	Winter	2017	341.34	395.55	465.36	590.89	73.53	84.97	100.56	126.47
C	Madera (SJV)	Winter	2018	348.50	404.13	474.98	604.03	73.54	84.94	100.58	126.81
C	Madera (SJV)	Winter	2019	348.58	404.41	474.92	604.69	73.58	84.99	100.61	127.12
C	Madera (SJV)	Winter	2020	348.65	404.64	474.88	605.26	73.67	85.10	100.68	127.40
C	Madera (SJV)	Winter	2021	344.13	399.50	468.60	597.66	73.74	85.25	100.75	127.59
C	Madera (SJV)	Winter	2022	344.15	399.65	468.56	597.97	73.79	85.37	100.81	127.75
C	Madera (SJV)	Winter	2023	344.14	399.77	468.53	598.22	73.81	85.48	100.86	127.94
C	Madera (SJV)	Winter	2024	351.28	408.23	478.31	610.95	73.82	85.58	100.89	128.11
C	Madera (SJV)	Winter	2025	351.28	408.32	478.29	611.17	73.84	85.67	100.92	128.28
C	Madera (SJV)	Winter	2026	360.78	419.47	491.24	627.89	73.86	85.75	100.94	128.40
C	Madera (SJV)	Winter	2027	360.79	419.54	491.22	628.04	73.87	85.81	100.96	128.52
C	Madera (SJV)	Winter	2028	360.79	419.61	491.19	628.20	73.88	85.88	100.97	128.62
C	Madera (SJV)	Winter	2029	360.79	419.69	491.17	628.35	73.89	85.94	100.97	128.71
C	Madera (SJV)	Winter	2030	360.78	419.77	491.14	628.51	73.89	85.99	100.98	128.81
C	Madera (SJV)	Winter	2031	360.78	419.85	491.13	628.67	73.89	86.05	100.98	128.89
C	Madera (SJV)	Winter	2032	360.78	419.92	491.12	628.84	73.90	86.10	100.99	128.97
C	Madera (SJV)	Winter	2033	360.78	419.98	491.11	628.98	73.90	86.14	100.99	129.05
C	Madera (SJV)	Winter	2034	360.77	420.04	491.10	629.12	73.90	86.18	100.99	129.12
C	Madera (SJV)	Winter	2035	360.77	420.08	491.09	629.23	73.91	86.22	101.00	129.18
C	Marin (SF)	Annual	2010	342.06	393.30	467.93	590.43	73.01	84.53	99.43	125.07
C	Marin (SF)	Annual	2011	342.19	393.69	467.77	590.87	73.00	84.35	99.51	125.23
C	Marin (SF)	Annual	2012	342.32	394.10	467.65	591.38	72.98	84.26	99.63	125.42
C	Marin (SF)	Annual	2013	342.52	394.50	467.56	591.92	73.04	84.24	99.74	125.62
C	Marin (SF)	Annual	2014	342.70	394.88	467.49	592.49	73.06	84.22	99.85	125.83
C	Marin (SF)	Annual	2015	342.90	395.23	467.44	593.06	73.12	84.21	99.96	126.06
C	Marin (SF)	Annual	2016	343.09	395.61	467.41	593.61	73.20	84.24	100.07	126.29
C	Marin (SF)	Annual	2017	343.23	395.96	467.38	594.14	73.23	84.30	100.16	126.53
C	Marin (SF)	Annual	2018	343.35	396.28	467.37	594.61	73.26	84.37	100.27	126.75
C	Marin (SF)	Annual	2019	343.45	396.57	467.36	595.01	73.29	84.48	100.36	126.95
C	Marin (SF)	Annual	2020	343.56	396.84	467.35	595.38	73.40	84.63	100.46	127.14
C	Marin (SF)	Annual	2021	343.62	397.07	467.35	595.68	73.47	84.79	100.55	127.29
C	Marin (SF)	Annual	2022	343.67	397.28	467.34	595.93	73.53	84.93	100.63	127.41
C	Marin (SF)	Annual	2023	343.68	397.44	467.33	596.13	73.56	85.05	100.70	127.57
C	Marin (SF)	Annual	2024	343.65	397.57	467.32	596.28	73.58	85.16	100.76	127.71
C	Marin (SF)	Annual	2025	343.63	397.68	467.31	596.44	73.60	85.26	100.80	127.85
C	Marin (SF)	Annual	2026	343.66	397.83	467.29	596.62	73.62	85.36	100.84	127.99
C	Marin (SF)	Annual	2027	343.67	397.97	467.27	596.79	73.64	85.45	100.87	128.12
C	Marin (SF)	Annual	2028	343.67	398.11	467.25	596.97	73.65	85.53	100.89	128.24
C	Marin (SF)	Annual	2029	343.67	398.26	467.22	597.14	73.66	85.62	100.91	128.35
C	Marin (SF)	Annual	2030	343.66	398.41	467.19	597.32	73.66	85.69	100.92	128.46
C	Marin (SF)	Annual	2031	343.65	398.57	467.18	597.51	73.67	85.77	100.93	128.56
C	Marin (SF)	Annual	2032	343.65	398.71	467.17	597.70	73.67	85.85	100.94	128.66
C	Marin (SF)	Annual	2033	343.65	398.85	467.16	597.87	73.68	85.91	100.95	128.75
C	Marin (SF)	Annual	2034	343.65	398.97	467.15	598.03	73.68	85.98	100.95	128.84
C	Marin (SF)	Annual	2035	343.64	399.07	467.13	598.17	73.69	86.03	100.96	128.92
C	Marin (SF)	Summer	2010	368.58	421.04	503.41	635.07	73.01	84.53	99.43	125.07
C	Marin (SF)	Summer	2011	368.87	421.79	503.29	635.34	73.00	84.35	99.51	125.23
C	Marin (SF)	Summer	2012	369.13	422.49	503.22	635.76	72.98	84.26	99.63	125.42
C	Marin (SF)	Summer	2013	369.44	423.14	503.19	636.29	73.04	84.24	99.74	125.62

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Marin (SF)	Summer	2014	369.69	423.73	503.20	636.91	73.06	84.22	99.85	125.83
C	Marin (SF)	Summer	2015	369.95	424.26	503.22	637.60	73.12	84.21	99.96	126.06
C	Marin (SF)	Summer	2016	370.19	424.82	503.26	638.30	73.20	84.24	100.07	126.29
C	Marin (SF)	Summer	2017	370.35	425.34	503.30	638.99	73.23	84.30	100.16	126.53
C	Marin (SF)	Summer	2018	370.48	425.80	503.31	639.59	73.26	84.37	100.27	126.75
C	Marin (SF)	Summer	2019	370.59	426.19	503.33	640.09	73.29	84.48	100.36	126.95
C	Marin (SF)	Summer	2020	370.71	426.55	503.34	640.55	73.40	84.63	100.46	127.14
C	Marin (SF)	Summer	2021	370.77	426.87	503.34	640.93	73.47	84.79	100.55	127.29
C	Marin (SF)	Summer	2022	370.82	427.15	503.33	641.26	73.53	84.93	100.63	127.41
C	Marin (SF)	Summer	2023	370.83	427.37	503.31	641.51	73.56	85.05	100.70	127.57
C	Marin (SF)	Summer	2024	370.80	427.56	503.29	641.70	73.58	85.16	100.76	127.71
C	Marin (SF)	Summer	2025	370.79	427.73	503.27	641.88	73.60	85.26	100.80	127.85
C	Marin (SF)	Summer	2026	370.81	427.93	503.25	642.10	73.62	85.36	100.84	127.99
C	Marin (SF)	Summer	2027	370.83	428.12	503.22	642.29	73.64	85.45	100.87	128.12
C	Marin (SF)	Summer	2028	370.84	428.32	503.19	642.48	73.65	85.53	100.89	128.24
C	Marin (SF)	Summer	2029	370.84	428.53	503.16	642.68	73.66	85.62	100.91	128.35
C	Marin (SF)	Summer	2030	370.84	428.74	503.14	642.87	73.66	85.69	100.92	128.46
C	Marin (SF)	Summer	2031	370.84	428.96	503.13	643.08	73.67	85.77	100.93	128.56
C	Marin (SF)	Summer	2032	370.84	429.15	503.12	643.29	73.67	85.85	100.94	128.66
C	Marin (SF)	Summer	2033	370.85	429.32	503.11	643.48	73.68	85.91	100.95	128.75
C	Marin (SF)	Summer	2034	370.85	429.47	503.10	643.67	73.68	85.98	100.95	128.84
C	Marin (SF)	Summer	2035	370.85	429.59	503.09	643.84	73.69	86.03	100.96	128.92
C	Marin (SF)	Winter	2010	340.33	391.50	465.62	587.52	73.01	84.53	99.43	125.07
C	Marin (SF)	Winter	2011	340.45	391.86	465.46	587.97	73.00	84.35	99.51	125.23
C	Marin (SF)	Winter	2012	340.57	392.25	465.34	588.49	72.98	84.26	99.63	125.42
C	Marin (SF)	Winter	2013	340.77	392.64	465.24	589.03	73.04	84.24	99.74	125.62
C	Marin (SF)	Winter	2014	340.94	393.00	465.17	589.60	73.06	84.22	99.85	125.83
C	Marin (SF)	Winter	2015	341.14	393.34	465.11	590.16	73.12	84.21	99.96	126.06
C	Marin (SF)	Winter	2016	341.33	393.70	465.07	590.70	73.20	84.24	100.07	126.29
C	Marin (SF)	Winter	2017	341.47	394.05	465.04	591.22	73.23	84.30	100.16	126.53
C	Marin (SF)	Winter	2018	341.58	394.36	465.03	591.68	73.26	84.37	100.27	126.75
C	Marin (SF)	Winter	2019	341.68	394.64	465.02	592.08	73.29	84.48	100.36	126.95
C	Marin (SF)	Winter	2020	341.80	394.90	465.01	592.44	73.40	84.63	100.46	127.14
C	Marin (SF)	Winter	2021	341.86	395.13	465.01	592.73	73.47	84.79	100.55	127.29
C	Marin (SF)	Winter	2022	341.91	395.34	465.00	592.98	73.53	84.93	100.63	127.41
C	Marin (SF)	Winter	2023	341.91	395.49	464.99	593.17	73.56	85.05	100.70	127.57
C	Marin (SF)	Winter	2024	341.88	395.61	464.98	593.32	73.58	85.16	100.76	127.71
C	Marin (SF)	Winter	2025	341.87	395.73	464.97	593.48	73.60	85.26	100.80	127.85
C	Marin (SF)	Winter	2026	341.89	395.87	464.95	593.66	73.62	85.36	100.84	127.99
C	Marin (SF)	Winter	2027	341.90	396.01	464.93	593.83	73.64	85.45	100.87	128.12
C	Marin (SF)	Winter	2028	341.90	396.15	464.91	594.00	73.65	85.53	100.89	128.24
C	Marin (SF)	Winter	2029	341.90	396.29	464.88	594.18	73.66	85.62	100.91	128.35
C	Marin (SF)	Winter	2030	341.89	396.44	464.85	594.35	73.66	85.69	100.92	128.46
C	Marin (SF)	Winter	2031	341.88	396.59	464.84	594.54	73.67	85.77	100.93	128.56
C	Marin (SF)	Winter	2032	341.88	396.73	464.83	594.73	73.67	85.85	100.94	128.66
C	Marin (SF)	Winter	2033	341.88	396.86	464.82	594.90	73.68	85.91	100.95	128.75
C	Marin (SF)	Winter	2034	341.88	396.98	464.80	595.06	73.68	85.98	100.95	128.84
C	Marin (SF)	Winter	2035	341.87	397.09	464.79	595.20	73.69	86.03	100.96	128.92
C	Mariposa (MC)	Annual	2010	354.50	410.51	485.83	607.63	74.37	89.51	102.09	125.68
C	Mariposa (MC)	Annual	2011	354.40	410.55	485.11	608.19	74.22	88.77	101.86	125.71
C	Mariposa (MC)	Annual	2012	354.31	410.56	484.54	608.86	74.03	88.15	101.71	125.79
C	Mariposa (MC)	Annual	2013	354.36	410.52	484.09	609.60	73.97	87.50	101.57	125.92
C	Mariposa (MC)	Annual	2014	354.33	410.46	483.72	610.33	73.82	86.87	101.30	126.07
C	Mariposa (MC)	Annual	2015	354.43	410.47	483.42	611.09	73.83	86.45	101.16	126.26

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mariposa (MC)	Annual	2016	354.48	410.49	483.19	611.81	73.80	86.11	101.08	126.48
C	Mariposa (MC)	Annual	2017	354.51	410.47	483.00	612.49	73.77	85.68	101.00	126.70
C	Mariposa (MC)	Annual	2018	354.51	410.48	482.83	613.06	73.71	85.43	100.90	126.90
C	Mariposa (MC)	Annual	2019	354.47	410.55	482.70	613.53	73.61	85.35	100.87	127.11
C	Mariposa (MC)	Annual	2020	354.41	410.60	482.59	613.96	73.65	85.32	100.89	127.30
C	Mariposa (MC)	Annual	2021	354.35	410.60	482.48	614.20	73.67	85.35	100.93	127.34
C	Mariposa (MC)	Annual	2022	354.26	410.63	482.35	614.40	73.67	85.40	100.94	127.39
C	Mariposa (MC)	Annual	2023	354.08	410.62	482.24	614.56	73.64	85.42	100.94	127.56
C	Mariposa (MC)	Annual	2024	353.92	410.60	482.16	614.67	73.60	85.46	100.96	127.71
C	Mariposa (MC)	Annual	2025	353.86	410.66	482.10	614.79	73.60	85.52	100.99	127.87
C	Mariposa (MC)	Annual	2026	353.86	410.81	482.03	614.95	73.62	85.62	101.00	128.02
C	Mariposa (MC)	Annual	2027	353.86	410.93	481.97	615.12	73.63	85.71	101.01	128.16
C	Mariposa (MC)	Annual	2028	353.85	411.06	481.91	615.29	73.64	85.79	101.02	128.29
C	Mariposa (MC)	Annual	2029	353.83	411.19	481.84	615.47	73.64	85.87	101.02	128.41
C	Mariposa (MC)	Annual	2030	353.81	411.31	481.77	615.62	73.64	85.94	101.01	128.52
C	Mariposa (MC)	Annual	2031	353.81	411.44	481.74	615.85	73.65	86.01	101.01	128.65
C	Mariposa (MC)	Annual	2032	353.80	411.54	481.71	616.07	73.65	86.08	101.02	128.76
C	Mariposa (MC)	Annual	2033	353.80	411.63	481.68	616.27	73.66	86.13	101.02	128.86
C	Mariposa (MC)	Annual	2034	353.79	411.70	481.65	616.45	73.66	86.19	101.02	128.96
C	Mariposa (MC)	Annual	2035	353.78	411.77	481.63	616.61	73.67	86.23	101.02	129.05
C	Mariposa (MC)	Summer	2010	383.75	439.08	524.10	654.73	74.37	89.51	102.09	125.68
C	Mariposa (MC)	Summer	2011	383.98	440.10	523.79	655.48	74.22	88.77	101.86	125.71
C	Mariposa (MC)	Summer	2012	384.14	440.90	523.54	656.41	74.03	88.15	101.71	125.79
C	Mariposa (MC)	Summer	2013	384.37	441.53	523.38	657.50	73.97	87.50	101.57	125.92
C	Mariposa (MC)	Summer	2014	384.48	442.00	523.29	658.57	73.82	86.87	101.30	126.07
C	Mariposa (MC)	Summer	2015	384.66	442.44	523.21	659.71	73.83	86.45	101.16	126.26
C	Mariposa (MC)	Summer	2016	384.77	442.80	523.13	660.80	73.80	86.11	101.08	126.48
C	Mariposa (MC)	Summer	2017	384.83	443.08	523.05	661.80	73.77	85.68	101.00	126.70
C	Mariposa (MC)	Summer	2018	384.83	443.32	522.95	662.65	73.71	85.43	100.90	126.90
C	Mariposa (MC)	Summer	2019	384.80	443.56	522.85	663.34	73.61	85.35	100.87	127.11
C	Mariposa (MC)	Summer	2020	384.74	443.78	522.76	663.97	73.65	85.32	100.89	127.30
C	Mariposa (MC)	Summer	2021	384.68	443.93	522.65	664.40	73.67	85.35	100.93	127.34
C	Mariposa (MC)	Summer	2022	384.58	444.09	522.56	664.75	73.67	85.40	100.94	127.39
C	Mariposa (MC)	Summer	2023	384.42	444.21	522.47	665.02	73.64	85.42	100.94	127.56
C	Mariposa (MC)	Summer	2024	384.29	444.31	522.40	665.20	73.60	85.46	100.96	127.71
C	Mariposa (MC)	Summer	2025	384.24	444.44	522.34	665.37	73.60	85.52	100.99	127.87
C	Mariposa (MC)	Summer	2026	384.25	444.68	522.29	665.56	73.62	85.62	101.00	128.02
C	Mariposa (MC)	Summer	2027	384.26	444.88	522.24	665.76	73.63	85.71	101.01	128.16
C	Mariposa (MC)	Summer	2028	384.26	445.08	522.20	665.98	73.64	85.79	101.02	128.29
C	Mariposa (MC)	Summer	2029	384.26	445.29	522.15	666.20	73.64	85.87	101.02	128.41
C	Mariposa (MC)	Summer	2030	384.25	445.48	522.11	666.42	73.64	85.94	101.01	128.52
C	Mariposa (MC)	Summer	2031	384.25	445.67	522.08	666.71	73.65	86.01	101.01	128.65
C	Mariposa (MC)	Summer	2032	384.25	445.81	522.06	667.00	73.65	86.08	101.02	128.76
C	Mariposa (MC)	Summer	2033	384.25	445.93	522.04	667.26	73.66	86.13	101.02	128.86
C	Mariposa (MC)	Summer	2034	384.24	446.03	522.02	667.49	73.66	86.19	101.02	128.96
C	Mariposa (MC)	Summer	2035	384.23	446.10	521.99	667.70	73.67	86.23	101.02	129.05
C	Mariposa (MC)	Winter	2010	347.30	403.48	476.41	596.03	74.37	89.51	102.09	125.68
C	Mariposa (MC)	Winter	2011	347.12	403.27	475.59	596.55	74.22	88.77	101.86	125.71
C	Mariposa (MC)	Winter	2012	346.97	403.10	474.94	597.15	74.03	88.15	101.71	125.79
C	Mariposa (MC)	Winter	2013	346.97	402.89	474.42	597.81	73.97	87.50	101.57	125.92
C	Mariposa (MC)	Winter	2014	346.91	402.69	473.97	598.45	73.82	86.87	101.30	126.07
C	Mariposa (MC)	Winter	2015	346.99	402.60	473.63	599.12	73.83	86.45	101.16	126.26
C	Mariposa (MC)	Winter	2016	347.02	402.54	473.35	599.75	73.80	86.11	101.08	126.48
C	Mariposa (MC)	Winter	2017	347.05	402.44	473.14	600.35	73.77	85.68	101.00	126.70

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mariposa (MC)	Winter	2018	347.05	402.40	472.95	600.86	73.71	85.43	100.90	126.90
C	Mariposa (MC)	Winter	2019	347.00	402.43	472.82	601.27	73.61	85.35	100.87	127.11
C	Mariposa (MC)	Winter	2020	346.95	402.43	472.71	601.65	73.65	85.32	100.89	127.30
C	Mariposa (MC)	Winter	2021	346.89	402.39	472.58	601.84	73.67	85.35	100.93	127.34
C	Mariposa (MC)	Winter	2022	346.79	402.39	472.45	602.00	73.67	85.40	100.94	127.39
C	Mariposa (MC)	Winter	2023	346.62	402.35	472.34	602.13	73.64	85.42	100.94	127.56
C	Mariposa (MC)	Winter	2024	346.44	402.31	472.26	602.23	73.60	85.46	100.96	127.71
C	Mariposa (MC)	Winter	2025	346.39	402.35	472.20	602.34	73.60	85.52	100.99	127.87
C	Mariposa (MC)	Winter	2026	346.39	402.47	472.12	602.49	73.62	85.62	101.00	128.02
C	Mariposa (MC)	Winter	2027	346.37	402.58	472.05	602.65	73.63	85.71	101.01	128.16
C	Mariposa (MC)	Winter	2028	346.37	402.69	472.00	602.81	73.64	85.79	101.02	128.29
C	Mariposa (MC)	Winter	2029	346.35	402.80	471.92	602.98	73.64	85.87	101.02	128.41
C	Mariposa (MC)	Winter	2030	346.32	402.90	471.85	603.12	73.64	85.94	101.01	128.52
C	Mariposa (MC)	Winter	2031	346.31	403.01	471.81	603.33	73.65	86.01	101.01	128.65
C	Mariposa (MC)	Winter	2032	346.31	403.10	471.78	603.54	73.65	86.08	101.02	128.76
C	Mariposa (MC)	Winter	2033	346.30	403.18	471.75	603.72	73.66	86.13	101.02	128.86
C	Mariposa (MC)	Winter	2034	346.29	403.25	471.72	603.89	73.66	86.19	101.02	128.96
C	Mariposa (MC)	Winter	2035	346.28	403.31	471.70	604.03	73.67	86.23	101.02	129.05
C	Mendocino-Coastal	Annual	2010	328.61	379.07	451.10	562.37	72.79	86.74	100.94	123.79
C	Mendocino-Coastal	Annual	2011	328.64	379.33	450.55	563.04	72.74	86.20	100.83	123.99
C	Mendocino-Coastal	Annual	2012	328.71	379.62	450.13	563.82	72.71	85.88	100.79	124.25
C	Mendocino-Coastal	Annual	2013	328.81	379.86	449.78	564.69	72.69	85.57	100.77	124.53
C	Mendocino-Coastal	Annual	2014	328.91	380.10	449.50	565.53	72.66	85.38	100.70	124.83
C	Mendocino-Coastal	Annual	2015	329.05	380.33	449.28	566.42	72.71	85.22	100.68	125.15
C	Mendocino-Coastal	Annual	2016	329.20	380.54	449.10	567.26	72.78	85.05	100.67	125.47
C	Mendocino-Coastal	Annual	2017	329.29	380.71	448.96	568.05	72.79	84.90	100.65	125.80
C	Mendocino-Coastal	Annual	2018	329.36	380.86	448.84	568.75	72.80	84.79	100.64	126.10
C	Mendocino-Coastal	Annual	2019	329.41	381.04	448.75	569.35	72.81	84.81	100.66	126.39
C	Mendocino-Coastal	Annual	2020	329.46	381.20	448.68	569.87	72.90	84.89	100.71	126.66
C	Mendocino-Coastal	Annual	2021	329.47	381.32	448.60	570.28	72.95	85.00	100.77	126.88
C	Mendocino-Coastal	Annual	2022	329.44	381.41	448.52	570.63	72.98	85.10	100.81	127.08
C	Mendocino-Coastal	Annual	2023	329.37	381.48	448.45	570.90	72.99	85.18	100.85	127.29
C	Mendocino-Coastal	Annual	2024	329.30	381.52	448.37	571.09	72.98	85.26	100.87	127.48
C	Mendocino-Coastal	Annual	2025	329.26	381.61	448.33	571.27	72.99	85.36	100.90	127.65
C	Mendocino-Coastal	Annual	2026	329.27	381.77	448.27	571.47	73.01	85.47	100.93	127.81
C	Mendocino-Coastal	Annual	2027	329.27	381.91	448.22	571.68	73.03	85.57	100.94	127.97
C	Mendocino-Coastal	Annual	2028	329.27	382.05	448.17	571.89	73.03	85.66	100.96	128.11
C	Mendocino-Coastal	Annual	2029	329.25	382.19	448.10	572.09	73.04	85.75	100.95	128.24
C	Mendocino-Coastal	Annual	2030	329.24	382.33	448.03	572.30	73.04	85.83	100.95	128.37
C	Mendocino-Coastal	Annual	2031	329.23	382.47	448.00	572.53	73.05	85.91	100.96	128.50
C	Mendocino-Coastal	Annual	2032	329.23	382.60	447.97	572.77	73.06	85.98	100.96	128.62
C	Mendocino-Coastal	Annual	2033	329.22	382.71	447.95	572.98	73.06	86.05	100.96	128.73
C	Mendocino-Coastal	Annual	2034	329.22	382.81	447.93	573.17	73.07	86.11	100.97	128.83
C	Mendocino-Coastal	Annual	2035	329.21	382.89	447.91	573.33	73.07	86.16	100.97	128.93
C	Mendocino-Coastal	Summer	2010	335.50	385.93	460.22	573.75	72.79	86.74	100.94	123.79
C	Mendocino-Coastal	Summer	2011	335.60	386.40	459.76	574.44	72.74	86.20	100.83	123.99
C	Mendocino-Coastal	Summer	2012	335.73	386.85	459.39	575.26	72.71	85.88	100.79	124.25
C	Mendocino-Coastal	Summer	2013	335.88	387.22	459.11	576.18	72.69	85.57	100.77	124.53
C	Mendocino-Coastal	Summer	2014	336.01	387.57	458.87	577.08	72.66	85.38	100.70	124.83
C	Mendocino-Coastal	Summer	2015	336.17	387.90	458.70	578.04	72.71	85.22	100.68	125.15
C	Mendocino-Coastal	Summer	2016	336.34	388.18	458.56	578.96	72.78	85.05	100.67	125.47
C	Mendocino-Coastal	Summer	2017	336.43	388.42	458.43	579.82	72.79	84.90	100.65	125.80
C	Mendocino-Coastal	Summer	2018	336.49	388.62	458.33	580.57	72.80	84.79	100.64	126.10
C	Mendocino-Coastal	Summer	2019	336.54	388.83	458.25	581.22	72.81	84.81	100.66	126.39

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mendocino-Coastal	Summer	2020	336.59	389.03	458.18	581.78	72.90	84.89	100.71	126.66
C	Mendocino-Coastal	Summer	2021	336.60	389.18	458.11	582.21	72.95	85.00	100.77	126.88
C	Mendocino-Coastal	Summer	2022	336.57	389.31	458.03	582.59	72.98	85.10	100.81	127.08
C	Mendocino-Coastal	Summer	2023	336.50	389.40	457.96	582.88	72.99	85.18	100.85	127.29
C	Mendocino-Coastal	Summer	2024	336.43	389.46	457.89	583.08	72.98	85.26	100.87	127.48
C	Mendocino-Coastal	Summer	2025	336.39	389.57	457.85	583.26	72.99	85.36	100.90	127.65
C	Mendocino-Coastal	Summer	2026	336.40	389.75	457.79	583.47	73.01	85.47	100.93	127.81
C	Mendocino-Coastal	Summer	2027	336.41	389.91	457.74	583.68	73.03	85.57	100.94	127.97
C	Mendocino-Coastal	Summer	2028	336.41	390.07	457.70	583.89	73.03	85.66	100.96	128.11
C	Mendocino-Coastal	Summer	2029	336.40	390.24	457.63	584.11	73.04	85.75	100.95	128.24
C	Mendocino-Coastal	Summer	2030	336.39	390.39	457.57	584.32	73.04	85.83	100.95	128.37
C	Mendocino-Coastal	Summer	2031	336.39	390.55	457.53	584.57	73.05	85.91	100.96	128.50
C	Mendocino-Coastal	Summer	2032	336.38	390.69	457.51	584.82	73.06	85.98	100.96	128.62
C	Mendocino-Coastal	Summer	2033	336.38	390.81	457.48	585.05	73.06	86.05	100.96	128.73
C	Mendocino-Coastal	Summer	2034	336.37	390.92	457.46	585.25	73.07	86.11	100.97	128.83
C	Mendocino-Coastal	Summer	2035	336.36	391.01	457.44	585.42	73.07	86.16	100.97	128.93
C	Mendocino-Coastal	Winter	2010	325.36	375.84	446.80	556.99	72.79	86.74	100.94	123.79
C	Mendocino-Coastal	Winter	2011	325.35	375.99	446.21	557.66	72.74	86.20	100.83	123.99
C	Mendocino-Coastal	Winter	2012	325.39	376.21	445.75	558.43	72.71	85.88	100.79	124.25
C	Mendocino-Coastal	Winter	2013	325.47	376.38	445.38	559.27	72.69	85.57	100.77	124.53
C	Mendocino-Coastal	Winter	2014	325.56	376.57	445.08	560.08	72.66	85.38	100.70	124.83
C	Mendocino-Coastal	Winter	2015	325.69	376.77	444.84	560.93	72.71	85.22	100.68	125.15
C	Mendocino-Coastal	Winter	2016	325.84	376.93	444.64	561.74	72.78	85.05	100.67	125.47
C	Mendocino-Coastal	Winter	2017	325.92	377.08	444.49	562.50	72.79	84.90	100.65	125.80
C	Mendocino-Coastal	Winter	2018	325.99	377.20	444.36	563.17	72.80	84.79	100.64	126.10
C	Mendocino-Coastal	Winter	2019	326.04	377.36	444.27	563.75	72.81	84.81	100.66	126.39
C	Mendocino-Coastal	Winter	2020	326.10	377.51	444.20	564.26	72.90	84.89	100.71	126.66
C	Mendocino-Coastal	Winter	2021	326.10	377.61	444.12	564.65	72.95	85.00	100.77	126.88
C	Mendocino-Coastal	Winter	2022	326.08	377.69	444.04	564.99	72.98	85.10	100.81	127.08
C	Mendocino-Coastal	Winter	2023	326.01	377.75	443.96	565.25	72.99	85.18	100.85	127.29
C	Mendocino-Coastal	Winter	2024	325.93	377.77	443.88	565.44	72.98	85.26	100.87	127.48
C	Mendocino-Coastal	Winter	2025	325.89	377.86	443.83	565.61	72.99	85.36	100.90	127.65
C	Mendocino-Coastal	Winter	2026	325.90	378.00	443.78	565.81	73.01	85.47	100.93	127.81
C	Mendocino-Coastal	Winter	2027	325.90	378.13	443.72	566.01	73.03	85.57	100.94	127.97
C	Mendocino-Coastal	Winter	2028	325.90	378.27	443.68	566.22	73.03	85.66	100.96	128.11
C	Mendocino-Coastal	Winter	2029	325.88	378.40	443.60	566.42	73.04	85.75	100.95	128.24
C	Mendocino-Coastal	Winter	2030	325.86	378.53	443.54	566.62	73.04	85.83	100.95	128.37
C	Mendocino-Coastal	Winter	2031	325.86	378.66	443.50	566.86	73.05	85.91	100.96	128.50
C	Mendocino-Coastal	Winter	2032	325.85	378.78	443.47	567.09	73.06	85.98	100.96	128.62
C	Mendocino-Coastal	Winter	2033	325.85	378.89	443.45	567.29	73.06	86.05	100.96	128.73
C	Mendocino-Coastal	Winter	2034	325.84	378.99	443.43	567.47	73.07	86.11	100.97	128.83
C	Mendocino-Coastal	Winter	2035	325.83	379.07	443.41	567.63	73.07	86.16	100.97	128.93
C	Mendocino-Inland	Annual	2010	328.61	379.07	451.10	562.37	72.79	86.74	100.94	123.79
C	Mendocino-Inland	Annual	2011	328.64	379.33	450.55	563.04	72.74	86.20	100.83	123.99
C	Mendocino-Inland	Annual	2012	328.71	379.62	450.13	563.82	72.71	85.88	100.79	124.25
C	Mendocino-Inland	Annual	2013	328.81	379.86	449.78	564.69	72.69	85.57	100.77	124.53
C	Mendocino-Inland	Annual	2014	328.91	380.10	449.50	565.53	72.66	85.38	100.70	124.83
C	Mendocino-Inland	Annual	2015	329.05	380.33	449.28	566.42	72.71	85.22	100.68	125.15
C	Mendocino-Inland	Annual	2016	329.20	380.54	449.10	567.26	72.78	85.05	100.67	125.47
C	Mendocino-Inland	Annual	2017	329.29	380.71	448.96	568.05	72.79	84.90	100.65	125.80
C	Mendocino-Inland	Annual	2018	329.36	380.86	448.84	568.75	72.80	84.79	100.64	126.10
C	Mendocino-Inland	Annual	2019	329.41	381.04	448.75	569.35	72.81	84.81	100.66	126.39
C	Mendocino-Inland	Annual	2020	329.46	381.20	448.68	569.87	72.90	84.89	100.71	126.66
C	Mendocino-Inland	Annual	2021	329.47	381.32	448.60	570.28	72.95	85.00	100.77	126.88

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mendocino-Inland	Annual	2022	329.44	381.41	448.52	570.63	72.98	85.10	100.81	127.08
C	Mendocino-Inland	Annual	2023	329.37	381.48	448.45	570.90	72.99	85.18	100.85	127.29
C	Mendocino-Inland	Annual	2024	329.30	381.52	448.37	571.09	72.98	85.26	100.87	127.48
C	Mendocino-Inland	Annual	2025	329.26	381.61	448.33	571.27	72.99	85.36	100.90	127.65
C	Mendocino-Inland	Annual	2026	329.27	381.77	448.27	571.47	73.01	85.47	100.93	127.81
C	Mendocino-Inland	Annual	2027	329.27	381.91	448.22	571.68	73.03	85.57	100.94	127.97
C	Mendocino-Inland	Annual	2028	329.27	382.05	448.17	571.89	73.03	85.66	100.96	128.11
C	Mendocino-Inland	Annual	2029	329.25	382.19	448.10	572.09	73.04	85.75	100.95	128.24
C	Mendocino-Inland	Annual	2030	329.24	382.33	448.03	572.30	73.04	85.83	100.95	128.37
C	Mendocino-Inland	Annual	2031	329.23	382.47	448.00	572.53	73.05	85.91	100.96	128.50
C	Mendocino-Inland	Annual	2032	329.23	382.60	447.97	572.77	73.06	85.98	100.96	128.62
C	Mendocino-Inland	Annual	2033	329.22	382.71	447.95	572.98	73.06	86.05	100.96	128.73
C	Mendocino-Inland	Annual	2034	329.22	382.81	447.93	573.17	73.07	86.11	100.97	128.83
C	Mendocino-Inland	Annual	2035	329.21	382.89	447.91	573.33	73.07	86.16	100.97	128.93
C	Mendocino-Inland	Summer	2010	335.50	385.93	460.22	573.75	72.79	86.74	100.94	123.79
C	Mendocino-Inland	Summer	2011	335.60	386.40	459.76	574.44	72.74	86.20	100.83	123.99
C	Mendocino-Inland	Summer	2012	335.73	386.85	459.39	575.26	72.71	85.88	100.79	124.25
C	Mendocino-Inland	Summer	2013	335.88	387.22	459.11	576.18	72.69	85.57	100.77	124.53
C	Mendocino-Inland	Summer	2014	336.01	387.57	458.87	577.08	72.66	85.38	100.70	124.83
C	Mendocino-Inland	Summer	2015	336.17	387.90	458.70	578.04	72.71	85.22	100.68	125.15
C	Mendocino-Inland	Summer	2016	336.34	388.18	458.56	578.96	72.78	85.05	100.67	125.47
C	Mendocino-Inland	Summer	2017	336.43	388.42	458.43	579.82	72.79	84.90	100.65	125.80
C	Mendocino-Inland	Summer	2018	336.49	388.62	458.33	580.57	72.80	84.79	100.64	126.10
C	Mendocino-Inland	Summer	2019	336.54	388.83	458.25	581.22	72.81	84.81	100.66	126.39
C	Mendocino-Inland	Summer	2020	336.59	389.03	458.18	581.78	72.90	84.89	100.71	126.66
C	Mendocino-Inland	Summer	2021	336.60	389.18	458.11	582.21	72.95	85.00	100.77	126.88
C	Mendocino-Inland	Summer	2022	336.57	389.31	458.03	582.59	72.98	85.10	100.81	127.08
C	Mendocino-Inland	Summer	2023	336.50	389.40	457.96	582.88	72.99	85.18	100.85	127.29
C	Mendocino-Inland	Summer	2024	336.43	389.46	457.89	583.08	72.98	85.26	100.87	127.48
C	Mendocino-Inland	Summer	2025	336.39	389.57	457.85	583.26	72.99	85.36	100.90	127.65
C	Mendocino-Inland	Summer	2026	336.40	389.75	457.79	583.47	73.01	85.47	100.93	127.81
C	Mendocino-Inland	Summer	2027	336.41	389.91	457.74	583.68	73.03	85.57	100.94	127.97
C	Mendocino-Inland	Summer	2028	336.41	390.07	457.70	583.89	73.03	85.66	100.96	128.11
C	Mendocino-Inland	Summer	2029	336.40	390.24	457.63	584.11	73.04	85.75	100.95	128.24
C	Mendocino-Inland	Summer	2030	336.39	390.39	457.57	584.32	73.04	85.83	100.95	128.37
C	Mendocino-Inland	Summer	2031	336.39	390.55	457.53	584.57	73.05	85.91	100.96	128.50
C	Mendocino-Inland	Summer	2032	336.38	390.69	457.51	584.82	73.06	85.98	100.96	128.62
C	Mendocino-Inland	Summer	2033	336.38	390.81	457.48	585.05	73.06	86.05	100.96	128.73
C	Mendocino-Inland	Summer	2034	336.37	390.92	457.46	585.25	73.07	86.11	100.97	128.83
C	Mendocino-Inland	Summer	2035	336.36	391.01	457.44	585.42	73.07	86.16	100.97	128.93
C	Mendocino-Inland	Winter	2010	325.36	375.84	446.80	556.99	72.79	86.74	100.94	123.79
C	Mendocino-Inland	Winter	2011	325.35	375.99	446.21	557.66	72.74	86.20	100.83	123.99
C	Mendocino-Inland	Winter	2012	325.39	376.21	445.75	558.43	72.71	85.88	100.79	124.25
C	Mendocino-Inland	Winter	2013	325.47	376.38	445.38	559.27	72.69	85.57	100.77	124.53
C	Mendocino-Inland	Winter	2014	325.56	376.57	445.08	560.08	72.66	85.38	100.70	124.83
C	Mendocino-Inland	Winter	2015	325.69	376.77	444.84	560.93	72.71	85.22	100.68	125.15
C	Mendocino-Inland	Winter	2016	325.84	376.93	444.64	561.74	72.78	85.05	100.67	125.47
C	Mendocino-Inland	Winter	2017	325.92	377.08	444.49	562.50	72.79	84.90	100.65	125.80
C	Mendocino-Inland	Winter	2018	325.99	377.20	444.36	563.17	72.80	84.79	100.64	126.10
C	Mendocino-Inland	Winter	2019	326.04	377.36	444.27	563.75	72.81	84.81	100.66	126.39
C	Mendocino-Inland	Winter	2020	326.10	377.51	444.20	564.26	72.90	84.89	100.71	126.66
C	Mendocino-Inland	Winter	2021	326.10	377.61	444.12	564.65	72.95	85.00	100.77	126.88
C	Mendocino-Inland	Winter	2022	326.08	377.69	444.04	564.99	72.98	85.10	100.81	127.08
C	Mendocino-Inland	Winter	2023	326.01	377.75	443.96	565.25	72.99	85.18	100.85	127.29

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mendocino-Inland	Winter	2024	325.93	377.77	443.88	565.44	72.98	85.26	100.87	127.48
C	Mendocino-Inland	Winter	2025	325.89	377.86	443.83	565.61	72.99	85.36	100.90	127.65
C	Mendocino-Inland	Winter	2026	325.90	378.00	443.78	565.81	73.01	85.47	100.93	127.81
C	Mendocino-Inland	Winter	2027	325.90	378.13	443.72	566.01	73.03	85.57	100.94	127.97
C	Mendocino-Inland	Winter	2028	325.90	378.27	443.68	566.22	73.03	85.66	100.96	128.11
C	Mendocino-Inland	Winter	2029	325.88	378.40	443.60	566.42	73.04	85.75	100.95	128.24
C	Mendocino-Inland	Winter	2030	325.86	378.53	443.54	566.62	73.04	85.83	100.95	128.37
C	Mendocino-Inland	Winter	2031	325.86	378.66	443.50	566.86	73.05	85.91	100.96	128.50
C	Mendocino-Inland	Winter	2032	325.85	378.78	443.47	567.09	73.06	85.98	100.96	128.62
C	Mendocino-Inland	Winter	2033	325.85	378.89	443.45	567.29	73.06	86.05	100.96	128.73
C	Mendocino-Inland	Winter	2034	325.84	378.99	443.43	567.47	73.07	86.11	100.97	128.83
C	Mendocino-Inland	Winter	2035	325.83	379.07	443.41	567.63	73.07	86.16	100.97	128.93
C	Mendocino-Rural Inland North	Annual	2010	328.61	379.07	451.10	562.37	72.79	86.74	100.94	123.79
C	Mendocino-Rural Inland North	Annual	2011	328.64	379.33	450.55	563.04	72.74	86.20	100.83	123.99
C	Mendocino-Rural Inland North	Annual	2012	328.71	379.62	450.13	563.82	72.71	85.88	100.79	124.25
C	Mendocino-Rural Inland North	Annual	2013	328.81	379.86	449.78	564.69	72.69	85.57	100.77	124.53
C	Mendocino-Rural Inland North	Annual	2014	328.91	380.10	449.50	565.53	72.66	85.38	100.70	124.83
C	Mendocino-Rural Inland North	Annual	2015	329.05	380.33	449.28	566.42	72.71	85.22	100.68	125.15
C	Mendocino-Rural Inland North	Annual	2016	329.20	380.54	449.10	567.26	72.78	85.05	100.67	125.47
C	Mendocino-Rural Inland North	Annual	2017	329.29	380.71	448.96	568.05	72.79	84.90	100.65	125.80
C	Mendocino-Rural Inland North	Annual	2018	329.36	380.86	448.84	568.75	72.80	84.79	100.64	126.10
C	Mendocino-Rural Inland North	Annual	2019	329.41	381.04	448.75	569.35	72.81	84.81	100.66	126.39
C	Mendocino-Rural Inland North	Annual	2020	329.46	381.20	448.68	569.87	72.90	84.89	100.71	126.66
C	Mendocino-Rural Inland North	Annual	2021	329.47	381.32	448.60	570.28	72.95	85.00	100.77	126.88
C	Mendocino-Rural Inland North	Annual	2022	329.44	381.41	448.52	570.63	72.98	85.10	100.81	127.08
C	Mendocino-Rural Inland North	Annual	2023	329.37	381.48	448.45	570.90	72.99	85.18	100.85	127.29
C	Mendocino-Rural Inland North	Annual	2024	329.30	381.52	448.37	571.09	72.98	85.26	100.87	127.48
C	Mendocino-Rural Inland North	Annual	2025	329.26	381.61	448.33	571.27	72.99	85.36	100.90	127.65
C	Mendocino-Rural Inland North	Annual	2026	329.27	381.77	448.27	571.47	73.01	85.47	100.93	127.81
C	Mendocino-Rural Inland North	Annual	2027	329.27	381.91	448.22	571.68	73.03	85.57	100.94	127.97
C	Mendocino-Rural Inland North	Annual	2028	329.27	382.05	448.17	571.89	73.03	85.66	100.96	128.11
C	Mendocino-Rural Inland North	Annual	2029	329.25	382.19	448.10	572.09	73.04	85.75	100.95	128.24
C	Mendocino-Rural Inland North	Annual	2030	329.24	382.33	448.03	572.30	73.04	85.83	100.95	128.37
C	Mendocino-Rural Inland North	Annual	2031	329.23	382.47	448.00	572.53	73.05	85.91	100.96	128.50
C	Mendocino-Rural Inland North	Annual	2032	329.23	382.60	447.97	572.77	73.06	85.98	100.96	128.62
C	Mendocino-Rural Inland North	Annual	2033	329.22	382.71	447.95	572.98	73.06	86.05	100.96	128.73
C	Mendocino-Rural Inland North	Annual	2034	329.22	382.81	447.93	573.17	73.07	86.11	100.97	128.83
C	Mendocino-Rural Inland North	Annual	2035	329.21	382.89	447.91	573.33	73.07	86.16	100.97	128.93
C	Mendocino-Rural Inland North	Summer	2010	335.50	385.93	460.22	573.75	72.79	86.74	100.94	123.79
C	Mendocino-Rural Inland North	Summer	2011	335.60	386.40	459.76	574.44	72.74	86.20	100.83	123.99
C	Mendocino-Rural Inland North	Summer	2012	335.73	386.85	459.39	575.26	72.71	85.88	100.79	124.25
C	Mendocino-Rural Inland North	Summer	2013	335.88	387.22	459.11	576.18	72.69	85.57	100.77	124.53
C	Mendocino-Rural Inland North	Summer	2014	336.01	387.57	458.87	577.08	72.66	85.38	100.70	124.83
C	Mendocino-Rural Inland North	Summer	2015	336.17	387.90	458.70	578.04	72.71	85.22	100.68	125.15
C	Mendocino-Rural Inland North	Summer	2016	336.34	388.18	458.56	578.96	72.78	85.05	100.67	125.47
C	Mendocino-Rural Inland North	Summer	2017	336.43	388.42	458.43	579.82	72.79	84.90	100.65	125.80
C	Mendocino-Rural Inland North	Summer	2018	336.49	388.62	458.33	580.57	72.80	84.79	100.64	126.10
C	Mendocino-Rural Inland North	Summer	2019	336.54	388.83	458.25	581.22	72.81	84.81	100.66	126.39
C	Mendocino-Rural Inland North	Summer	2020	336.59	389.03	458.18	581.78	72.90	84.89	100.71	126.66
C	Mendocino-Rural Inland North	Summer	2021	336.60	389.18	458.11	582.21	72.95	85.00	100.77	126.88
C	Mendocino-Rural Inland North	Summer	2022	336.57	389.31	458.03	582.59	72.98	85.10	100.81	127.08
C	Mendocino-Rural Inland North	Summer	2023	336.50	389.40	457.96	582.88	72.99	85.18	100.85	127.29
C	Mendocino-Rural Inland North	Summer	2024	336.43	389.46	457.89	583.08	72.98	85.26	100.87	127.48
C	Mendocino-Rural Inland North	Summer	2025	336.39	389.57	457.85	583.26	72.99	85.36	100.90	127.65

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mendocino-Rural Inland North	Summer	2026	336.40	389.75	457.79	583.47	73.01	85.47	100.93	127.81
C	Mendocino-Rural Inland North	Summer	2027	336.41	389.91	457.74	583.68	73.03	85.57	100.94	127.97
C	Mendocino-Rural Inland North	Summer	2028	336.41	390.07	457.70	583.89	73.03	85.66	100.96	128.11
C	Mendocino-Rural Inland North	Summer	2029	336.40	390.24	457.63	584.11	73.04	85.75	100.95	128.24
C	Mendocino-Rural Inland North	Summer	2030	336.39	390.39	457.57	584.32	73.04	85.83	100.95	128.37
C	Mendocino-Rural Inland North	Summer	2031	336.39	390.55	457.53	584.57	73.05	85.91	100.96	128.50
C	Mendocino-Rural Inland North	Summer	2032	336.38	390.69	457.51	584.82	73.06	85.98	100.96	128.62
C	Mendocino-Rural Inland North	Summer	2033	336.38	390.81	457.48	585.05	73.06	86.05	100.96	128.73
C	Mendocino-Rural Inland North	Summer	2034	336.37	390.92	457.46	585.25	73.07	86.11	100.97	128.83
C	Mendocino-Rural Inland North	Summer	2035	336.36	391.01	457.44	585.42	73.07	86.16	100.97	128.93
C	Mendocino-Rural Inland North	Winter	2010	325.36	375.84	446.80	556.99	72.79	86.74	100.94	123.79
C	Mendocino-Rural Inland North	Winter	2011	325.35	375.99	446.21	557.66	72.74	86.20	100.83	123.99
C	Mendocino-Rural Inland North	Winter	2012	325.39	376.21	445.75	558.43	72.71	85.88	100.79	124.25
C	Mendocino-Rural Inland North	Winter	2013	325.47	376.38	445.38	559.27	72.69	85.57	100.77	124.53
C	Mendocino-Rural Inland North	Winter	2014	325.56	376.57	445.08	560.08	72.66	85.38	100.70	124.83
C	Mendocino-Rural Inland North	Winter	2015	325.69	376.77	444.84	560.93	72.71	85.22	100.68	125.15
C	Mendocino-Rural Inland North	Winter	2016	325.84	376.93	444.64	561.74	72.78	85.05	100.67	125.47
C	Mendocino-Rural Inland North	Winter	2017	325.92	377.08	444.49	562.50	72.79	84.90	100.65	125.80
C	Mendocino-Rural Inland North	Winter	2018	325.99	377.20	444.36	563.17	72.80	84.79	100.64	126.10
C	Mendocino-Rural Inland North	Winter	2019	326.04	377.36	444.27	563.75	72.81	84.81	100.66	126.39
C	Mendocino-Rural Inland North	Winter	2020	326.10	377.51	444.20	564.26	72.90	84.89	100.71	126.66
C	Mendocino-Rural Inland North	Winter	2021	326.10	377.61	444.12	564.65	72.95	85.00	100.77	126.88
C	Mendocino-Rural Inland North	Winter	2022	326.08	377.69	444.04	564.99	72.98	85.10	100.81	127.08
C	Mendocino-Rural Inland North	Winter	2023	326.01	377.75	443.96	565.25	72.99	85.18	100.85	127.29
C	Mendocino-Rural Inland North	Winter	2024	325.93	377.77	443.88	565.44	72.98	85.26	100.87	127.48
C	Mendocino-Rural Inland North	Winter	2025	325.89	377.86	443.83	565.61	72.99	85.36	100.90	127.65
C	Mendocino-Rural Inland North	Winter	2026	325.90	378.00	443.78	565.81	73.01	85.47	100.93	127.81
C	Mendocino-Rural Inland North	Winter	2027	325.90	378.13	443.72	566.01	73.03	85.57	100.94	127.97
C	Mendocino-Rural Inland North	Winter	2028	325.90	378.27	443.68	566.22	73.03	85.66	100.96	128.11
C	Mendocino-Rural Inland North	Winter	2029	325.88	378.40	443.60	566.42	73.04	85.75	100.95	128.24
C	Mendocino-Rural Inland North	Winter	2030	325.86	378.53	443.54	566.62	73.04	85.83	100.95	128.37
C	Mendocino-Rural Inland North	Winter	2031	325.86	378.66	443.50	566.86	73.05	85.91	100.96	128.50
C	Mendocino-Rural Inland North	Winter	2032	325.85	378.78	443.47	567.09	73.06	85.98	100.96	128.62
C	Mendocino-Rural Inland North	Winter	2033	325.85	378.89	443.45	567.29	73.06	86.05	100.96	128.73
C	Mendocino-Rural Inland North	Winter	2034	325.84	378.99	443.43	567.47	73.07	86.11	100.97	128.83
C	Mendocino-Rural Inland North	Winter	2035	325.83	379.07	443.41	567.63	73.07	86.16	100.97	128.93
C	Mendocino-Rural Inland South	Annual	2010	328.61	379.07	451.10	562.37	72.79	86.74	100.94	123.79
C	Mendocino-Rural Inland South	Annual	2011	328.64	379.33	450.55	563.04	72.74	86.20	100.83	123.99
C	Mendocino-Rural Inland South	Annual	2012	328.71	379.62	450.13	563.82	72.71	85.88	100.79	124.25
C	Mendocino-Rural Inland South	Annual	2013	328.81	379.86	449.78	564.69	72.69	85.57	100.77	124.53
C	Mendocino-Rural Inland South	Annual	2014	328.91	380.10	449.50	565.53	72.66	85.38	100.70	124.83
C	Mendocino-Rural Inland South	Annual	2015	329.05	380.33	449.28	566.42	72.71	85.22	100.68	125.15
C	Mendocino-Rural Inland South	Annual	2016	329.20	380.54	449.10	567.26	72.78	85.05	100.67	125.47
C	Mendocino-Rural Inland South	Annual	2017	329.29	380.71	448.96	568.05	72.79	84.90	100.65	125.80
C	Mendocino-Rural Inland South	Annual	2018	329.36	380.86	448.84	568.75	72.80	84.79	100.64	126.10
C	Mendocino-Rural Inland South	Annual	2019	329.41	381.04	448.75	569.35	72.81	84.81	100.66	126.39
C	Mendocino-Rural Inland South	Annual	2020	329.46	381.20	448.68	569.87	72.90	84.89	100.71	126.66
C	Mendocino-Rural Inland South	Annual	2021	329.47	381.32	448.60	570.28	72.95	85.00	100.77	126.88
C	Mendocino-Rural Inland South	Annual	2022	329.44	381.41	448.52	570.63	72.98	85.10	100.81	127.08
C	Mendocino-Rural Inland South	Annual	2023	329.37	381.48	448.45	570.90	72.99	85.18	100.85	127.29
C	Mendocino-Rural Inland South	Annual	2024	329.30	381.52	448.37	571.09	72.98	85.26	100.87	127.48
C	Mendocino-Rural Inland South	Annual	2025	329.26	381.61	448.33	571.27	72.99	85.36	100.90	127.65
C	Mendocino-Rural Inland South	Annual	2026	329.27	381.77	448.27	571.47	73.01	85.47	100.93	127.81
C	Mendocino-Rural Inland South	Annual	2027	329.27	381.91	448.22	571.68	73.03	85.57	100.94	127.97

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mendocino-Rural Inland South	Annual	2028	329.27	382.05	448.17	571.89	73.03	85.66	100.96	128.11
C	Mendocino-Rural Inland South	Annual	2029	329.25	382.19	448.10	572.09	73.04	85.75	100.95	128.24
C	Mendocino-Rural Inland South	Annual	2030	329.24	382.33	448.03	572.30	73.04	85.83	100.95	128.37
C	Mendocino-Rural Inland South	Annual	2031	329.23	382.47	448.00	572.53	73.05	85.91	100.96	128.50
C	Mendocino-Rural Inland South	Annual	2032	329.23	382.60	447.97	572.77	73.06	85.98	100.96	128.62
C	Mendocino-Rural Inland South	Annual	2033	329.22	382.71	447.95	572.98	73.06	86.05	100.96	128.73
C	Mendocino-Rural Inland South	Annual	2034	329.22	382.81	447.93	573.17	73.07	86.11	100.97	128.83
C	Mendocino-Rural Inland South	Annual	2035	329.21	382.89	447.91	573.33	73.07	86.16	100.97	128.93
C	Mendocino-Rural Inland South	Summer	2010	335.50	385.93	460.22	573.75	72.79	86.74	100.94	123.79
C	Mendocino-Rural Inland South	Summer	2011	335.60	386.40	459.76	574.44	72.74	86.20	100.83	123.99
C	Mendocino-Rural Inland South	Summer	2012	335.73	386.85	459.39	575.26	72.71	85.88	100.79	124.25
C	Mendocino-Rural Inland South	Summer	2013	335.88	387.22	459.11	576.18	72.69	85.57	100.77	124.53
C	Mendocino-Rural Inland South	Summer	2014	336.01	387.57	458.87	577.08	72.66	85.38	100.70	124.83
C	Mendocino-Rural Inland South	Summer	2015	336.17	387.90	458.70	578.04	72.71	85.22	100.68	125.15
C	Mendocino-Rural Inland South	Summer	2016	336.34	388.18	458.56	578.96	72.78	85.05	100.67	125.47
C	Mendocino-Rural Inland South	Summer	2017	336.43	388.42	458.43	579.82	72.79	84.90	100.65	125.80
C	Mendocino-Rural Inland South	Summer	2018	336.49	388.62	458.33	580.57	72.80	84.79	100.64	126.10
C	Mendocino-Rural Inland South	Summer	2019	336.54	388.83	458.25	581.22	72.81	84.81	100.66	126.39
C	Mendocino-Rural Inland South	Summer	2020	336.59	389.03	458.18	581.78	72.90	84.89	100.71	126.66
C	Mendocino-Rural Inland South	Summer	2021	336.60	389.18	458.11	582.21	72.95	85.00	100.77	126.88
C	Mendocino-Rural Inland South	Summer	2022	336.57	389.31	458.03	582.59	72.98	85.10	100.81	127.08
C	Mendocino-Rural Inland South	Summer	2023	336.50	389.40	457.96	582.88	72.99	85.18	100.85	127.29
C	Mendocino-Rural Inland South	Summer	2024	336.43	389.46	457.89	583.08	72.98	85.26	100.87	127.48
C	Mendocino-Rural Inland South	Summer	2025	336.39	389.57	457.85	583.26	72.99	85.36	100.90	127.65
C	Mendocino-Rural Inland South	Summer	2026	336.40	389.75	457.79	583.47	73.01	85.47	100.93	127.81
C	Mendocino-Rural Inland South	Summer	2027	336.41	389.91	457.74	583.68	73.03	85.57	100.94	127.97
C	Mendocino-Rural Inland South	Summer	2028	336.41	390.07	457.70	583.89	73.03	85.66	100.96	128.11
C	Mendocino-Rural Inland South	Summer	2029	336.40	390.24	457.63	584.11	73.04	85.75	100.95	128.24
C	Mendocino-Rural Inland South	Summer	2030	336.39	390.39	457.57	584.32	73.04	85.83	100.95	128.37
C	Mendocino-Rural Inland South	Summer	2031	336.39	390.55	457.53	584.57	73.05	85.91	100.96	128.50
C	Mendocino-Rural Inland South	Summer	2032	336.38	390.69	457.51	584.82	73.06	85.98	100.96	128.62
C	Mendocino-Rural Inland South	Summer	2033	336.38	390.81	457.48	585.05	73.06	86.05	100.96	128.73
C	Mendocino-Rural Inland South	Summer	2034	336.37	390.92	457.46	585.25	73.07	86.11	100.97	128.83
C	Mendocino-Rural Inland South	Summer	2035	336.36	391.01	457.44	585.42	73.07	86.16	100.97	128.93
C	Mendocino-Rural Inland South	Winter	2010	325.36	375.84	446.80	556.99	72.79	86.74	100.94	123.79
C	Mendocino-Rural Inland South	Winter	2011	325.35	375.99	446.21	557.66	72.74	86.20	100.83	123.99
C	Mendocino-Rural Inland South	Winter	2012	325.39	376.21	445.75	558.43	72.71	85.88	100.79	124.25
C	Mendocino-Rural Inland South	Winter	2013	325.47	376.38	445.38	559.27	72.69	85.57	100.77	124.53
C	Mendocino-Rural Inland South	Winter	2014	325.56	376.57	445.08	560.08	72.66	85.38	100.70	124.83
C	Mendocino-Rural Inland South	Winter	2015	325.69	376.77	444.84	560.93	72.71	85.22	100.68	125.15
C	Mendocino-Rural Inland South	Winter	2016	325.84	376.93	444.64	561.74	72.78	85.05	100.67	125.47
C	Mendocino-Rural Inland South	Winter	2017	325.92	377.08	444.49	562.50	72.79	84.90	100.65	125.80
C	Mendocino-Rural Inland South	Winter	2018	325.99	377.20	444.36	563.17	72.80	84.79	100.64	126.10
C	Mendocino-Rural Inland South	Winter	2019	326.04	377.36	444.27	563.75	72.81	84.81	100.66	126.39
C	Mendocino-Rural Inland South	Winter	2020	326.10	377.51	444.20	564.26	72.90	84.89	100.71	126.66
C	Mendocino-Rural Inland South	Winter	2021	326.10	377.61	444.12	564.65	72.95	85.00	100.77	126.88
C	Mendocino-Rural Inland South	Winter	2022	326.08	377.69	444.04	564.99	72.98	85.10	100.81	127.08
C	Mendocino-Rural Inland South	Winter	2023	326.01	377.75	443.96	565.25	72.99	85.18	100.85	127.29
C	Mendocino-Rural Inland South	Winter	2024	325.93	377.77	443.88	565.44	72.98	85.26	100.87	127.48
C	Mendocino-Rural Inland South	Winter	2025	325.89	377.86	443.83	565.61	72.99	85.36	100.90	127.65
C	Mendocino-Rural Inland South	Winter	2026	325.90	378.00	443.78	565.81	73.01	85.47	100.93	127.81
C	Mendocino-Rural Inland South	Winter	2027	325.90	378.13	443.72	566.01	73.03	85.57	100.94	127.97
C	Mendocino-Rural Inland South	Winter	2028	325.90	378.27	443.68	566.22	73.03	85.66	100.96	128.11
C	Mendocino-Rural Inland South	Winter	2029	325.88	378.40	443.60	566.42	73.04	85.75	100.95	128.24

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mendocino-Rural Inland South	Winter	2030	325.86	378.53	443.54	566.62	73.04	85.83	100.95	128.37
C	Mendocino-Rural Inland South	Winter	2031	325.86	378.66	443.50	566.86	73.05	85.91	100.96	128.50
C	Mendocino-Rural Inland South	Winter	2032	325.85	378.78	443.47	567.09	73.06	85.98	100.96	128.62
C	Mendocino-Rural Inland South	Winter	2033	325.85	378.89	443.45	567.29	73.06	86.05	100.96	128.73
C	Mendocino-Rural Inland South	Winter	2034	325.84	378.99	443.43	567.47	73.07	86.11	100.97	128.83
C	Mendocino-Rural Inland South	Winter	2035	325.83	379.07	443.41	567.63	73.07	86.16	100.97	128.93
C	Merced (SJV)	Annual	2010	340.87	390.90	467.36	584.95	73.16	85.59	100.55	123.92
C	Merced (SJV)	Annual	2011	341.18	391.95	467.11	585.80	73.17	85.25	100.50	124.18
C	Merced (SJV)	Annual	2012	342.08	393.49	467.75	587.72	73.22	85.08	100.47	124.45
C	Merced (SJV)	Annual	2013	343.97	396.08	469.80	591.52	73.28	84.93	100.46	124.78
C	Merced (SJV)	Annual	2014	344.21	396.70	469.70	592.50	73.32	84.82	100.47	125.10
C	Merced (SJV)	Annual	2015	346.14	399.22	471.93	596.45	73.40	84.76	100.47	125.45
C	Merced (SJV)	Annual	2016	346.35	399.69	471.87	597.40	73.48	84.69	100.48	125.80
C	Merced (SJV)	Annual	2017	346.49	400.09	471.80	598.27	73.51	84.64	100.48	126.15
C	Merced (SJV)	Annual	2018	349.13	403.34	475.20	603.39	73.57	84.61	100.50	126.47
C	Merced (SJV)	Annual	2019	349.23	403.65	475.15	604.02	73.62	84.72	100.53	126.76
C	Merced (SJV)	Annual	2020	349.30	403.93	475.11	604.59	73.71	84.85	100.61	127.03
C	Merced (SJV)	Annual	2021	351.18	406.32	477.56	608.27	73.78	85.02	100.69	127.27
C	Merced (SJV)	Annual	2022	351.21	406.57	477.54	608.69	73.83	85.17	100.76	127.46
C	Merced (SJV)	Annual	2023	351.21	406.77	477.51	609.02	73.86	85.30	100.81	127.68
C	Merced (SJV)	Annual	2024	352.65	408.63	479.46	611.80	73.88	85.42	100.85	127.88
C	Merced (SJV)	Annual	2025	352.66	408.77	479.44	612.05	73.90	85.52	100.89	128.06
C	Merced (SJV)	Annual	2026	355.16	411.82	482.81	616.64	73.92	85.62	100.91	128.23
C	Merced (SJV)	Annual	2027	355.17	411.96	482.79	616.85	73.93	85.71	100.93	128.38
C	Merced (SJV)	Annual	2028	355.18	412.10	482.76	617.06	73.94	85.80	100.95	128.51
C	Merced (SJV)	Annual	2029	355.18	412.22	482.73	617.26	73.95	85.87	100.95	128.63
C	Merced (SJV)	Annual	2030	355.17	412.35	482.71	617.45	73.95	85.94	100.96	128.75
C	Merced (SJV)	Annual	2031	355.17	412.47	482.69	617.62	73.96	86.01	100.97	128.85
C	Merced (SJV)	Annual	2032	355.17	412.57	482.67	617.79	73.96	86.07	100.97	128.94
C	Merced (SJV)	Annual	2033	355.17	412.66	482.65	617.95	73.97	86.12	100.98	129.03
C	Merced (SJV)	Annual	2034	355.17	412.73	482.64	618.09	73.97	86.17	100.98	129.10
C	Merced (SJV)	Annual	2035	355.17	412.79	482.63	618.21	73.97	86.21	100.99	129.17
C	Merced (SJV)	Summer	2010	373.91	424.50	510.75	639.39	73.16	85.59	100.55	123.92
C	Merced (SJV)	Summer	2011	374.54	426.53	510.92	640.32	73.17	85.25	100.50	124.18
C	Merced (SJV)	Summer	2012	375.72	428.80	511.95	642.49	73.22	85.08	100.47	124.45
C	Merced (SJV)	Summer	2013	377.96	432.14	514.48	646.83	73.28	84.93	100.46	124.78
C	Merced (SJV)	Summer	2014	378.33	433.19	514.60	648.11	73.32	84.82	100.47	125.10
C	Merced (SJV)	Summer	2015	380.53	436.25	517.25	652.67	73.40	84.76	100.47	125.45
C	Merced (SJV)	Summer	2016	380.80	437.00	517.32	653.93	73.48	84.69	100.48	125.80
C	Merced (SJV)	Summer	2017	380.97	437.61	517.33	655.06	73.51	84.64	100.48	126.15
C	Merced (SJV)	Summer	2018	383.85	441.28	521.08	660.79	73.57	84.61	100.50	126.47
C	Merced (SJV)	Summer	2019	383.93	441.70	521.02	661.58	73.62	84.72	100.53	126.76
C	Merced (SJV)	Summer	2020	383.99	442.07	520.96	662.27	73.71	84.85	100.61	127.03
C	Merced (SJV)	Summer	2021	386.07	444.82	523.67	666.43	73.78	85.02	100.69	127.27
C	Merced (SJV)	Summer	2022	386.11	445.19	523.65	666.97	73.83	85.17	100.76	127.46
C	Merced (SJV)	Summer	2023	386.12	445.49	523.63	667.38	73.86	85.30	100.81	127.68
C	Merced (SJV)	Summer	2024	387.72	447.60	525.78	670.47	73.88	85.42	100.85	127.88
C	Merced (SJV)	Summer	2025	387.74	447.82	525.78	670.75	73.90	85.52	100.89	128.06
C	Merced (SJV)	Summer	2026	390.50	451.22	529.48	675.75	73.92	85.62	100.91	128.23
C	Merced (SJV)	Summer	2027	390.51	451.41	529.46	675.97	73.93	85.71	100.93	128.38
C	Merced (SJV)	Summer	2028	390.52	451.60	529.44	676.18	73.94	85.80	100.95	128.51
C	Merced (SJV)	Summer	2029	390.53	451.78	529.41	676.38	73.95	85.87	100.95	128.63
C	Merced (SJV)	Summer	2030	390.53	451.95	529.39	676.58	73.95	85.94	100.96	128.75
C	Merced (SJV)	Summer	2031	390.53	452.12	529.34	676.72	73.96	86.01	100.97	128.85

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Merced (SJV)	Summer	2032	390.53	452.26	529.30	676.87	73.96	86.07	100.97	128.94
C	Merced (SJV)	Summer	2033	390.53	452.37	529.27	677.03	73.97	86.12	100.98	129.03
C	Merced (SJV)	Summer	2034	390.53	452.46	529.26	677.19	73.97	86.17	100.98	129.10
C	Merced (SJV)	Summer	2035	390.53	452.53	529.24	677.34	73.97	86.21	100.99	129.17
C	Merced (SJV)	Winter	2010	329.03	378.86	451.81	565.43	73.16	85.59	100.55	123.92
C	Merced (SJV)	Winter	2011	329.22	379.55	451.41	566.25	73.17	85.25	100.50	124.18
C	Merced (SJV)	Winter	2012	330.02	380.82	451.91	568.09	73.22	85.08	100.47	124.45
C	Merced (SJV)	Winter	2013	331.78	383.15	453.79	571.69	73.28	84.93	100.46	124.78
C	Merced (SJV)	Winter	2014	331.98	383.62	453.60	572.57	73.32	84.82	100.47	125.10
C	Merced (SJV)	Winter	2015	333.81	385.94	455.69	576.30	73.40	84.76	100.47	125.45
C	Merced (SJV)	Winter	2016	334.00	386.31	455.57	577.14	73.48	84.69	100.48	125.80
C	Merced (SJV)	Winter	2017	334.13	386.64	455.48	577.91	73.51	84.64	100.48	126.15
C	Merced (SJV)	Winter	2018	336.69	389.74	458.76	582.81	73.57	84.61	100.50	126.47
C	Merced (SJV)	Winter	2019	336.79	390.02	458.71	583.39	73.62	84.72	100.53	126.76
C	Merced (SJV)	Winter	2020	336.87	390.25	458.68	583.91	73.71	84.85	100.61	127.03
C	Merced (SJV)	Winter	2021	338.67	392.52	461.04	587.42	73.78	85.02	100.69	127.27
C	Merced (SJV)	Winter	2022	338.70	392.73	461.01	587.80	73.83	85.17	100.76	127.46
C	Merced (SJV)	Winter	2023	338.70	392.89	460.97	588.09	73.86	85.30	100.81	127.68
C	Merced (SJV)	Winter	2024	340.08	394.65	462.85	590.78	73.88	85.42	100.85	127.88
C	Merced (SJV)	Winter	2025	340.08	394.77	462.82	591.01	73.90	85.52	100.89	128.06
C	Merced (SJV)	Winter	2026	342.49	397.70	466.08	595.45	73.92	85.62	100.91	128.23
C	Merced (SJV)	Winter	2027	342.50	397.82	466.06	595.66	73.93	85.71	100.93	128.38
C	Merced (SJV)	Winter	2028	342.50	397.93	466.03	595.87	73.94	85.80	100.95	128.51
C	Merced (SJV)	Winter	2029	342.50	398.05	466.00	596.07	73.95	85.87	100.95	128.63
C	Merced (SJV)	Winter	2030	342.50	398.15	465.98	596.26	73.95	85.94	100.96	128.75
C	Merced (SJV)	Winter	2031	342.50	398.25	465.97	596.43	73.96	86.01	100.97	128.85
C	Merced (SJV)	Winter	2032	342.50	398.34	465.96	596.61	73.96	86.07	100.97	128.94
C	Merced (SJV)	Winter	2033	342.50	398.42	465.94	596.76	73.97	86.12	100.98	129.03
C	Merced (SJV)	Winter	2034	342.49	398.49	465.93	596.90	73.97	86.17	100.98	129.10
C	Merced (SJV)	Winter	2035	342.49	398.55	465.92	597.02	73.97	86.21	100.99	129.17
C	Modoc (NEP)	Annual	2010	408.79	488.59	560.53	697.57	74.87	100.48	102.62	125.01
C	Modoc (NEP)	Annual	2011	408.63	485.64	559.72	698.46	74.72	97.48	102.30	125.08
C	Modoc (NEP)	Annual	2012	408.43	483.59	559.09	699.50	74.39	95.30	102.13	125.22
C	Modoc (NEP)	Annual	2013	408.39	482.13	558.57	700.69	74.23	93.74	101.93	125.38
C	Modoc (NEP)	Annual	2014	408.30	480.62	558.13	701.74	73.97	91.96	101.58	125.59
C	Modoc (NEP)	Annual	2015	408.25	479.23	557.81	702.85	73.76	90.19	101.45	125.82
C	Modoc (NEP)	Annual	2016	408.36	478.26	557.54	703.92	73.79	88.96	101.31	126.08
C	Modoc (NEP)	Annual	2017	408.32	477.36	557.31	704.96	73.64	87.77	101.05	126.34
C	Modoc (NEP)	Annual	2018	408.22	476.76	557.13	705.82	73.43	87.03	100.91	126.59
C	Modoc (NEP)	Annual	2019	408.20	476.34	556.98	706.60	73.35	86.56	100.78	126.79
C	Modoc (NEP)	Annual	2020	408.15	475.96	556.87	707.25	73.39	86.27	100.81	127.00
C	Modoc (NEP)	Annual	2021	408.10	475.54	556.77	707.69	73.42	86.13	100.87	127.13
C	Modoc (NEP)	Annual	2022	408.00	475.17	556.62	708.03	73.42	86.00	100.88	127.20
C	Modoc (NEP)	Annual	2023	407.93	474.79	556.52	708.27	73.44	85.87	100.91	127.38
C	Modoc (NEP)	Annual	2024	407.79	474.58	556.39	708.49	73.41	85.82	100.92	127.55
C	Modoc (NEP)	Annual	2025	407.72	474.59	556.34	708.71	73.41	85.87	100.96	127.72
C	Modoc (NEP)	Annual	2026	407.73	474.69	556.26	709.00	73.43	85.94	100.98	127.90
C	Modoc (NEP)	Annual	2027	407.73	474.80	556.20	709.30	73.44	86.00	100.99	128.07
C	Modoc (NEP)	Annual	2028	407.71	474.90	556.15	709.60	73.44	86.06	101.01	128.22
C	Modoc (NEP)	Annual	2029	407.70	475.01	556.08	709.88	73.45	86.12	101.01	128.36
C	Modoc (NEP)	Annual	2030	407.68	475.10	556.00	710.15	73.45	86.17	101.01	128.50
C	Modoc (NEP)	Annual	2031	407.69	475.22	555.95	710.46	73.45	86.22	101.01	128.63
C	Modoc (NEP)	Annual	2032	407.68	475.32	555.91	710.77	73.46	86.27	101.01	128.76
C	Modoc (NEP)	Annual	2033	407.68	475.40	555.88	711.04	73.47	86.31	101.01	128.87

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Modoc (NEP)	Annual	2034	407.67	475.47	555.85	711.29	73.47	86.35	101.01	128.97
C	Modoc (NEP)	Annual	2035	407.66	475.53	555.81	711.49	73.48	86.38	101.02	129.07
C	Modoc (NEP)	Summer	2010	425.39	503.36	582.23	724.10	74.87	100.48	102.62	125.01
C	Modoc (NEP)	Summer	2011	425.44	501.48	581.68	725.15	74.72	97.48	102.30	125.08
C	Modoc (NEP)	Summer	2012	425.41	500.15	581.24	726.37	74.39	95.30	102.13	125.22
C	Modoc (NEP)	Summer	2013	425.50	499.17	580.90	727.80	74.23	93.74	101.93	125.38
C	Modoc (NEP)	Summer	2014	425.50	498.13	580.66	729.05	73.97	91.96	101.58	125.59
C	Modoc (NEP)	Summer	2015	425.50	497.14	580.45	730.41	73.76	90.19	101.45	125.82
C	Modoc (NEP)	Summer	2016	425.64	496.45	580.30	731.70	73.79	88.96	101.31	126.08
C	Modoc (NEP)	Summer	2017	425.62	495.80	580.16	732.94	73.64	87.77	101.05	126.34
C	Modoc (NEP)	Summer	2018	425.52	495.35	580.02	733.96	73.43	87.03	100.91	126.59
C	Modoc (NEP)	Summer	2019	425.50	495.06	579.91	734.91	73.35	86.56	100.78	126.79
C	Modoc (NEP)	Summer	2020	425.44	494.80	579.80	735.68	73.39	86.27	100.81	127.00
C	Modoc (NEP)	Summer	2021	425.39	494.51	579.70	736.23	73.42	86.13	100.87	127.13
C	Modoc (NEP)	Summer	2022	425.28	494.26	579.57	736.66	73.42	86.00	100.88	127.20
C	Modoc (NEP)	Summer	2023	425.21	493.99	579.47	736.98	73.44	85.87	100.91	127.38
C	Modoc (NEP)	Summer	2024	425.08	493.85	579.37	737.26	73.41	85.82	100.92	127.55
C	Modoc (NEP)	Summer	2025	425.02	493.90	579.31	737.53	73.41	85.87	100.96	127.72
C	Modoc (NEP)	Summer	2026	425.03	494.03	579.22	737.87	73.43	85.94	100.98	127.90
C	Modoc (NEP)	Summer	2027	425.04	494.17	579.16	738.21	73.44	86.00	100.99	128.07
C	Modoc (NEP)	Summer	2028	425.05	494.30	579.11	738.56	73.44	86.06	101.01	128.22
C	Modoc (NEP)	Summer	2029	425.05	494.46	579.05	738.88	73.45	86.12	101.01	128.36
C	Modoc (NEP)	Summer	2030	425.04	494.57	578.98	739.20	73.45	86.17	101.01	128.50
C	Modoc (NEP)	Summer	2031	425.05	494.75	578.95	739.54	73.45	86.22	101.01	128.63
C	Modoc (NEP)	Summer	2032	425.05	494.88	578.93	739.88	73.46	86.27	101.01	128.76
C	Modoc (NEP)	Summer	2033	425.05	494.99	578.91	740.18	73.47	86.31	101.01	128.87
C	Modoc (NEP)	Summer	2034	425.04	495.08	578.89	740.44	73.47	86.35	101.01	128.97
C	Modoc (NEP)	Summer	2035	425.03	495.14	578.86	740.68	73.48	86.38	101.02	129.07
C	Modoc (NEP)	Winter	2010	403.43	483.82	553.52	689.00	74.87	100.48	102.62	125.01
C	Modoc (NEP)	Winter	2011	403.20	480.53	552.63	689.84	74.72	97.48	102.30	125.08
C	Modoc (NEP)	Winter	2012	402.94	478.25	551.93	690.82	74.39	95.30	102.13	125.22
C	Modoc (NEP)	Winter	2013	402.86	476.62	551.35	691.93	74.23	93.74	101.93	125.38
C	Modoc (NEP)	Winter	2014	402.75	474.97	550.86	692.91	73.97	91.96	101.58	125.59
C	Modoc (NEP)	Winter	2015	402.67	473.44	550.49	693.96	73.76	90.19	101.45	125.82
C	Modoc (NEP)	Winter	2016	402.78	472.38	550.19	694.95	73.79	88.96	101.31	126.08
C	Modoc (NEP)	Winter	2017	402.74	471.40	549.93	695.92	73.64	87.77	101.05	126.34
C	Modoc (NEP)	Winter	2018	402.64	470.75	549.73	696.72	73.43	87.03	100.91	126.59
C	Modoc (NEP)	Winter	2019	402.61	470.29	549.57	697.46	73.35	86.56	100.78	126.79
C	Modoc (NEP)	Winter	2020	402.56	469.87	549.46	698.07	73.39	86.27	100.81	127.00
C	Modoc (NEP)	Winter	2021	402.52	469.41	549.36	698.48	73.42	86.13	100.87	127.13
C	Modoc (NEP)	Winter	2022	402.41	469.01	549.21	698.78	73.42	86.00	100.88	127.20
C	Modoc (NEP)	Winter	2023	402.35	468.59	549.10	699.00	73.44	85.87	100.91	127.38
C	Modoc (NEP)	Winter	2024	402.21	468.35	548.97	699.20	73.41	85.82	100.92	127.55
C	Modoc (NEP)	Winter	2025	402.14	468.36	548.91	699.40	73.41	85.87	100.96	127.72
C	Modoc (NEP)	Winter	2026	402.14	468.45	548.84	699.67	73.43	85.94	100.98	127.90
C	Modoc (NEP)	Winter	2027	402.13	468.54	548.78	699.96	73.44	86.00	100.99	128.07
C	Modoc (NEP)	Winter	2028	402.11	468.63	548.73	700.25	73.44	86.06	101.01	128.22
C	Modoc (NEP)	Winter	2029	402.10	468.72	548.66	700.50	73.45	86.12	101.01	128.36
C	Modoc (NEP)	Winter	2030	402.08	468.81	548.57	700.77	73.45	86.17	101.01	128.50
C	Modoc (NEP)	Winter	2031	402.08	468.91	548.52	701.07	73.45	86.22	101.01	128.63
C	Modoc (NEP)	Winter	2032	402.08	469.00	548.47	701.37	73.46	86.27	101.01	128.76
C	Modoc (NEP)	Winter	2033	402.07	469.08	548.44	701.63	73.47	86.31	101.01	128.87
C	Modoc (NEP)	Winter	2034	402.06	469.14	548.40	701.87	73.47	86.35	101.01	128.97
C	Modoc (NEP)	Winter	2035	402.05	469.20	548.37	702.06	73.48	86.38	101.02	129.07

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mono (GBV)	Annual	2010	343.29	401.90	471.21	588.85	73.49	90.48	100.46	124.33
C	Mono (GBV)	Annual	2011	343.38	401.41	470.63	589.51	73.45	89.54	100.40	124.54
C	Mono (GBV)	Annual	2012	343.46	401.01	470.17	590.24	73.30	88.81	100.41	124.77
C	Mono (GBV)	Annual	2013	343.56	400.60	469.80	591.01	73.12	88.06	100.44	125.04
C	Mono (GBV)	Annual	2014	343.63	400.25	469.51	591.80	72.91	87.42	100.46	125.29
C	Mono (GBV)	Annual	2015	343.76	400.00	469.27	592.59	72.85	86.92	100.51	125.58
C	Mono (GBV)	Annual	2016	343.89	399.78	469.09	593.36	72.82	86.46	100.57	125.87
C	Mono (GBV)	Annual	2017	343.97	399.52	468.93	594.07	72.77	85.93	100.62	126.17
C	Mono (GBV)	Annual	2018	344.06	399.38	468.81	594.73	72.79	85.63	100.65	126.43
C	Mono (GBV)	Annual	2019	344.09	399.35	468.71	595.27	72.69	85.53	100.67	126.69
C	Mono (GBV)	Annual	2020	344.16	399.27	468.63	595.75	72.78	85.46	100.75	126.94
C	Mono (GBV)	Annual	2021	344.10	399.20	468.56	596.09	72.76	85.49	100.81	127.11
C	Mono (GBV)	Annual	2022	344.02	399.16	468.47	596.42	72.72	85.53	100.85	127.32
C	Mono (GBV)	Annual	2023	343.91	399.06	468.40	596.65	72.65	85.55	100.89	127.50
C	Mono (GBV)	Annual	2024	343.88	398.93	468.31	596.81	72.64	85.56	100.91	127.66
C	Mono (GBV)	Annual	2025	343.85	399.01	468.26	597.00	72.64	85.64	100.94	127.83
C	Mono (GBV)	Annual	2026	343.87	399.12	468.20	597.21	72.66	85.73	100.97	127.98
C	Mono (GBV)	Annual	2027	343.88	399.24	468.15	597.42	72.67	85.81	100.99	128.13
C	Mono (GBV)	Annual	2028	343.89	399.35	468.10	597.63	72.68	85.89	101.00	128.27
C	Mono (GBV)	Annual	2029	343.88	399.47	468.01	597.85	72.68	85.96	101.00	128.40
C	Mono (GBV)	Annual	2030	343.87	399.58	467.93	598.05	72.68	86.03	101.00	128.52
C	Mono (GBV)	Annual	2031	343.87	399.69	467.90	598.28	72.69	86.09	101.00	128.64
C	Mono (GBV)	Annual	2032	343.87	399.80	467.87	598.50	72.69	86.15	101.01	128.75
C	Mono (GBV)	Annual	2033	343.87	399.90	467.84	598.69	72.70	86.20	101.01	128.85
C	Mono (GBV)	Annual	2034	343.87	399.99	467.82	598.87	72.70	86.25	101.01	128.95
C	Mono (GBV)	Annual	2035	343.86	400.07	467.79	599.02	72.70	86.30	101.02	129.03
C	Mono (GBV)	Summer	2010	344.62	403.20	472.98	591.06	73.49	90.48	100.46	124.33
C	Mono (GBV)	Summer	2011	344.72	402.75	472.40	591.72	73.45	89.54	100.40	124.54
C	Mono (GBV)	Summer	2012	344.82	402.39	471.95	592.45	73.30	88.81	100.41	124.77
C	Mono (GBV)	Summer	2013	344.91	402.00	471.59	593.23	73.12	88.06	100.44	125.04
C	Mono (GBV)	Summer	2014	345.00	401.67	471.31	594.02	72.91	87.42	100.46	125.29
C	Mono (GBV)	Summer	2015	345.13	401.44	471.08	594.83	72.85	86.92	100.51	125.58
C	Mono (GBV)	Summer	2016	345.25	401.24	470.89	595.61	72.82	86.46	100.57	125.87
C	Mono (GBV)	Summer	2017	345.34	400.99	470.75	596.33	72.77	85.93	100.62	126.17
C	Mono (GBV)	Summer	2018	345.43	400.86	470.62	597.00	72.79	85.63	100.65	126.43
C	Mono (GBV)	Summer	2019	345.45	400.84	470.53	597.55	72.69	85.53	100.67	126.69
C	Mono (GBV)	Summer	2020	345.53	400.77	470.45	598.03	72.78	85.46	100.75	126.94
C	Mono (GBV)	Summer	2021	345.47	400.71	470.37	598.38	72.76	85.49	100.81	127.11
C	Mono (GBV)	Summer	2022	345.39	400.67	470.29	598.71	72.72	85.53	100.85	127.32
C	Mono (GBV)	Summer	2023	345.28	400.59	470.22	598.94	72.65	85.55	100.89	127.50
C	Mono (GBV)	Summer	2024	345.25	400.46	470.13	599.11	72.64	85.56	100.91	127.66
C	Mono (GBV)	Summer	2025	345.22	400.54	470.08	599.30	72.64	85.64	100.94	127.83
C	Mono (GBV)	Summer	2026	345.23	400.65	470.02	599.51	72.66	85.73	100.97	127.98
C	Mono (GBV)	Summer	2027	345.25	400.77	469.98	599.72	72.67	85.81	100.99	128.13
C	Mono (GBV)	Summer	2028	345.26	400.89	469.92	599.94	72.68	85.89	101.00	128.27
C	Mono (GBV)	Summer	2029	345.25	401.01	469.84	600.15	72.68	85.96	101.00	128.40
C	Mono (GBV)	Summer	2030	345.24	401.12	469.76	600.36	72.68	86.03	101.00	128.52
C	Mono (GBV)	Summer	2031	345.24	401.24	469.72	600.58	72.69	86.09	101.00	128.64
C	Mono (GBV)	Summer	2032	345.24	401.35	469.69	600.81	72.69	86.15	101.01	128.75
C	Mono (GBV)	Summer	2033	345.24	401.45	469.67	601.01	72.70	86.20	101.01	128.85
C	Mono (GBV)	Summer	2034	345.24	401.54	469.64	601.18	72.70	86.25	101.01	128.95
C	Mono (GBV)	Summer	2035	345.23	401.62	469.62	601.34	72.70	86.30	101.02	129.03
C	Mono (GBV)	Winter	2010	344.72	403.30	473.10	591.22	73.49	90.48	100.46	124.33
C	Mono (GBV)	Winter	2011	344.82	402.85	472.53	591.88	73.45	89.54	100.40	124.54

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Mono (GBV)	Winter	2012	344.91	402.49	472.08	592.61	73.30	88.81	100.41	124.77
C	Mono (GBV)	Winter	2013	345.01	402.10	471.72	593.39	73.12	88.06	100.44	125.04
C	Mono (GBV)	Winter	2014	345.10	401.78	471.44	594.19	72.91	87.42	100.46	125.29
C	Mono (GBV)	Winter	2015	345.23	401.55	471.21	594.99	72.85	86.92	100.51	125.58
C	Mono (GBV)	Winter	2016	345.35	401.35	471.03	595.77	72.82	86.46	100.57	125.87
C	Mono (GBV)	Winter	2017	345.44	401.10	470.88	596.50	72.77	85.93	100.62	126.17
C	Mono (GBV)	Winter	2018	345.53	400.97	470.76	597.17	72.79	85.63	100.65	126.43
C	Mono (GBV)	Winter	2019	345.55	400.95	470.66	597.72	72.69	85.53	100.67	126.69
C	Mono (GBV)	Winter	2020	345.63	400.88	470.59	598.20	72.78	85.46	100.75	126.94
C	Mono (GBV)	Winter	2021	345.57	400.82	470.51	598.55	72.76	85.49	100.81	127.11
C	Mono (GBV)	Winter	2022	345.49	400.78	470.42	598.88	72.72	85.53	100.85	127.32
C	Mono (GBV)	Winter	2023	345.38	400.70	470.35	599.11	72.65	85.55	100.89	127.50
C	Mono (GBV)	Winter	2024	345.35	400.57	470.26	599.28	72.64	85.56	100.91	127.66
C	Mono (GBV)	Winter	2025	345.32	400.65	470.21	599.47	72.64	85.64	100.94	127.83
C	Mono (GBV)	Winter	2026	345.33	400.77	470.16	599.68	72.66	85.73	100.97	127.98
C	Mono (GBV)	Winter	2027	345.35	400.89	470.11	599.89	72.67	85.81	100.99	128.13
C	Mono (GBV)	Winter	2028	345.35	401.00	470.06	600.11	72.68	85.89	101.00	128.27
C	Mono (GBV)	Winter	2029	345.35	401.12	469.97	600.32	72.68	85.96	101.00	128.40
C	Mono (GBV)	Winter	2030	345.34	401.24	469.89	600.53	72.68	86.03	101.00	128.52
C	Mono (GBV)	Winter	2031	345.34	401.35	469.86	600.75	72.69	86.09	101.00	128.64
C	Mono (GBV)	Winter	2032	345.34	401.47	469.83	600.98	72.69	86.15	101.01	128.75
C	Mono (GBV)	Winter	2033	345.34	401.57	469.80	601.18	72.70	86.20	101.01	128.85
C	Mono (GBV)	Winter	2034	345.34	401.66	469.77	601.35	72.70	86.25	101.01	128.95
C	Mono (GBV)	Winter	2035	345.33	401.73	469.75	601.50	72.70	86.30	101.02	129.03
C	Monterey (NCC)	Annual	2010	361.69	420.90	498.72	622.94	72.97	87.15	99.70	123.80
C	Monterey (NCC)	Annual	2011	360.10	418.76	495.80	620.71	72.95	86.58	99.75	124.04
C	Monterey (NCC)	Annual	2012	360.24	418.68	495.36	621.52	72.94	86.11	99.83	124.31
C	Monterey (NCC)	Annual	2013	360.44	418.67	495.00	622.39	72.98	85.75	99.92	124.61
C	Monterey (NCC)	Annual	2014	360.60	418.67	494.72	623.24	73.00	85.44	100.02	124.91
C	Monterey (NCC)	Annual	2015	360.80	418.74	494.50	624.11	73.07	85.23	100.12	125.24
C	Monterey (NCC)	Annual	2016	360.99	418.78	494.33	624.94	73.15	85.01	100.23	125.56
C	Monterey (NCC)	Annual	2017	361.13	418.83	494.19	625.72	73.19	84.83	100.31	125.87
C	Monterey (NCC)	Annual	2018	361.23	418.90	494.08	626.40	73.21	84.71	100.39	126.18
C	Monterey (NCC)	Annual	2019	361.32	419.04	494.00	627.00	73.25	84.71	100.47	126.46
C	Monterey (NCC)	Annual	2020	361.40	419.20	493.94	627.55	73.34	84.80	100.56	126.73
C	Monterey (NCC)	Annual	2021	361.41	419.37	493.82	627.95	73.42	84.94	100.65	126.97
C	Monterey (NCC)	Annual	2022	361.43	419.55	493.76	628.35	73.47	85.07	100.72	127.17
C	Monterey (NCC)	Annual	2023	361.40	419.69	493.69	628.65	73.50	85.18	100.78	127.38
C	Monterey (NCC)	Annual	2024	361.35	419.79	493.63	628.89	73.51	85.28	100.83	127.56
C	Monterey (NCC)	Annual	2025	361.32	419.90	493.58	629.12	73.53	85.37	100.87	127.74
C	Monterey (NCC)	Annual	2026	359.63	418.04	491.16	626.37	73.55	85.47	100.90	127.91
C	Monterey (NCC)	Annual	2027	359.64	418.17	491.09	626.59	73.57	85.55	100.92	128.06
C	Monterey (NCC)	Annual	2028	359.64	418.30	491.03	626.81	73.58	85.62	100.93	128.19
C	Monterey (NCC)	Annual	2029	359.64	418.44	490.95	627.03	73.58	85.69	100.94	128.32
C	Monterey (NCC)	Annual	2030	359.63	418.59	490.87	627.25	73.59	85.76	100.94	128.45
C	Monterey (NCC)	Annual	2031	359.63	418.74	490.82	627.49	73.59	85.83	100.95	128.56
C	Monterey (NCC)	Annual	2032	359.64	418.88	490.78	627.72	73.60	85.89	100.96	128.68
C	Monterey (NCC)	Annual	2033	359.64	419.01	490.75	627.94	73.60	85.95	100.96	128.78
C	Monterey (NCC)	Annual	2034	359.64	419.12	490.71	628.13	73.61	86.00	100.97	128.88
C	Monterey (NCC)	Annual	2035	359.64	419.22	490.68	628.30	73.61	86.04	100.97	128.97
C	Monterey (NCC)	Summer	2010	384.62	444.54	528.69	661.39	72.97	87.15	99.70	123.80
C	Monterey (NCC)	Summer	2011	383.13	442.63	525.88	658.94	72.95	86.58	99.75	124.04
C	Monterey (NCC)	Summer	2012	383.43	442.87	525.66	659.77	72.94	86.11	99.83	124.31
C	Monterey (NCC)	Summer	2013	383.74	443.13	525.49	660.73	72.98	85.75	99.92	124.61

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Monterey (NCC)	Summer	2014	384.00	443.36	525.37	661.71	73.00	85.44	100.02	124.91
C	Monterey (NCC)	Summer	2015	384.25	443.63	525.27	662.75	73.07	85.23	100.12	125.24
C	Monterey (NCC)	Summer	2016	384.48	443.85	525.19	663.74	73.15	85.01	100.23	125.56
C	Monterey (NCC)	Summer	2017	384.63	444.07	525.11	664.67	73.19	84.83	100.31	125.87
C	Monterey (NCC)	Summer	2018	384.73	444.29	525.03	665.48	73.21	84.71	100.39	126.18
C	Monterey (NCC)	Summer	2019	384.81	444.55	524.96	666.19	73.25	84.71	100.47	126.46
C	Monterey (NCC)	Summer	2020	384.89	444.81	524.90	666.82	73.34	84.80	100.56	126.73
C	Monterey (NCC)	Summer	2021	384.89	445.06	524.78	667.28	73.42	84.94	100.65	126.97
C	Monterey (NCC)	Summer	2022	384.92	445.33	524.72	667.75	73.47	85.07	100.72	127.17
C	Monterey (NCC)	Summer	2023	384.89	445.54	524.67	668.09	73.50	85.18	100.78	127.38
C	Monterey (NCC)	Summer	2024	384.85	445.71	524.61	668.34	73.51	85.28	100.83	127.56
C	Monterey (NCC)	Summer	2025	384.84	445.87	524.56	668.58	73.53	85.37	100.87	127.74
C	Monterey (NCC)	Summer	2026	383.04	443.94	522.01	665.65	73.55	85.47	100.90	127.91
C	Monterey (NCC)	Summer	2027	383.05	444.11	521.95	665.88	73.57	85.55	100.92	128.06
C	Monterey (NCC)	Summer	2028	383.06	444.28	521.90	666.11	73.58	85.62	100.93	128.19
C	Monterey (NCC)	Summer	2029	383.07	444.47	521.83	666.33	73.58	85.69	100.94	128.32
C	Monterey (NCC)	Summer	2030	383.07	444.66	521.77	666.57	73.59	85.76	100.94	128.45
C	Monterey (NCC)	Summer	2031	383.07	444.86	521.73	666.82	73.59	85.83	100.95	128.56
C	Monterey (NCC)	Summer	2032	383.08	445.04	521.70	667.08	73.60	85.89	100.96	128.68
C	Monterey (NCC)	Summer	2033	383.09	445.20	521.67	667.32	73.60	85.95	100.96	128.78
C	Monterey (NCC)	Summer	2034	383.09	445.34	521.64	667.54	73.61	86.00	100.97	128.88
C	Monterey (NCC)	Summer	2035	383.09	445.45	521.62	667.73	73.61	86.04	100.97	128.97
C	Monterey (NCC)	Winter	2010	359.53	418.68	495.91	619.33	72.97	87.15	99.70	123.80
C	Monterey (NCC)	Winter	2011	357.94	416.52	492.98	617.12	72.95	86.58	99.75	124.04
C	Monterey (NCC)	Winter	2012	358.06	416.41	492.51	617.92	72.94	86.11	99.83	124.31
C	Monterey (NCC)	Winter	2013	358.25	416.38	492.14	618.78	72.98	85.75	99.92	124.61
C	Monterey (NCC)	Winter	2014	358.40	416.35	491.84	619.62	73.00	85.44	100.02	124.91
C	Monterey (NCC)	Winter	2015	358.60	416.40	491.61	620.48	73.07	85.23	100.12	125.24
C	Monterey (NCC)	Winter	2016	358.78	416.42	491.43	621.29	73.15	85.01	100.23	125.56
C	Monterey (NCC)	Winter	2017	358.92	416.46	491.28	622.06	73.19	84.83	100.31	125.87
C	Monterey (NCC)	Winter	2018	359.02	416.51	491.17	622.73	73.21	84.71	100.39	126.18
C	Monterey (NCC)	Winter	2019	359.11	416.65	491.09	623.32	73.25	84.71	100.47	126.46
C	Monterey (NCC)	Winter	2020	359.20	416.80	491.03	623.86	73.34	84.80	100.56	126.73
C	Monterey (NCC)	Winter	2021	359.20	416.95	490.91	624.25	73.42	84.94	100.65	126.97
C	Monterey (NCC)	Winter	2022	359.22	417.13	490.85	624.65	73.47	85.07	100.72	127.17
C	Monterey (NCC)	Winter	2023	359.19	417.26	490.78	624.95	73.50	85.18	100.78	127.38
C	Monterey (NCC)	Winter	2024	359.14	417.36	490.72	625.18	73.51	85.28	100.83	127.56
C	Monterey (NCC)	Winter	2025	359.11	417.45	490.67	625.41	73.53	85.37	100.87	127.74
C	Monterey (NCC)	Winter	2026	357.43	415.61	488.26	622.68	73.55	85.47	100.90	127.91
C	Monterey (NCC)	Winter	2027	357.44	415.73	488.19	622.90	73.57	85.55	100.92	128.06
C	Monterey (NCC)	Winter	2028	357.44	415.86	488.13	623.12	73.58	85.62	100.93	128.19
C	Monterey (NCC)	Winter	2029	357.44	416.00	488.04	623.34	73.58	85.69	100.94	128.32
C	Monterey (NCC)	Winter	2030	357.43	416.14	487.97	623.56	73.59	85.76	100.94	128.45
C	Monterey (NCC)	Winter	2031	357.43	416.28	487.92	623.79	73.59	85.83	100.95	128.56
C	Monterey (NCC)	Winter	2032	357.43	416.42	487.88	624.03	73.60	85.89	100.96	128.68
C	Monterey (NCC)	Winter	2033	357.44	416.54	487.84	624.24	73.60	85.95	100.96	128.78
C	Monterey (NCC)	Winter	2034	357.44	416.66	487.80	624.43	73.61	86.00	100.97	128.88
C	Monterey (NCC)	Winter	2035	357.43	416.75	487.77	624.59	73.61	86.04	100.97	128.97
C	Napa (SF)	Annual	2010	329.10	378.96	450.01	565.84	73.43	86.05	99.91	124.74
C	Napa (SF)	Annual	2011	329.06	378.97	449.74	566.36	73.36	85.65	99.95	124.92
C	Napa (SF)	Annual	2012	329.05	379.03	449.53	566.94	73.30	85.32	99.99	125.12
C	Napa (SF)	Annual	2013	329.13	379.15	449.36	567.56	73.30	85.09	100.06	125.34
C	Napa (SF)	Annual	2014	329.21	379.25	449.22	568.19	73.28	84.89	100.11	125.57
C	Napa (SF)	Annual	2015	329.32	379.37	449.11	568.83	73.31	84.71	100.14	125.82

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Napa (SF)	Annual	2016	329.46	379.53	449.03	569.44	73.38	84.61	100.21	126.08
C	Napa (SF)	Annual	2017	329.52	379.63	448.96	570.02	73.36	84.47	100.26	126.33
C	Napa (SF)	Annual	2018	329.58	379.77	448.91	570.54	73.37	84.41	100.30	126.57
C	Napa (SF)	Annual	2019	329.63	379.97	448.87	570.99	73.38	84.45	100.37	126.80
C	Napa (SF)	Annual	2020	329.69	380.19	448.85	571.40	73.47	84.58	100.46	127.02
C	Napa (SF)	Annual	2021	329.76	380.44	448.83	571.71	73.55	84.74	100.55	127.19
C	Napa (SF)	Annual	2022	329.80	380.64	448.80	571.97	73.61	84.89	100.63	127.33
C	Napa (SF)	Annual	2023	329.77	380.79	448.77	572.17	73.64	85.01	100.69	127.50
C	Napa (SF)	Annual	2024	329.73	380.92	448.74	572.31	73.66	85.13	100.75	127.65
C	Napa (SF)	Annual	2025	329.72	381.02	448.71	572.48	73.68	85.23	100.80	127.80
C	Napa (SF)	Annual	2026	329.74	381.19	448.67	572.65	73.70	85.33	100.83	127.95
C	Napa (SF)	Annual	2027	329.75	381.36	448.64	572.81	73.72	85.43	100.86	128.09
C	Napa (SF)	Annual	2028	329.75	381.54	448.61	572.98	73.73	85.52	100.89	128.21
C	Napa (SF)	Annual	2029	329.74	381.72	448.56	573.14	73.74	85.61	100.90	128.33
C	Napa (SF)	Annual	2030	329.73	381.90	448.51	573.32	73.74	85.69	100.91	128.44
C	Napa (SF)	Annual	2031	329.73	382.10	448.49	573.52	73.75	85.77	100.92	128.55
C	Napa (SF)	Annual	2032	329.72	382.29	448.47	573.73	73.75	85.85	100.93	128.66
C	Napa (SF)	Annual	2033	329.72	382.46	448.45	573.91	73.76	85.92	100.94	128.76
C	Napa (SF)	Annual	2034	329.71	382.61	448.42	574.08	73.76	85.98	100.94	128.86
C	Napa (SF)	Annual	2035	329.70	382.75	448.40	574.22	73.77	86.04	100.95	128.94
C	Napa (SF)	Summer	2010	352.37	401.97	480.67	604.93	73.43	86.05	99.91	124.74
C	Napa (SF)	Summer	2011	352.52	402.44	480.51	605.37	73.36	85.65	99.95	124.92
C	Napa (SF)	Summer	2012	352.67	402.91	480.41	605.97	73.30	85.32	99.99	125.12
C	Napa (SF)	Summer	2013	352.86	403.37	480.36	606.65	73.30	85.09	100.06	125.34
C	Napa (SF)	Summer	2014	353.02	403.79	480.35	607.39	73.28	84.89	100.11	125.57
C	Napa (SF)	Summer	2015	353.20	404.17	480.37	608.18	73.31	84.71	100.14	125.82
C	Napa (SF)	Summer	2016	353.38	404.56	480.39	608.94	73.38	84.61	100.21	126.08
C	Napa (SF)	Summer	2017	353.47	404.88	480.42	609.68	73.36	84.47	100.26	126.33
C	Napa (SF)	Summer	2018	353.53	405.19	480.43	610.32	73.37	84.41	100.30	126.57
C	Napa (SF)	Summer	2019	353.59	405.53	480.43	610.87	73.38	84.45	100.37	126.80
C	Napa (SF)	Summer	2020	353.65	405.87	480.42	611.37	73.47	84.58	100.46	127.02
C	Napa (SF)	Summer	2021	353.72	406.21	480.39	611.75	73.55	84.74	100.55	127.19
C	Napa (SF)	Summer	2022	353.75	406.51	480.36	612.08	73.61	84.89	100.63	127.33
C	Napa (SF)	Summer	2023	353.73	406.75	480.32	612.31	73.64	85.01	100.69	127.50
C	Napa (SF)	Summer	2024	353.70	406.96	480.28	612.48	73.66	85.13	100.75	127.65
C	Napa (SF)	Summer	2025	353.69	407.15	480.25	612.65	73.68	85.23	100.80	127.80
C	Napa (SF)	Summer	2026	353.71	407.39	480.21	612.82	73.70	85.33	100.83	127.95
C	Napa (SF)	Summer	2027	353.72	407.64	480.17	612.99	73.72	85.43	100.86	128.09
C	Napa (SF)	Summer	2028	353.73	407.89	480.14	613.16	73.73	85.52	100.89	128.21
C	Napa (SF)	Summer	2029	353.74	408.15	480.10	613.34	73.74	85.61	100.90	128.33
C	Napa (SF)	Summer	2030	353.73	408.41	480.06	613.52	73.74	85.69	100.91	128.44
C	Napa (SF)	Summer	2031	353.73	408.69	480.04	613.77	73.75	85.77	100.92	128.55
C	Napa (SF)	Summer	2032	353.73	408.94	480.03	614.01	73.75	85.85	100.93	128.66
C	Napa (SF)	Summer	2033	353.73	409.15	480.01	614.23	73.76	85.92	100.94	128.76
C	Napa (SF)	Summer	2034	353.73	409.35	479.99	614.43	73.76	85.98	100.94	128.86
C	Napa (SF)	Summer	2035	353.72	409.51	479.97	614.62	73.77	86.04	100.95	128.94
C	Napa (SF)	Winter	2010	325.46	375.37	445.22	559.74	73.43	86.05	99.91	124.74
C	Napa (SF)	Winter	2011	325.40	375.31	444.93	560.26	73.36	85.65	99.95	124.92
C	Napa (SF)	Winter	2012	325.37	375.30	444.70	560.85	73.30	85.32	99.99	125.12
C	Napa (SF)	Winter	2013	325.43	375.36	444.52	561.45	73.30	85.09	100.06	125.34
C	Napa (SF)	Winter	2014	325.49	375.42	444.36	562.07	73.28	84.89	100.11	125.57
C	Napa (SF)	Winter	2015	325.59	375.49	444.23	562.69	73.31	84.71	100.14	125.82
C	Napa (SF)	Winter	2016	325.73	375.62	444.13	563.27	73.38	84.61	100.21	126.08
C	Napa (SF)	Winter	2017	325.78	375.69	444.05	563.83	73.36	84.47	100.26	126.33

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Napa (SF)	Winter	2018	325.84	375.80	443.99	564.33	73.37	84.41	100.30	126.57
C	Napa (SF)	Winter	2019	325.89	375.97	443.95	564.76	73.38	84.45	100.37	126.80
C	Napa (SF)	Winter	2020	325.95	376.18	443.92	565.16	73.47	84.58	100.46	127.02
C	Napa (SF)	Winter	2021	326.02	376.41	443.90	565.46	73.55	84.74	100.55	127.19
C	Napa (SF)	Winter	2022	326.06	376.60	443.87	565.71	73.61	84.89	100.63	127.33
C	Napa (SF)	Winter	2023	326.03	376.74	443.84	565.90	73.64	85.01	100.69	127.50
C	Napa (SF)	Winter	2024	325.99	376.85	443.81	566.04	73.66	85.13	100.75	127.65
C	Napa (SF)	Winter	2025	325.98	376.94	443.79	566.20	73.68	85.23	100.80	127.80
C	Napa (SF)	Winter	2026	325.99	377.10	443.75	566.37	73.70	85.33	100.83	127.95
C	Napa (SF)	Winter	2027	326.00	377.26	443.72	566.54	73.72	85.43	100.86	128.09
C	Napa (SF)	Winter	2028	326.00	377.42	443.68	566.71	73.73	85.52	100.89	128.21
C	Napa (SF)	Winter	2029	325.99	377.59	443.63	566.87	73.74	85.61	100.90	128.33
C	Napa (SF)	Winter	2030	325.98	377.76	443.59	567.04	73.74	85.69	100.91	128.44
C	Napa (SF)	Winter	2031	325.98	377.95	443.57	567.24	73.75	85.77	100.92	128.55
C	Napa (SF)	Winter	2032	325.97	378.13	443.55	567.44	73.75	85.85	100.93	128.66
C	Napa (SF)	Winter	2033	325.97	378.29	443.52	567.61	73.76	85.92	100.94	128.76
C	Napa (SF)	Winter	2034	325.96	378.44	443.49	567.77	73.76	85.98	100.94	128.86
C	Napa (SF)	Winter	2035	325.95	378.57	443.47	567.91	73.77	86.04	100.95	128.94
C	Nevada (MC)	Annual	2010	326.07	380.22	447.10	559.78	73.67	93.42	100.30	125.42
C	Nevada (MC)	Annual	2011	326.05	379.91	446.56	560.31	73.51	91.91	100.28	125.49
C	Nevada (MC)	Annual	2012	326.08	379.65	446.15	560.94	73.39	90.54	100.30	125.59
C	Nevada (MC)	Annual	2013	326.14	379.46	445.84	561.62	73.28	89.44	100.33	125.74
C	Nevada (MC)	Annual	2014	326.17	379.29	445.60	562.31	73.14	88.45	100.37	125.90
C	Nevada (MC)	Annual	2015	326.25	379.17	445.41	563.05	73.08	87.59	100.41	126.09
C	Nevada (MC)	Annual	2016	326.37	379.06	445.26	563.75	73.08	86.81	100.48	126.31
C	Nevada (MC)	Annual	2017	326.42	378.96	445.14	564.41	73.04	86.10	100.50	126.53
C	Nevada (MC)	Annual	2018	326.47	378.87	445.04	564.98	73.01	85.49	100.54	126.75
C	Nevada (MC)	Annual	2019	326.52	378.90	444.96	565.48	73.00	85.26	100.59	126.96
C	Nevada (MC)	Annual	2020	326.58	378.94	444.89	565.93	73.10	85.21	100.66	127.16
C	Nevada (MC)	Annual	2021	326.64	379.04	444.84	566.23	73.18	85.31	100.74	127.27
C	Nevada (MC)	Annual	2022	326.65	379.14	444.78	566.45	73.23	85.40	100.80	127.30
C	Nevada (MC)	Annual	2023	326.63	379.22	444.73	566.61	73.26	85.48	100.85	127.47
C	Nevada (MC)	Annual	2024	326.58	379.28	444.68	566.75	73.28	85.56	100.89	127.62
C	Nevada (MC)	Annual	2025	326.58	379.35	444.63	566.93	73.30	85.63	100.92	127.79
C	Nevada (MC)	Annual	2026	326.59	379.43	444.58	567.11	73.32	85.70	100.95	127.95
C	Nevada (MC)	Annual	2027	326.60	379.49	444.53	567.28	73.34	85.77	100.96	128.09
C	Nevada (MC)	Annual	2028	326.60	379.56	444.49	567.46	73.35	85.83	100.97	128.22
C	Nevada (MC)	Annual	2029	326.60	379.64	444.43	567.65	73.36	85.88	100.97	128.35
C	Nevada (MC)	Annual	2030	326.59	379.71	444.37	567.83	73.36	85.93	100.97	128.47
C	Nevada (MC)	Annual	2031	326.58	379.78	444.34	568.04	73.37	85.99	100.97	128.58
C	Nevada (MC)	Annual	2032	326.58	379.84	444.32	568.25	73.37	86.03	100.97	128.70
C	Nevada (MC)	Annual	2033	326.58	379.90	444.30	568.44	73.38	86.08	100.98	128.80
C	Nevada (MC)	Annual	2034	326.57	379.95	444.28	568.61	73.38	86.12	100.98	128.89
C	Nevada (MC)	Annual	2035	326.57	379.99	444.26	568.76	73.39	86.15	100.98	128.98
C	Nevada (MC)	Summer	2010	349.54	405.49	478.37	598.65	73.67	93.42	100.30	125.42
C	Nevada (MC)	Summer	2011	349.74	405.57	478.16	599.23	73.51	91.91	100.28	125.49
C	Nevada (MC)	Summer	2012	349.96	405.65	478.01	599.97	73.39	90.54	100.30	125.59
C	Nevada (MC)	Summer	2013	350.16	405.73	477.90	600.85	73.28	89.44	100.33	125.74
C	Nevada (MC)	Summer	2014	350.32	405.78	477.81	601.73	73.14	88.45	100.37	125.90
C	Nevada (MC)	Summer	2015	350.49	405.86	477.75	602.72	73.08	87.59	100.41	126.09
C	Nevada (MC)	Summer	2016	350.67	405.92	477.68	603.66	73.08	86.81	100.48	126.31
C	Nevada (MC)	Summer	2017	350.76	405.97	477.60	604.55	73.04	86.10	100.50	126.53
C	Nevada (MC)	Summer	2018	350.82	406.02	477.50	605.29	73.01	85.49	100.54	126.75
C	Nevada (MC)	Summer	2019	350.87	406.12	477.42	605.95	73.00	85.26	100.59	126.96

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Nevada (MC)	Summer	2020	350.93	406.22	477.35	606.52	73.10	85.21	100.66	127.16
C	Nevada (MC)	Summer	2021	350.98	406.36	477.27	606.93	73.18	85.31	100.74	127.27
C	Nevada (MC)	Summer	2022	350.98	406.49	477.21	607.24	73.23	85.40	100.80	127.30
C	Nevada (MC)	Summer	2023	350.96	406.60	477.15	607.48	73.26	85.48	100.85	127.47
C	Nevada (MC)	Summer	2024	350.91	406.70	477.10	607.66	73.28	85.56	100.89	127.62
C	Nevada (MC)	Summer	2025	350.91	406.81	477.06	607.85	73.30	85.63	100.92	127.79
C	Nevada (MC)	Summer	2026	350.93	406.90	477.02	608.02	73.32	85.70	100.95	127.95
C	Nevada (MC)	Summer	2027	350.95	406.99	476.99	608.19	73.34	85.77	100.96	128.09
C	Nevada (MC)	Summer	2028	350.96	407.08	476.96	608.37	73.35	85.83	100.97	128.22
C	Nevada (MC)	Summer	2029	350.96	407.18	476.92	608.57	73.36	85.88	100.97	128.35
C	Nevada (MC)	Summer	2030	350.96	407.28	476.88	608.77	73.36	85.93	100.97	128.47
C	Nevada (MC)	Summer	2031	350.97	407.37	476.86	609.02	73.37	85.99	100.97	128.58
C	Nevada (MC)	Summer	2032	350.97	407.44	476.85	609.26	73.37	86.03	100.97	128.70
C	Nevada (MC)	Summer	2033	350.97	407.51	476.83	609.49	73.38	86.08	100.98	128.80
C	Nevada (MC)	Summer	2034	350.97	407.57	476.81	609.70	73.38	86.12	100.98	128.89
C	Nevada (MC)	Summer	2035	350.96	407.62	476.80	609.90	73.39	86.15	100.98	128.98
C	Nevada (MC)	Winter	2010	320.89	374.64	440.20	551.20	73.67	93.42	100.30	125.42
C	Nevada (MC)	Winter	2011	320.82	374.25	439.58	551.72	73.51	91.91	100.28	125.49
C	Nevada (MC)	Winter	2012	320.81	373.90	439.12	552.32	73.39	90.54	100.30	125.59
C	Nevada (MC)	Winter	2013	320.83	373.65	438.76	552.96	73.28	89.44	100.33	125.74
C	Nevada (MC)	Winter	2014	320.84	373.44	438.48	553.60	73.14	88.45	100.37	125.90
C	Nevada (MC)	Winter	2015	320.90	373.27	438.27	554.29	73.08	87.59	100.41	126.09
C	Nevada (MC)	Winter	2016	321.00	373.13	438.10	554.93	73.08	86.81	100.48	126.31
C	Nevada (MC)	Winter	2017	321.05	372.99	437.97	555.55	73.04	86.10	100.50	126.53
C	Nevada (MC)	Winter	2018	321.09	372.88	437.87	556.08	73.01	85.49	100.54	126.75
C	Nevada (MC)	Winter	2019	321.14	372.89	437.79	556.55	73.00	85.26	100.59	126.96
C	Nevada (MC)	Winter	2020	321.21	372.92	437.73	556.97	73.10	85.21	100.66	127.16
C	Nevada (MC)	Winter	2021	321.26	373.01	437.67	557.24	73.18	85.31	100.74	127.27
C	Nevada (MC)	Winter	2022	321.28	373.10	437.62	557.44	73.23	85.40	100.80	127.30
C	Nevada (MC)	Winter	2023	321.26	373.17	437.57	557.59	73.26	85.48	100.85	127.47
C	Nevada (MC)	Winter	2024	321.21	373.23	437.52	557.72	73.28	85.56	100.89	127.62
C	Nevada (MC)	Winter	2025	321.21	373.29	437.48	557.90	73.30	85.63	100.92	127.79
C	Nevada (MC)	Winter	2026	321.22	373.36	437.42	558.07	73.32	85.70	100.95	127.95
C	Nevada (MC)	Winter	2027	321.23	373.42	437.37	558.25	73.34	85.77	100.96	128.09
C	Nevada (MC)	Winter	2028	321.23	373.49	437.32	558.43	73.35	85.83	100.97	128.22
C	Nevada (MC)	Winter	2029	321.22	373.56	437.26	558.61	73.36	85.88	100.97	128.35
C	Nevada (MC)	Winter	2030	321.20	373.62	437.19	558.79	73.36	85.93	100.97	128.47
C	Nevada (MC)	Winter	2031	321.20	373.69	437.16	558.99	73.37	85.99	100.97	128.58
C	Nevada (MC)	Winter	2032	321.20	373.75	437.14	559.20	73.37	86.03	100.97	128.70
C	Nevada (MC)	Winter	2033	321.19	373.80	437.12	559.38	73.38	86.08	100.98	128.80
C	Nevada (MC)	Winter	2034	321.19	373.85	437.10	559.54	73.38	86.12	100.98	128.89
C	Nevada (MC)	Winter	2035	321.18	373.89	437.08	559.68	73.39	86.15	100.98	128.98
C	Orange (SC)	Annual	2010	347.87	400.01	475.99	602.85	73.07	83.78	99.29	125.36
C	Orange (SC)	Annual	2011	348.42	401.06	476.42	603.92	73.09	83.78	99.41	125.57
C	Orange (SC)	Annual	2012	348.63	401.63	476.37	604.39	73.13	83.82	99.55	125.78
C	Orange (SC)	Annual	2013	347.19	400.22	474.06	601.99	73.21	83.88	99.69	126.00
C	Orange (SC)	Annual	2014	347.40	400.69	474.04	602.49	73.26	83.95	99.83	126.23
C	Orange (SC)	Annual	2015	346.99	400.42	473.19	601.91	73.34	84.04	99.96	126.46
C	Orange (SC)	Annual	2016	347.18	400.82	473.19	602.39	73.43	84.13	100.08	126.69
C	Orange (SC)	Annual	2017	347.34	401.21	473.19	602.86	73.49	84.25	100.19	126.92
C	Orange (SC)	Annual	2018	347.48	401.54	473.20	603.27	73.54	84.36	100.29	127.13
C	Orange (SC)	Annual	2019	349.20	403.69	475.40	606.40	73.60	84.51	100.39	127.32
C	Orange (SC)	Annual	2020	349.30	403.97	475.41	606.72	73.70	84.67	100.49	127.50
C	Orange (SC)	Annual	2021	349.75	404.66	475.92	607.64	73.77	84.83	100.58	127.66

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Orange (SC)	Annual	2022	349.80	404.88	475.93	607.87	73.82	84.97	100.65	127.80
C	Orange (SC)	Annual	2023	349.82	405.05	475.92	608.05	73.86	85.10	100.72	127.95
C	Orange (SC)	Annual	2024	349.76	405.12	475.84	608.09	73.88	85.21	100.77	128.09
C	Orange (SC)	Annual	2025	349.77	405.26	475.83	608.24	73.90	85.31	100.82	128.22
C	Orange (SC)	Annual	2026	349.79	405.40	475.82	608.38	73.92	85.41	100.85	128.34
C	Orange (SC)	Annual	2027	349.80	405.53	475.81	608.51	73.94	85.50	100.88	128.45
C	Orange (SC)	Annual	2028	349.81	405.67	475.80	608.64	73.95	85.58	100.90	128.55
C	Orange (SC)	Annual	2029	349.81	405.80	475.79	608.77	73.96	85.66	100.92	128.64
C	Orange (SC)	Annual	2030	349.81	405.94	475.78	608.90	73.96	85.73	100.93	128.73
C	Orange (SC)	Annual	2031	348.96	405.11	474.63	607.56	73.97	85.80	100.95	128.81
C	Orange (SC)	Annual	2032	348.96	405.24	474.63	607.70	73.97	85.87	100.95	128.89
C	Orange (SC)	Annual	2033	348.96	405.36	474.62	607.83	73.97	85.94	100.96	128.97
C	Orange (SC)	Annual	2034	348.95	405.47	474.62	607.95	73.98	86.00	100.97	129.04
C	Orange (SC)	Annual	2035	348.95	405.55	474.61	608.05	73.98	86.05	100.97	129.10
C	Orange (SC)	Summer	2010	362.44	415.36	495.33	627.26	73.07	83.78	99.29	125.36
C	Orange (SC)	Summer	2011	363.04	416.58	495.78	628.25	73.09	83.78	99.41	125.57
C	Orange (SC)	Summer	2012	363.28	417.29	495.73	628.67	73.13	83.82	99.55	125.78
C	Orange (SC)	Summer	2013	361.81	415.93	493.36	626.17	73.21	83.88	99.69	126.00
C	Orange (SC)	Summer	2014	362.04	416.49	493.37	626.68	73.26	83.95	99.83	126.23
C	Orange (SC)	Summer	2015	361.62	416.27	492.50	626.09	73.34	84.04	99.96	126.46
C	Orange (SC)	Summer	2016	361.83	416.72	492.53	626.63	73.43	84.13	100.08	126.69
C	Orange (SC)	Summer	2017	362.01	417.16	492.56	627.16	73.49	84.25	100.19	126.92
C	Orange (SC)	Summer	2018	362.15	417.54	492.59	627.63	73.54	84.36	100.29	127.13
C	Orange (SC)	Summer	2019	363.96	419.82	494.91	630.94	73.60	84.51	100.39	127.32
C	Orange (SC)	Summer	2020	364.07	420.12	494.92	631.29	73.70	84.67	100.49	127.50
C	Orange (SC)	Summer	2021	364.53	420.87	495.46	632.27	73.77	84.83	100.58	127.66
C	Orange (SC)	Summer	2022	364.57	421.13	495.46	632.54	73.82	84.97	100.65	127.80
C	Orange (SC)	Summer	2023	364.59	421.33	495.45	632.74	73.86	85.10	100.72	127.95
C	Orange (SC)	Summer	2024	364.55	421.45	495.37	632.81	73.88	85.21	100.77	128.09
C	Orange (SC)	Summer	2025	364.56	421.62	495.36	632.96	73.90	85.31	100.82	128.22
C	Orange (SC)	Summer	2026	364.58	421.79	495.35	633.12	73.92	85.41	100.85	128.34
C	Orange (SC)	Summer	2027	364.59	421.94	495.34	633.26	73.94	85.50	100.88	128.45
C	Orange (SC)	Summer	2028	364.60	422.10	495.33	633.39	73.95	85.58	100.90	128.55
C	Orange (SC)	Summer	2029	364.60	422.27	495.31	633.51	73.96	85.66	100.92	128.64
C	Orange (SC)	Summer	2030	364.60	422.43	495.31	633.65	73.96	85.73	100.93	128.73
C	Orange (SC)	Summer	2031	363.73	421.60	494.12	632.27	73.97	85.80	100.95	128.81
C	Orange (SC)	Summer	2032	363.72	421.76	494.11	632.41	73.97	85.87	100.95	128.89
C	Orange (SC)	Summer	2033	363.72	421.90	494.11	632.54	73.97	85.94	100.96	128.97
C	Orange (SC)	Summer	2034	363.72	422.02	494.10	632.66	73.98	86.00	100.97	129.04
C	Orange (SC)	Summer	2035	363.71	422.11	494.10	632.78	73.98	86.05	100.97	129.10
C	Orange (SC)	Winter	2010	342.49	394.35	468.85	593.85	73.07	83.78	99.29	125.36
C	Orange (SC)	Winter	2011	343.03	395.32	469.28	594.94	73.09	83.78	99.41	125.57
C	Orange (SC)	Winter	2012	343.22	395.85	469.23	595.43	73.13	83.82	99.55	125.78
C	Orange (SC)	Winter	2013	341.80	394.42	466.94	593.07	73.21	83.88	99.69	126.00
C	Orange (SC)	Winter	2014	341.99	394.86	466.91	593.56	73.26	83.95	99.83	126.23
C	Orange (SC)	Winter	2015	341.59	394.58	466.06	592.99	73.34	84.04	99.96	126.46
C	Orange (SC)	Winter	2016	341.78	394.95	466.05	593.44	73.43	84.13	100.08	126.69
C	Orange (SC)	Winter	2017	341.93	395.32	466.04	593.89	73.49	84.25	100.19	126.92
C	Orange (SC)	Winter	2018	342.06	395.63	466.04	594.28	73.54	84.36	100.29	127.13
C	Orange (SC)	Winter	2019	343.75	397.74	468.20	597.34	73.60	84.51	100.39	127.32
C	Orange (SC)	Winter	2020	343.85	398.00	468.21	597.65	73.70	84.67	100.49	127.50
C	Orange (SC)	Winter	2021	344.29	398.67	468.71	598.54	73.77	84.83	100.58	127.66
C	Orange (SC)	Winter	2022	344.34	398.88	468.72	598.77	73.82	84.97	100.65	127.80
C	Orange (SC)	Winter	2023	344.36	399.04	468.72	598.94	73.86	85.10	100.72	127.95

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Orange (SC)	Winter	2024	344.30	399.10	468.63	598.97	73.88	85.21	100.77	128.09
C	Orange (SC)	Winter	2025	344.31	399.22	468.62	599.11	73.90	85.31	100.82	128.22
C	Orange (SC)	Winter	2026	344.33	399.35	468.62	599.25	73.92	85.41	100.85	128.34
C	Orange (SC)	Winter	2027	344.34	399.47	468.61	599.38	73.94	85.50	100.88	128.45
C	Orange (SC)	Winter	2028	344.35	399.60	468.60	599.51	73.95	85.58	100.90	128.55
C	Orange (SC)	Winter	2029	344.35	399.72	468.59	599.64	73.96	85.66	100.92	128.64
C	Orange (SC)	Winter	2030	344.34	399.85	468.58	599.77	73.96	85.73	100.93	128.73
C	Orange (SC)	Winter	2031	343.51	399.02	467.44	598.45	73.97	85.80	100.95	128.81
C	Orange (SC)	Winter	2032	343.51	399.15	467.43	598.59	73.97	85.87	100.95	128.89
C	Orange (SC)	Winter	2033	343.51	399.26	467.43	598.71	73.97	85.94	100.96	128.97
C	Orange (SC)	Winter	2034	343.50	399.36	467.42	598.82	73.98	86.00	100.97	129.04
C	Orange (SC)	Winter	2035	343.50	399.44	467.42	598.92	73.98	86.05	100.97	129.10
C	Placer (LT)	Annual	2010	340.23	392.41	463.45	577.11	74.90	88.03	99.95	123.15
C	Placer (LT)	Annual	2011	339.97	392.42	463.05	578.12	74.69	87.25	99.98	123.39
C	Placer (LT)	Annual	2012	339.74	392.55	462.73	579.12	74.40	86.88	100.02	123.70
C	Placer (LT)	Annual	2013	339.68	392.64	462.48	580.23	74.28	86.50	100.11	124.04
C	Placer (LT)	Annual	2014	339.55	392.72	462.29	581.26	74.02	86.17	100.18	124.39
C	Placer (LT)	Annual	2015	339.51	392.81	462.13	582.31	73.88	85.86	100.25	124.76
C	Placer (LT)	Annual	2016	339.57	392.94	462.02	583.33	73.88	85.70	100.34	125.12
C	Placer (LT)	Annual	2017	339.55	392.98	461.93	584.26	73.79	85.38	100.40	125.48
C	Placer (LT)	Annual	2018	339.54	393.05	461.86	585.08	73.72	85.22	100.48	125.82
C	Placer (LT)	Annual	2019	339.49	393.16	461.81	585.79	73.61	85.17	100.54	126.14
C	Placer (LT)	Annual	2020	339.51	393.28	461.78	586.39	73.69	85.23	100.64	126.46
C	Placer (LT)	Annual	2021	339.39	393.37	461.75	586.89	73.69	85.32	100.72	126.73
C	Placer (LT)	Annual	2022	339.32	393.46	461.71	587.33	73.71	85.41	100.78	126.98
C	Placer (LT)	Annual	2023	339.19	393.47	461.67	587.65	73.70	85.46	100.83	127.20
C	Placer (LT)	Annual	2024	338.99	393.46	461.63	587.89	73.66	85.51	100.87	127.40
C	Placer (LT)	Annual	2025	338.92	393.53	461.61	588.13	73.66	85.59	100.91	127.59
C	Placer (LT)	Annual	2026	338.92	393.66	461.58	588.38	73.68	85.69	100.94	127.78
C	Placer (LT)	Annual	2027	338.92	393.78	461.56	588.62	73.70	85.78	100.96	127.94
C	Placer (LT)	Annual	2028	338.91	393.89	461.53	588.87	73.71	85.86	100.98	128.10
C	Placer (LT)	Annual	2029	338.88	394.01	461.50	589.12	73.71	85.93	100.99	128.24
C	Placer (LT)	Annual	2030	338.87	394.12	461.45	589.36	73.71	86.00	100.99	128.38
C	Placer (LT)	Annual	2031	338.87	394.23	461.43	589.62	73.72	86.07	101.00	128.51
C	Placer (LT)	Annual	2032	338.86	394.34	461.40	589.88	73.73	86.13	101.01	128.64
C	Placer (LT)	Annual	2033	338.86	394.44	461.38	590.11	73.73	86.19	101.01	128.75
C	Placer (LT)	Annual	2034	338.85	394.52	461.36	590.32	73.74	86.25	101.01	128.86
C	Placer (LT)	Annual	2035	338.84	394.59	461.34	590.51	73.74	86.29	101.02	128.96
C	Placer (LT)	Summer	2010	338.84	391.00	461.59	574.82	74.90	88.03	99.95	123.15
C	Placer (LT)	Summer	2011	338.57	390.97	461.17	575.82	74.69	87.25	99.98	123.39
C	Placer (LT)	Summer	2012	338.32	391.08	460.84	576.82	74.40	86.88	100.02	123.70
C	Placer (LT)	Summer	2013	338.25	391.14	460.59	577.91	74.28	86.50	100.11	124.04
C	Placer (LT)	Summer	2014	338.11	391.20	460.39	578.92	74.02	86.17	100.18	124.39
C	Placer (LT)	Summer	2015	338.07	391.27	460.22	579.97	73.88	85.86	100.25	124.76
C	Placer (LT)	Summer	2016	338.13	391.39	460.11	580.97	73.88	85.70	100.34	125.12
C	Placer (LT)	Summer	2017	338.10	391.41	460.01	581.88	73.79	85.38	100.40	125.48
C	Placer (LT)	Summer	2018	338.10	391.48	459.94	582.69	73.72	85.22	100.48	125.82
C	Placer (LT)	Summer	2019	338.04	391.58	459.89	583.40	73.61	85.17	100.54	126.14
C	Placer (LT)	Summer	2020	338.06	391.69	459.86	583.98	73.69	85.23	100.64	126.46
C	Placer (LT)	Summer	2021	337.95	391.78	459.84	584.48	73.69	85.32	100.72	126.73
C	Placer (LT)	Summer	2022	337.87	391.86	459.79	584.92	73.71	85.41	100.78	126.98
C	Placer (LT)	Summer	2023	337.74	391.87	459.76	585.24	73.70	85.46	100.83	127.20
C	Placer (LT)	Summer	2024	337.54	391.85	459.72	585.48	73.66	85.51	100.87	127.40
C	Placer (LT)	Summer	2025	337.47	391.92	459.69	585.72	73.66	85.59	100.91	127.59

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Placer (LT)	Summer	2026	337.47	392.04	459.66	585.97	73.68	85.69	100.94	127.78
C	Placer (LT)	Summer	2027	337.47	392.16	459.64	586.21	73.70	85.78	100.96	127.94
C	Placer (LT)	Summer	2028	337.46	392.27	459.61	586.46	73.71	85.86	100.98	128.10
C	Placer (LT)	Summer	2029	337.44	392.39	459.58	586.70	73.71	85.93	100.99	128.24
C	Placer (LT)	Summer	2030	337.42	392.50	459.53	586.94	73.71	86.00	100.99	128.38
C	Placer (LT)	Summer	2031	337.42	392.60	459.50	587.19	73.72	86.07	101.00	128.51
C	Placer (LT)	Summer	2032	337.41	392.71	459.48	587.45	73.73	86.13	101.01	128.64
C	Placer (LT)	Summer	2033	337.40	392.80	459.46	587.68	73.73	86.19	101.01	128.75
C	Placer (LT)	Summer	2034	337.40	392.88	459.44	587.89	73.74	86.25	101.01	128.86
C	Placer (LT)	Summer	2035	337.39	392.96	459.42	588.07	73.74	86.29	101.02	128.96
C	Placer (LT)	Winter	2010	338.69	390.84	461.38	574.56	74.90	88.03	99.95	123.15
C	Placer (LT)	Winter	2011	338.41	390.80	460.96	575.56	74.69	87.25	99.98	123.39
C	Placer (LT)	Winter	2012	338.16	390.91	460.63	576.55	74.40	86.88	100.02	123.70
C	Placer (LT)	Winter	2013	338.09	390.97	460.37	577.65	74.28	86.50	100.11	124.04
C	Placer (LT)	Winter	2014	337.95	391.03	460.17	578.66	74.02	86.17	100.18	124.39
C	Placer (LT)	Winter	2015	337.90	391.10	460.01	579.70	73.88	85.86	100.25	124.76
C	Placer (LT)	Winter	2016	337.96	391.21	459.89	580.70	73.88	85.70	100.34	125.12
C	Placer (LT)	Winter	2017	337.94	391.23	459.79	581.61	73.79	85.38	100.40	125.48
C	Placer (LT)	Winter	2018	337.93	391.30	459.73	582.42	73.72	85.22	100.48	125.82
C	Placer (LT)	Winter	2019	337.88	391.40	459.67	583.12	73.61	85.17	100.54	126.14
C	Placer (LT)	Winter	2020	337.90	391.51	459.64	583.71	73.69	85.23	100.64	126.46
C	Placer (LT)	Winter	2021	337.78	391.60	459.62	584.21	73.69	85.32	100.72	126.73
C	Placer (LT)	Winter	2022	337.71	391.68	459.57	584.64	73.71	85.41	100.78	126.98
C	Placer (LT)	Winter	2023	337.58	391.69	459.54	584.96	73.70	85.46	100.83	127.20
C	Placer (LT)	Winter	2024	337.38	391.66	459.50	585.21	73.66	85.51	100.87	127.40
C	Placer (LT)	Winter	2025	337.31	391.74	459.47	585.44	73.66	85.59	100.91	127.59
C	Placer (LT)	Winter	2026	337.31	391.86	459.44	585.69	73.68	85.69	100.94	127.78
C	Placer (LT)	Winter	2027	337.31	391.98	459.42	585.93	73.70	85.78	100.96	127.94
C	Placer (LT)	Winter	2028	337.30	392.09	459.39	586.18	73.71	85.86	100.98	128.10
C	Placer (LT)	Winter	2029	337.27	392.20	459.36	586.42	73.71	85.93	100.99	128.24
C	Placer (LT)	Winter	2030	337.25	392.31	459.31	586.66	73.71	86.00	100.99	128.38
C	Placer (LT)	Winter	2031	337.25	392.42	459.29	586.92	73.72	86.07	101.00	128.51
C	Placer (LT)	Winter	2032	337.24	392.52	459.26	587.18	73.73	86.13	101.01	128.64
C	Placer (LT)	Winter	2033	337.24	392.62	459.24	587.41	73.73	86.19	101.01	128.75
C	Placer (LT)	Winter	2034	337.23	392.70	459.22	587.62	73.74	86.25	101.01	128.86
C	Placer (LT)	Winter	2035	337.23	392.77	459.20	587.80	73.74	86.29	101.02	128.96
C	Placer (MC)	Annual	2010	329.36	386.40	451.66	564.92	74.80	97.65	101.10	126.15
C	Placer (MC)	Annual	2011	329.15	385.52	450.95	565.40	74.33	95.41	100.91	126.13
C	Placer (MC)	Annual	2012	329.07	384.69	450.42	566.02	74.02	93.26	100.87	126.12
C	Placer (MC)	Annual	2013	329.11	384.15	450.00	566.65	73.83	91.74	100.80	126.20
C	Placer (MC)	Annual	2014	329.16	383.61	449.69	567.30	73.68	90.22	100.75	126.29
C	Placer (MC)	Annual	2015	329.24	383.22	449.43	567.96	73.57	89.07	100.72	126.43
C	Placer (MC)	Annual	2016	329.36	382.88	449.24	568.58	73.54	88.05	100.72	126.60
C	Placer (MC)	Annual	2017	329.40	382.34	449.07	569.24	73.43	86.60	100.66	126.74
C	Placer (MC)	Annual	2018	329.36	382.09	448.94	569.80	73.26	85.85	100.69	126.90
C	Placer (MC)	Annual	2019	332.02	385.00	452.39	574.73	73.29	85.50	100.67	127.04
C	Placer (MC)	Annual	2020	332.07	384.86	452.31	575.12	73.38	85.28	100.73	127.19
C	Placer (MC)	Annual	2021	332.12	384.99	452.23	575.34	73.44	85.38	100.80	127.25
C	Placer (MC)	Annual	2022	332.17	385.09	452.15	575.43	73.51	85.47	100.85	127.16
C	Placer (MC)	Annual	2023	332.19	385.15	452.08	575.52	73.55	85.54	100.90	127.30
C	Placer (MC)	Annual	2024	332.17	385.17	452.02	575.58	73.57	85.59	100.94	127.43
C	Placer (MC)	Annual	2025	332.15	385.21	451.97	575.68	73.59	85.65	100.97	127.57
C	Placer (MC)	Annual	2026	332.17	385.30	451.90	575.81	73.61	85.72	100.99	127.72
C	Placer (MC)	Annual	2027	332.18	385.38	451.84	575.95	73.62	85.78	101.01	127.85

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Placer (MC)	Annual	2028	332.18	385.47	451.76	576.09	73.63	85.85	101.01	127.97
C	Placer (MC)	Annual	2029	332.18	385.56	451.67	576.26	73.64	85.91	101.01	128.09
C	Placer (MC)	Annual	2030	332.17	385.66	451.55	576.44	73.64	85.96	100.98	128.21
C	Placer (MC)	Annual	2031	332.17	385.75	451.50	576.67	73.65	86.02	100.99	128.33
C	Placer (MC)	Annual	2032	332.16	385.83	451.46	576.90	73.66	86.07	100.99	128.45
C	Placer (MC)	Annual	2033	332.16	385.91	451.43	577.12	73.66	86.12	100.99	128.57
C	Placer (MC)	Annual	2034	332.16	385.97	451.40	577.32	73.67	86.17	100.99	128.67
C	Placer (MC)	Annual	2035	332.15	386.03	451.37	577.50	73.67	86.20	101.00	128.78
C	Placer (MC)	Summer	2010	352.60	410.10	482.16	602.93	74.80	97.65	101.10	126.15
C	Placer (MC)	Summer	2011	352.62	409.82	481.81	603.49	74.33	95.41	100.91	126.13
C	Placer (MC)	Summer	2012	352.73	409.55	481.54	604.28	74.02	93.26	100.87	126.12
C	Placer (MC)	Summer	2013	352.90	409.38	481.34	605.11	73.83	91.74	100.80	126.20
C	Placer (MC)	Summer	2014	353.06	409.18	481.21	605.99	73.68	90.22	100.75	126.29
C	Placer (MC)	Summer	2015	353.22	409.05	481.09	606.90	73.57	89.07	100.72	126.43
C	Placer (MC)	Summer	2016	353.39	408.90	480.99	607.75	73.54	88.05	100.72	126.60
C	Placer (MC)	Summer	2017	353.47	408.64	480.89	608.64	73.43	86.60	100.66	126.74
C	Placer (MC)	Summer	2018	353.45	408.51	480.77	609.39	73.26	85.85	100.69	126.90
C	Placer (MC)	Summer	2019	356.31	411.72	484.51	614.80	73.29	85.50	100.67	127.04
C	Placer (MC)	Summer	2020	356.34	411.66	484.39	615.29	73.38	85.28	100.73	127.19
C	Placer (MC)	Summer	2021	356.36	411.82	484.28	615.58	73.44	85.38	100.80	127.25
C	Placer (MC)	Summer	2022	356.40	411.97	484.18	615.77	73.51	85.47	100.85	127.16
C	Placer (MC)	Summer	2023	356.40	412.10	484.10	615.91	73.55	85.54	100.90	127.30
C	Placer (MC)	Summer	2024	356.40	412.17	484.02	615.97	73.57	85.59	100.94	127.43
C	Placer (MC)	Summer	2025	356.38	412.27	483.96	616.07	73.59	85.65	100.97	127.57
C	Placer (MC)	Summer	2026	356.41	412.39	483.91	616.17	73.61	85.72	100.99	127.72
C	Placer (MC)	Summer	2027	356.43	412.50	483.87	616.28	73.62	85.78	101.01	127.85
C	Placer (MC)	Summer	2028	356.44	412.63	483.82	616.43	73.63	85.85	101.01	127.97
C	Placer (MC)	Summer	2029	356.46	412.75	483.76	616.60	73.64	85.91	101.01	128.09
C	Placer (MC)	Summer	2030	356.46	412.90	483.67	616.81	73.64	85.96	100.98	128.21
C	Placer (MC)	Summer	2031	356.46	413.02	483.66	617.09	73.65	86.02	100.99	128.33
C	Placer (MC)	Summer	2032	356.46	413.12	483.65	617.39	73.66	86.07	100.99	128.45
C	Placer (MC)	Summer	2033	356.45	413.21	483.63	617.66	73.66	86.12	100.99	128.57
C	Placer (MC)	Summer	2034	356.45	413.29	483.61	617.93	73.67	86.17	100.99	128.67
C	Placer (MC)	Summer	2035	356.44	413.35	483.58	618.17	73.67	86.20	101.00	128.78
C	Placer (MC)	Winter	2010	324.91	381.86	445.82	557.64	74.80	97.65	101.10	126.15
C	Placer (MC)	Winter	2011	324.66	380.86	445.04	558.11	74.33	95.41	100.91	126.13
C	Placer (MC)	Winter	2012	324.54	379.93	444.46	558.70	74.02	93.26	100.87	126.12
C	Placer (MC)	Winter	2013	324.55	379.32	444.00	559.29	73.83	91.74	100.80	126.20
C	Placer (MC)	Winter	2014	324.58	378.71	443.65	559.89	73.68	90.22	100.75	126.29
C	Placer (MC)	Winter	2015	324.65	378.28	443.37	560.51	73.57	89.07	100.72	126.43
C	Placer (MC)	Winter	2016	324.76	377.90	443.16	561.08	73.54	88.05	100.72	126.60
C	Placer (MC)	Winter	2017	324.79	377.30	442.98	561.69	73.43	86.60	100.66	126.74
C	Placer (MC)	Winter	2018	324.75	377.03	442.84	562.22	73.26	85.85	100.69	126.90
C	Placer (MC)	Winter	2019	327.37	379.88	446.24	567.05	73.29	85.50	100.67	127.04
C	Placer (MC)	Winter	2020	327.42	379.73	446.16	567.42	73.38	85.28	100.73	127.19
C	Placer (MC)	Winter	2021	327.47	379.84	446.08	567.62	73.44	85.38	100.80	127.25
C	Placer (MC)	Winter	2022	327.53	379.93	446.02	567.70	73.51	85.47	100.85	127.16
C	Placer (MC)	Winter	2023	327.55	379.99	445.95	567.78	73.55	85.54	100.90	127.30
C	Placer (MC)	Winter	2024	327.53	379.99	445.89	567.83	73.57	85.59	100.94	127.43
C	Placer (MC)	Winter	2025	327.51	380.02	445.84	567.94	73.59	85.65	100.97	127.57
C	Placer (MC)	Winter	2026	327.52	380.10	445.77	568.08	73.61	85.72	100.99	127.72
C	Placer (MC)	Winter	2027	327.53	380.18	445.70	568.22	73.62	85.78	101.01	127.85
C	Placer (MC)	Winter	2028	327.53	380.27	445.62	568.36	73.63	85.85	101.01	127.97
C	Placer (MC)	Winter	2029	327.53	380.35	445.52	568.53	73.64	85.91	101.01	128.09

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Placer (MC)	Winter	2030	327.52	380.43	445.39	568.71	73.64	85.96	100.98	128.21
C	Placer (MC)	Winter	2031	327.52	380.52	445.34	568.92	73.65	86.02	100.99	128.33
C	Placer (MC)	Winter	2032	327.51	380.60	445.29	569.15	73.66	86.07	100.99	128.45
C	Placer (MC)	Winter	2033	327.51	380.67	445.26	569.35	73.66	86.12	100.99	128.57
C	Placer (MC)	Winter	2034	327.50	380.74	445.22	569.54	73.67	86.17	100.99	128.67
C	Placer (MC)	Winter	2035	327.50	380.79	445.19	569.71	73.67	86.20	101.00	128.78
C	Placer (SV)	Annual	2010	330.73	381.91	453.82	574.66	73.02	85.63	99.77	125.72
C	Placer (SV)	Annual	2011	330.94	382.54	453.73	575.15	73.00	85.31	99.84	125.93
C	Placer (SV)	Annual	2012	331.14	383.12	453.66	575.67	72.98	85.12	99.94	126.16
C	Placer (SV)	Annual	2013	331.36	383.59	453.61	576.19	73.02	84.98	100.04	126.39
C	Placer (SV)	Annual	2014	331.54	384.02	453.59	576.71	73.02	84.89	100.12	126.62
C	Placer (SV)	Annual	2015	331.72	384.39	453.58	577.22	73.07	84.82	100.20	126.84
C	Placer (SV)	Annual	2016	331.89	384.74	453.58	577.72	73.15	84.80	100.28	127.07
C	Placer (SV)	Annual	2017	332.02	385.03	453.57	578.18	73.21	84.75	100.34	127.30
C	Placer (SV)	Annual	2018	332.13	385.29	453.57	578.57	73.26	84.74	100.42	127.51
C	Placer (SV)	Annual	2019	331.61	384.84	452.75	577.85	73.32	84.86	100.50	127.69
C	Placer (SV)	Annual	2020	331.69	385.06	452.74	578.14	73.41	84.99	100.58	127.86
C	Placer (SV)	Annual	2021	331.75	385.26	452.73	578.36	73.48	85.13	100.66	127.99
C	Placer (SV)	Annual	2022	331.79	385.43	452.72	578.54	73.53	85.25	100.72	128.10
C	Placer (SV)	Annual	2023	331.81	385.56	452.70	578.69	73.57	85.36	100.78	128.24
C	Placer (SV)	Annual	2024	331.82	385.67	452.69	578.81	73.59	85.45	100.82	128.36
C	Placer (SV)	Annual	2025	331.83	385.78	452.68	578.93	73.61	85.53	100.86	128.48
C	Placer (SV)	Annual	2026	331.85	385.89	452.67	579.04	73.63	85.62	100.89	128.59
C	Placer (SV)	Annual	2027	331.87	385.99	452.65	579.14	73.64	85.69	100.92	128.68
C	Placer (SV)	Annual	2028	331.88	386.10	452.64	579.25	73.65	85.75	100.94	128.77
C	Placer (SV)	Annual	2029	331.89	386.21	452.63	579.35	73.66	85.82	100.95	128.85
C	Placer (SV)	Annual	2030	331.89	386.32	452.63	579.46	73.67	85.88	100.96	128.92
C	Placer (SV)	Annual	2031	331.90	386.42	452.62	579.56	73.67	85.94	100.97	128.99
C	Placer (SV)	Annual	2032	331.90	386.52	452.61	579.67	73.67	85.99	100.97	129.06
C	Placer (SV)	Annual	2033	331.90	386.60	452.61	579.77	73.68	86.04	100.98	129.12
C	Placer (SV)	Annual	2034	331.90	386.68	452.60	579.86	73.68	86.08	100.99	129.18
C	Placer (SV)	Annual	2035	331.90	386.73	452.60	579.94	73.68	86.12	100.99	129.23
C	Placer (SV)	Summer	2010	369.31	422.83	505.21	639.49	73.02	85.63	99.77	125.72
C	Placer (SV)	Summer	2011	369.67	424.09	505.18	639.85	73.00	85.31	99.84	125.93
C	Placer (SV)	Summer	2012	369.99	425.15	505.19	640.33	72.98	85.12	99.94	126.16
C	Placer (SV)	Summer	2013	370.30	425.98	505.22	640.88	73.02	84.98	100.04	126.39
C	Placer (SV)	Summer	2014	370.56	426.69	505.30	641.49	73.02	84.89	100.12	126.62
C	Placer (SV)	Summer	2015	370.79	427.26	505.37	642.12	73.07	84.82	100.20	126.84
C	Placer (SV)	Summer	2016	370.99	427.77	505.47	642.78	73.15	84.80	100.28	127.07
C	Placer (SV)	Summer	2017	371.13	428.22	505.53	643.41	73.21	84.75	100.34	127.30
C	Placer (SV)	Summer	2018	371.24	428.59	505.55	643.93	73.26	84.74	100.42	127.51
C	Placer (SV)	Summer	2019	370.64	428.12	504.63	643.16	73.32	84.86	100.50	127.69
C	Placer (SV)	Summer	2020	370.71	428.40	504.60	643.51	73.41	84.99	100.58	127.86
C	Placer (SV)	Summer	2021	370.75	428.64	504.55	643.79	73.48	85.13	100.66	127.99
C	Placer (SV)	Summer	2022	370.78	428.85	504.51	644.02	73.53	85.25	100.72	128.10
C	Placer (SV)	Summer	2023	370.81	429.03	504.48	644.20	73.57	85.36	100.78	128.24
C	Placer (SV)	Summer	2024	370.81	429.19	504.44	644.33	73.59	85.45	100.82	128.36
C	Placer (SV)	Summer	2025	370.82	429.33	504.41	644.45	73.61	85.53	100.86	128.48
C	Placer (SV)	Summer	2026	370.84	429.49	504.38	644.55	73.63	85.62	100.89	128.59
C	Placer (SV)	Summer	2027	370.86	429.64	504.37	644.64	73.64	85.69	100.92	128.68
C	Placer (SV)	Summer	2028	370.88	429.80	504.36	644.75	73.65	85.75	100.94	128.77
C	Placer (SV)	Summer	2029	370.90	429.96	504.35	644.85	73.66	85.82	100.95	128.85
C	Placer (SV)	Summer	2030	370.91	430.12	504.35	644.96	73.67	85.88	100.96	128.92
C	Placer (SV)	Summer	2031	370.92	430.27	504.34	645.06	73.67	85.94	100.97	128.99

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Placer (SV)	Summer	2032	370.92	430.41	504.33	645.17	73.67	85.99	100.97	129.06
C	Placer (SV)	Summer	2033	370.93	430.52	504.33	645.28	73.68	86.04	100.98	129.12
C	Placer (SV)	Summer	2034	370.93	430.61	504.33	645.39	73.68	86.08	100.99	129.18
C	Placer (SV)	Summer	2035	370.92	430.68	504.32	645.50	73.68	86.12	100.99	129.23
C	Placer (SV)	Winter	2010	320.40	370.94	440.06	557.29	73.02	85.63	99.77	125.72
C	Placer (SV)	Winter	2011	320.57	371.41	439.94	557.81	73.00	85.31	99.84	125.93
C	Placer (SV)	Winter	2012	320.73	371.86	439.86	558.35	72.98	85.12	99.94	126.16
C	Placer (SV)	Winter	2013	320.93	372.24	439.79	558.86	73.02	84.98	100.04	126.39
C	Placer (SV)	Winter	2014	321.08	372.59	439.74	559.36	73.02	84.89	100.12	126.62
C	Placer (SV)	Winter	2015	321.25	372.91	439.70	559.84	73.07	84.82	100.20	126.84
C	Placer (SV)	Winter	2016	321.42	373.21	439.68	560.29	73.15	84.80	100.28	127.07
C	Placer (SV)	Winter	2017	321.54	373.46	439.65	560.71	73.21	84.75	100.34	127.30
C	Placer (SV)	Winter	2018	321.65	373.69	439.64	561.06	73.26	84.74	100.42	127.51
C	Placer (SV)	Winter	2019	321.15	373.25	438.84	560.35	73.32	84.86	100.50	127.69
C	Placer (SV)	Winter	2020	321.23	373.45	438.84	560.62	73.41	84.99	100.58	127.86
C	Placer (SV)	Winter	2021	321.29	373.63	438.84	560.82	73.48	85.13	100.66	127.99
C	Placer (SV)	Winter	2022	321.34	373.79	438.83	561.00	73.53	85.25	100.72	128.10
C	Placer (SV)	Winter	2023	321.36	373.92	438.83	561.14	73.57	85.36	100.78	128.24
C	Placer (SV)	Winter	2024	321.37	374.01	438.82	561.25	73.59	85.45	100.82	128.36
C	Placer (SV)	Winter	2025	321.38	374.10	438.82	561.37	73.61	85.53	100.86	128.48
C	Placer (SV)	Winter	2026	321.40	374.20	438.81	561.48	73.63	85.62	100.89	128.59
C	Placer (SV)	Winter	2027	321.42	374.30	438.80	561.59	73.64	85.69	100.92	128.68
C	Placer (SV)	Winter	2028	321.43	374.39	438.79	561.70	73.65	85.75	100.94	128.77
C	Placer (SV)	Winter	2029	321.43	374.48	438.78	561.80	73.66	85.82	100.95	128.85
C	Placer (SV)	Winter	2030	321.44	374.58	438.77	561.91	73.67	85.88	100.96	128.92
C	Placer (SV)	Winter	2031	321.44	374.67	438.76	562.01	73.67	85.94	100.97	128.99
C	Placer (SV)	Winter	2032	321.44	374.76	438.76	562.12	73.67	85.99	100.97	129.06
C	Placer (SV)	Winter	2033	321.45	374.83	438.75	562.21	73.68	86.04	100.98	129.12
C	Placer (SV)	Winter	2034	321.45	374.90	438.74	562.30	73.68	86.08	100.99	129.18
C	Placer (SV)	Winter	2035	321.44	374.96	438.74	562.37	73.68	86.12	100.99	129.23
C	Plumas (MC)	Annual	2010	383.48	448.24	524.45	653.78	74.50	93.88	101.47	124.70
C	Plumas (MC)	Annual	2011	383.12	447.42	523.71	654.62	74.27	92.26	101.32	124.82
C	Plumas (MC)	Annual	2012	382.79	446.84	523.14	655.56	73.97	91.08	101.21	124.99
C	Plumas (MC)	Annual	2013	382.71	446.31	522.67	656.57	73.86	90.01	101.00	125.19
C	Plumas (MC)	Annual	2014	382.50	445.90	522.32	657.55	73.59	89.13	100.92	125.40
C	Plumas (MC)	Annual	2015	382.45	445.52	522.05	658.55	73.48	88.27	100.95	125.66
C	Plumas (MC)	Annual	2016	382.50	445.23	521.82	659.51	73.48	87.57	100.95	125.92
C	Plumas (MC)	Annual	2017	382.49	444.92	521.63	660.38	73.43	86.78	100.84	126.20
C	Plumas (MC)	Annual	2018	382.47	444.69	521.48	661.15	73.38	86.22	100.83	126.45
C	Plumas (MC)	Annual	2019	382.41	444.56	521.35	661.77	73.32	85.87	100.81	126.70
C	Plumas (MC)	Annual	2020	382.39	444.47	521.25	662.32	73.39	85.75	100.84	126.93
C	Plumas (MC)	Annual	2021	382.31	444.37	521.14	662.71	73.42	85.71	100.88	127.10
C	Plumas (MC)	Annual	2022	382.11	444.28	521.03	663.00	73.41	85.69	100.91	127.19
C	Plumas (MC)	Annual	2023	381.98	444.15	520.94	663.22	73.42	85.64	100.93	127.37
C	Plumas (MC)	Annual	2024	381.82	444.05	520.85	663.39	73.40	85.62	100.95	127.54
C	Plumas (MC)	Annual	2025	381.72	444.07	520.79	663.57	73.41	85.67	100.98	127.71
C	Plumas (MC)	Annual	2026	381.70	444.20	520.72	663.78	73.43	85.76	101.00	127.87
C	Plumas (MC)	Annual	2027	381.70	444.30	520.66	664.00	73.44	85.84	101.01	128.03
C	Plumas (MC)	Annual	2028	381.68	444.43	520.60	664.24	73.45	85.91	101.02	128.17
C	Plumas (MC)	Annual	2029	381.63	444.54	520.52	664.46	73.45	85.98	101.01	128.30
C	Plumas (MC)	Annual	2030	381.60	444.65	520.45	664.68	73.45	86.04	101.01	128.43
C	Plumas (MC)	Annual	2031	381.59	444.76	520.41	664.95	73.46	86.10	101.01	128.56
C	Plumas (MC)	Annual	2032	381.58	444.86	520.38	665.22	73.46	86.16	101.01	128.68
C	Plumas (MC)	Annual	2033	381.57	444.95	520.36	665.45	73.47	86.21	101.01	128.79

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Plumas (MC)	Annual	2034	381.56	445.03	520.33	665.67	73.47	86.26	101.02	128.89
C	Plumas (MC)	Annual	2035	381.55	445.09	520.31	665.86	73.47	86.30	101.02	128.98
C	Plumas (MC)	Summer	2010	408.76	472.90	558.33	694.63	74.50	93.88	101.47	124.70
C	Plumas (MC)	Summer	2011	408.75	473.23	557.90	695.71	74.27	92.26	101.32	124.82
C	Plumas (MC)	Summer	2012	408.69	473.46	557.59	696.96	73.97	91.08	101.21	124.99
C	Plumas (MC)	Summer	2013	408.80	473.57	557.38	698.32	73.86	90.01	101.00	125.19
C	Plumas (MC)	Summer	2014	408.76	473.64	557.21	699.63	73.59	89.13	100.92	125.40
C	Plumas (MC)	Summer	2015	408.82	473.68	557.08	701.00	73.48	88.27	100.95	125.66
C	Plumas (MC)	Summer	2016	408.94	473.71	556.97	702.30	73.48	87.57	100.95	125.92
C	Plumas (MC)	Summer	2017	408.96	473.70	556.88	703.46	73.43	86.78	100.84	126.20
C	Plumas (MC)	Summer	2018	408.94	473.67	556.77	704.48	73.38	86.22	100.83	126.45
C	Plumas (MC)	Summer	2019	408.89	473.69	556.67	705.32	73.32	85.87	100.81	126.70
C	Plumas (MC)	Summer	2020	408.86	473.73	556.58	706.05	73.39	85.75	100.84	126.93
C	Plumas (MC)	Summer	2021	408.78	473.74	556.48	706.60	73.42	85.71	100.88	127.10
C	Plumas (MC)	Summer	2022	408.58	473.77	556.38	707.04	73.41	85.69	100.91	127.19
C	Plumas (MC)	Summer	2023	408.46	473.75	556.30	707.36	73.42	85.64	100.93	127.37
C	Plumas (MC)	Summer	2024	408.30	473.76	556.22	707.63	73.40	85.62	100.95	127.54
C	Plumas (MC)	Summer	2025	408.21	473.84	556.16	707.88	73.41	85.67	100.98	127.71
C	Plumas (MC)	Summer	2026	408.22	474.03	556.10	708.13	73.43	85.76	101.00	127.87
C	Plumas (MC)	Summer	2027	408.23	474.17	556.06	708.38	73.44	85.84	101.01	128.03
C	Plumas (MC)	Summer	2028	408.23	474.35	556.02	708.66	73.45	85.91	101.02	128.17
C	Plumas (MC)	Summer	2029	408.21	474.53	555.96	708.94	73.45	85.98	101.01	128.30
C	Plumas (MC)	Summer	2030	408.20	474.69	555.90	709.22	73.45	86.04	101.01	128.43
C	Plumas (MC)	Summer	2031	408.20	474.85	555.87	709.55	73.46	86.10	101.01	128.56
C	Plumas (MC)	Summer	2032	408.20	474.98	555.85	709.87	73.46	86.16	101.01	128.68
C	Plumas (MC)	Summer	2033	408.19	475.10	555.83	710.16	73.47	86.21	101.01	128.79
C	Plumas (MC)	Summer	2034	408.18	475.21	555.80	710.43	73.47	86.26	101.02	128.89
C	Plumas (MC)	Summer	2035	408.16	475.28	555.78	710.66	73.47	86.30	101.02	128.98
C	Plumas (MC)	Winter	2010	378.05	442.95	517.17	645.01	74.50	93.88	101.47	124.70
C	Plumas (MC)	Winter	2011	377.62	441.88	516.37	645.79	74.27	92.26	101.32	124.82
C	Plumas (MC)	Winter	2012	377.22	441.12	515.74	646.67	73.97	91.08	101.21	124.99
C	Plumas (MC)	Winter	2013	377.10	440.45	515.22	647.61	73.86	90.01	101.00	125.19
C	Plumas (MC)	Winter	2014	376.86	439.94	514.83	648.51	73.59	89.13	100.92	125.40
C	Plumas (MC)	Winter	2015	376.79	439.47	514.52	649.44	73.48	88.27	100.95	125.66
C	Plumas (MC)	Winter	2016	376.82	439.11	514.28	650.32	73.48	87.57	100.95	125.92
C	Plumas (MC)	Winter	2017	376.81	438.74	514.06	651.13	73.43	86.78	100.84	126.20
C	Plumas (MC)	Winter	2018	376.78	438.47	513.90	651.84	73.38	86.22	100.83	126.45
C	Plumas (MC)	Winter	2019	376.73	438.30	513.77	652.42	73.32	85.87	100.81	126.70
C	Plumas (MC)	Winter	2020	376.70	438.19	513.66	652.93	73.39	85.75	100.84	126.93
C	Plumas (MC)	Winter	2021	376.63	438.06	513.55	653.29	73.42	85.71	100.88	127.10
C	Plumas (MC)	Winter	2022	376.42	437.94	513.44	653.55	73.41	85.69	100.91	127.19
C	Plumas (MC)	Winter	2023	376.29	437.79	513.34	653.74	73.42	85.64	100.93	127.37
C	Plumas (MC)	Winter	2024	376.13	437.66	513.26	653.89	73.40	85.62	100.95	127.54
C	Plumas (MC)	Winter	2025	376.03	437.68	513.20	654.05	73.41	85.67	100.98	127.71
C	Plumas (MC)	Winter	2026	376.01	437.79	513.12	654.25	73.43	85.76	101.00	127.87
C	Plumas (MC)	Winter	2027	376.00	437.89	513.06	654.47	73.44	85.84	101.01	128.03
C	Plumas (MC)	Winter	2028	375.97	438.00	513.00	654.70	73.45	85.91	101.02	128.17
C	Plumas (MC)	Winter	2029	375.92	438.10	512.91	654.91	73.45	85.98	101.01	128.30
C	Plumas (MC)	Winter	2030	375.89	438.20	512.83	655.12	73.45	86.04	101.01	128.43
C	Plumas (MC)	Winter	2031	375.88	438.30	512.79	655.37	73.46	86.10	101.01	128.56
C	Plumas (MC)	Winter	2032	375.87	438.39	512.76	655.62	73.46	86.16	101.01	128.68
C	Plumas (MC)	Winter	2033	375.86	438.47	512.74	655.85	73.47	86.21	101.01	128.79
C	Plumas (MC)	Winter	2034	375.85	438.54	512.72	656.06	73.47	86.26	101.02	128.89
C	Plumas (MC)	Winter	2035	375.84	438.60	512.70	656.24	73.47	86.30	101.02	128.98

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Riverside (MD/MDAQMD)	Annual	2010	369.67	426.53	505.92	638.18	73.80	88.32	101.83	126.09
C	Riverside (MD/MDAQMD)	Annual	2011	363.13	419.45	496.23	627.22	73.74	87.52	101.71	126.32
C	Riverside (MD/MDAQMD)	Annual	2012	363.45	420.07	495.98	628.06	73.81	87.02	101.53	126.58
C	Riverside (MD/MDAQMD)	Annual	2013	355.83	411.52	485.10	615.48	73.74	86.56	101.33	126.89
C	Riverside (MD/MDAQMD)	Annual	2014	356.04	411.97	484.98	616.31	73.77	86.37	101.22	127.18
C	Riverside (MD/MDAQMD)	Annual	2015	343.49	397.67	467.64	595.16	73.80	86.23	101.12	127.47
C	Riverside (MD/MDAQMD)	Annual	2016	343.62	397.92	467.57	595.81	73.85	86.05	100.99	127.72
C	Riverside (MD/MDAQMD)	Annual	2017	343.68	398.10	467.49	596.37	73.82	85.88	100.89	127.96
C	Riverside (MD/MDAQMD)	Annual	2018	343.71	398.23	467.40	596.79	73.83	85.77	100.94	128.17
C	Riverside (MD/MDAQMD)	Annual	2019	342.93	397.41	466.27	595.71	73.85	85.71	100.91	128.35
C	Riverside (MD/MDAQMD)	Annual	2020	342.93	397.49	466.18	595.93	73.90	85.74	100.94	128.50
C	Riverside (MD/MDAQMD)	Annual	2021	341.38	395.73	464.03	593.37	73.93	85.79	100.97	128.60
C	Riverside (MD/MDAQMD)	Annual	2022	341.32	395.69	463.91	593.40	73.94	85.82	100.98	128.68
C	Riverside (MD/MDAQMD)	Annual	2023	341.26	395.69	463.82	593.44	73.95	85.86	100.99	128.77
C	Riverside (MD/MDAQMD)	Annual	2024	341.57	396.13	464.28	594.16	73.95	85.89	101.00	128.86
C	Riverside (MD/MDAQMD)	Annual	2025	341.55	396.17	464.23	594.18	73.95	85.94	101.02	128.94
C	Riverside (MD/MDAQMD)	Annual	2026	341.54	396.24	464.17	594.20	73.96	86.00	101.02	129.01
C	Riverside (MD/MDAQMD)	Annual	2027	341.55	396.33	464.13	594.25	73.97	86.05	101.03	129.07
C	Riverside (MD/MDAQMD)	Annual	2028	341.55	396.42	464.10	594.31	73.97	86.10	101.03	129.13
C	Riverside (MD/MDAQMD)	Annual	2029	341.56	396.52	464.08	594.39	73.97	86.15	101.04	129.19
C	Riverside (MD/MDAQMD)	Annual	2030	341.57	396.62	464.07	594.47	73.98	86.19	101.04	129.24
C	Riverside (MD/MDAQMD)	Annual	2031	341.64	396.78	464.16	594.65	73.98	86.23	101.04	129.28
C	Riverside (MD/MDAQMD)	Annual	2032	341.65	396.86	464.15	594.71	73.98	86.26	101.04	129.33
C	Riverside (MD/MDAQMD)	Annual	2033	341.65	396.92	464.14	594.77	73.98	86.29	101.05	129.37
C	Riverside (MD/MDAQMD)	Annual	2034	341.65	396.98	464.13	594.83	73.99	86.32	101.05	129.40
C	Riverside (MD/MDAQMD)	Annual	2035	341.65	397.03	464.13	594.88	73.99	86.34	101.05	129.43
C	Riverside (MD/MDAQMD)	Summer	2010	377.81	434.15	516.42	651.64	73.80	88.32	101.83	126.09
C	Riverside (MD/MDAQMD)	Summer	2011	371.35	427.52	506.84	640.74	73.74	87.52	101.71	126.32
C	Riverside (MD/MDAQMD)	Summer	2012	371.72	428.43	506.69	641.64	73.81	87.02	101.53	126.58
C	Riverside (MD/MDAQMD)	Summer	2013	364.01	420.00	495.73	628.91	73.74	86.56	101.33	126.89
C	Riverside (MD/MDAQMD)	Summer	2014	364.25	420.62	495.68	629.84	73.77	86.37	101.22	127.18
C	Riverside (MD/MDAQMD)	Summer	2015	351.17	405.87	477.68	607.85	73.80	86.23	101.12	127.47
C	Riverside (MD/MDAQMD)	Summer	2016	351.32	406.21	477.66	608.58	73.85	86.05	100.99	127.72
C	Riverside (MD/MDAQMD)	Summer	2017	351.38	406.47	477.62	609.19	73.82	85.88	100.89	127.96
C	Riverside (MD/MDAQMD)	Summer	2018	351.42	406.65	477.53	609.64	73.83	85.77	100.94	128.17
C	Riverside (MD/MDAQMD)	Summer	2019	350.38	405.58	476.07	608.16	73.85	85.71	100.91	128.35
C	Riverside (MD/MDAQMD)	Summer	2020	350.37	405.69	475.97	608.38	73.90	85.74	100.94	128.50
C	Riverside (MD/MDAQMD)	Summer	2021	348.75	403.88	473.74	605.72	73.93	85.79	100.97	128.60
C	Riverside (MD/MDAQMD)	Summer	2022	348.67	403.84	473.61	605.74	73.94	85.82	100.98	128.68
C	Riverside (MD/MDAQMD)	Summer	2023	348.60	403.83	473.50	605.75	73.95	85.86	100.99	128.77
C	Riverside (MD/MDAQMD)	Summer	2024	348.76	404.12	473.75	606.20	73.95	85.89	101.00	128.86
C	Riverside (MD/MDAQMD)	Summer	2025	348.73	404.15	473.70	606.22	73.95	85.94	101.02	128.94
C	Riverside (MD/MDAQMD)	Summer	2026	348.72	404.23	473.62	606.22	73.96	86.00	101.02	129.01
C	Riverside (MD/MDAQMD)	Summer	2027	348.73	404.32	473.59	606.26	73.97	86.05	101.03	129.07
C	Riverside (MD/MDAQMD)	Summer	2028	348.74	404.42	473.56	606.32	73.97	86.10	101.03	129.13
C	Riverside (MD/MDAQMD)	Summer	2029	348.75	404.53	473.55	606.40	73.97	86.15	101.04	129.19
C	Riverside (MD/MDAQMD)	Summer	2030	348.77	404.64	473.54	606.49	73.98	86.19	101.04	129.24
C	Riverside (MD/MDAQMD)	Summer	2031	348.83	404.79	473.62	606.65	73.98	86.23	101.04	129.28
C	Riverside (MD/MDAQMD)	Summer	2032	348.84	404.88	473.60	606.70	73.98	86.26	101.04	129.33
C	Riverside (MD/MDAQMD)	Summer	2033	348.84	404.95	473.59	606.76	73.98	86.29	101.05	129.37
C	Riverside (MD/MDAQMD)	Summer	2034	348.84	405.01	473.58	606.82	73.99	86.32	101.05	129.40
C	Riverside (MD/MDAQMD)	Summer	2035	348.84	405.06	473.57	606.88	73.99	86.34	101.05	129.43
C	Riverside (MD/MDAQMD)	Winter	2010	370.14	426.97	506.53	638.95	73.80	88.32	101.83	126.09
C	Riverside (MD/MDAQMD)	Winter	2011	363.52	419.84	496.74	627.87	73.74	87.52	101.71	126.32

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Riverside (MD/MDAQMD)	Winter	2012	363.85	420.46	496.49	628.71	73.81	87.02	101.53	126.58
C	Riverside (MD/MDAQMD)	Winter	2013	356.20	411.90	485.58	616.08	73.74	86.56	101.33	126.89
C	Riverside (MD/MDAQMD)	Winter	2014	356.41	412.36	485.46	616.93	73.77	86.37	101.22	127.18
C	Riverside (MD/MDAQMD)	Winter	2015	343.96	398.17	468.25	595.93	73.80	86.23	101.12	127.47
C	Riverside (MD/MDAQMD)	Winter	2016	344.09	398.43	468.18	596.59	73.85	86.05	100.99	127.72
C	Riverside (MD/MDAQMD)	Winter	2017	344.14	398.61	468.11	597.15	73.82	85.88	100.89	127.96
C	Riverside (MD/MDAQMD)	Winter	2018	344.18	398.74	468.02	597.57	73.83	85.77	100.94	128.17
C	Riverside (MD/MDAQMD)	Winter	2019	343.49	398.02	467.00	596.64	73.85	85.71	100.91	128.35
C	Riverside (MD/MDAQMD)	Winter	2020	343.49	398.11	466.91	596.86	73.90	85.74	100.94	128.50
C	Riverside (MD/MDAQMD)	Winter	2021	341.93	396.34	464.75	594.29	73.93	85.79	100.97	128.60
C	Riverside (MD/MDAQMD)	Winter	2022	341.87	396.30	464.64	594.33	73.94	85.82	100.98	128.68
C	Riverside (MD/MDAQMD)	Winter	2023	341.81	396.29	464.54	594.36	73.95	85.86	100.99	128.77
C	Riverside (MD/MDAQMD)	Winter	2024	342.18	396.81	465.08	595.17	73.95	85.89	101.00	128.86
C	Riverside (MD/MDAQMD)	Winter	2025	342.15	396.84	465.03	595.20	73.95	85.94	101.02	128.94
C	Riverside (MD/MDAQMD)	Winter	2026	342.15	396.91	464.96	595.22	73.96	86.00	101.02	129.01
C	Riverside (MD/MDAQMD)	Winter	2027	342.15	397.00	464.93	595.26	73.97	86.05	101.03	129.07
C	Riverside (MD/MDAQMD)	Winter	2028	342.16	397.09	464.90	595.32	73.97	86.10	101.03	129.13
C	Riverside (MD/MDAQMD)	Winter	2029	342.17	397.19	464.88	595.40	73.97	86.15	101.04	129.19
C	Riverside (MD/MDAQMD)	Winter	2030	342.18	397.30	464.87	595.48	73.98	86.19	101.04	129.24
C	Riverside (MD/MDAQMD)	Winter	2031	342.26	397.46	464.97	595.67	73.98	86.23	101.04	129.28
C	Riverside (MD/MDAQMD)	Winter	2032	342.26	397.54	464.96	595.73	73.98	86.26	101.04	129.33
C	Riverside (MD/MDAQMD)	Winter	2033	342.26	397.61	464.95	595.79	73.98	86.29	101.05	129.37
C	Riverside (MD/MDAQMD)	Winter	2034	342.26	397.67	464.94	595.85	73.99	86.32	101.05	129.40
C	Riverside (MD/MDAQMD)	Winter	2035	342.26	397.71	464.93	595.90	73.99	86.34	101.05	129.43
C	Riverside (MD/SCAQMD)	Annual	2010	368.30	421.09	501.55	627.35	74.21	89.30	100.37	124.62
C	Riverside (MD/SCAQMD)	Annual	2011	364.70	417.57	496.50	622.41	73.31	88.07	100.40	124.81
C	Riverside (MD/SCAQMD)	Annual	2012	365.13	418.21	496.21	623.50	73.47	87.63	100.46	125.06
C	Riverside (MD/SCAQMD)	Annual	2013	364.41	417.34	494.60	622.65	73.63	86.84	100.29	125.29
C	Riverside (MD/SCAQMD)	Annual	2014	364.62	417.45	494.44	623.55	73.54	85.83	100.38	125.53
C	Riverside (MD/SCAQMD)	Annual	2015	360.62	413.24	488.80	617.43	73.46	85.76	100.49	125.76
C	Riverside (MD/SCAQMD)	Annual	2016	360.86	413.52	488.70	618.47	73.61	85.42	100.59	125.87
C	Riverside (MD/SCAQMD)	Annual	2017	360.81	413.70	488.63	619.42	73.30	84.92	100.34	126.01
C	Riverside (MD/SCAQMD)	Annual	2018	361.00	413.85	488.56	620.00	73.42	84.56	100.45	126.29
C	Riverside (MD/SCAQMD)	Annual	2019	360.39	413.29	487.47	619.19	73.52	84.71	100.55	126.54
C	Riverside (MD/SCAQMD)	Annual	2020	360.36	413.49	487.42	619.63	73.53	84.74	100.63	126.78
C	Riverside (MD/SCAQMD)	Annual	2021	357.25	410.70	483.71	615.42	73.38	84.91	100.71	127.03
C	Riverside (MD/SCAQMD)	Annual	2022	357.24	411.02	483.66	615.84	73.37	85.06	100.75	127.25
C	Riverside (MD/SCAQMD)	Annual	2023	357.29	411.28	483.62	616.06	73.42	85.19	100.79	127.40
C	Riverside (MD/SCAQMD)	Annual	2024	353.97	407.66	479.14	610.61	73.45	85.28	100.82	127.55
C	Riverside (MD/SCAQMD)	Annual	2025	354.02	407.88	479.11	610.79	73.47	85.39	100.84	127.70
C	Riverside (MD/SCAQMD)	Annual	2026	354.03	408.12	479.09	611.05	73.49	85.50	100.88	127.88
C	Riverside (MD/SCAQMD)	Annual	2027	354.04	408.39	479.07	611.31	73.50	85.60	100.90	128.04
C	Riverside (MD/SCAQMD)	Annual	2028	354.03	408.61	479.05	611.54	73.51	85.69	100.92	128.18
C	Riverside (MD/SCAQMD)	Annual	2029	354.00	408.81	478.99	611.77	73.51	85.77	100.93	128.31
C	Riverside (MD/SCAQMD)	Annual	2030	353.99	408.95	478.97	612.01	73.51	85.84	100.94	128.44
C	Riverside (MD/SCAQMD)	Annual	2031	348.76	403.17	472.01	603.39	73.52	85.91	100.94	128.56
C	Riverside (MD/SCAQMD)	Annual	2032	348.75	403.31	471.99	603.62	73.52	85.98	100.95	128.67
C	Riverside (MD/SCAQMD)	Annual	2033	348.75	403.45	471.97	603.82	73.53	86.04	100.95	128.77
C	Riverside (MD/SCAQMD)	Annual	2034	348.75	403.54	471.94	604.00	73.53	86.09	100.95	128.86
C	Riverside (MD/SCAQMD)	Annual	2035	348.75	403.63	471.92	604.15	73.54	86.13	100.96	128.94
C	Riverside (MD/SCAQMD)	Summer	2010	375.92	428.57	511.53	639.58	74.21	89.30	100.37	124.62
C	Riverside (MD/SCAQMD)	Summer	2011	372.44	425.34	506.60	634.78	73.31	88.07	100.40	124.81
C	Riverside (MD/SCAQMD)	Summer	2012	372.90	426.14	506.36	635.94	73.47	87.63	100.46	125.06
C	Riverside (MD/SCAQMD)	Summer	2013	372.17	425.39	504.79	635.14	73.63	86.84	100.29	125.29

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Riverside (MD/SCAQMD)	Summer	2014	372.39	425.65	504.66	636.10	73.54	85.83	100.38	125.53
C	Riverside (MD/SCAQMD)	Summer	2015	368.38	421.47	499.01	630.01	73.46	85.76	100.49	125.76
C	Riverside (MD/SCAQMD)	Summer	2016	368.61	421.83	498.93	631.14	73.61	85.42	100.59	125.87
C	Riverside (MD/SCAQMD)	Summer	2017	368.58	422.08	498.91	632.16	73.30	84.92	100.34	126.01
C	Riverside (MD/SCAQMD)	Summer	2018	368.76	422.29	498.84	632.79	73.42	84.56	100.45	126.29
C	Riverside (MD/SCAQMD)	Summer	2019	368.21	421.80	497.81	632.10	73.52	84.71	100.55	126.54
C	Riverside (MD/SCAQMD)	Summer	2020	368.19	422.05	497.77	632.57	73.53	84.74	100.63	126.78
C	Riverside (MD/SCAQMD)	Summer	2021	365.00	419.18	493.93	628.25	73.38	84.91	100.71	127.03
C	Riverside (MD/SCAQMD)	Summer	2022	365.00	419.52	493.91	628.71	73.37	85.06	100.75	127.25
C	Riverside (MD/SCAQMD)	Summer	2023	365.06	419.82	493.88	628.97	73.42	85.19	100.79	127.40
C	Riverside (MD/SCAQMD)	Summer	2024	361.68	416.17	489.34	623.45	73.45	85.28	100.82	127.55
C	Riverside (MD/SCAQMD)	Summer	2025	361.74	416.41	489.31	623.66	73.47	85.39	100.84	127.70
C	Riverside (MD/SCAQMD)	Summer	2026	361.74	416.69	489.30	623.93	73.49	85.50	100.88	127.88
C	Riverside (MD/SCAQMD)	Summer	2027	361.75	416.99	489.28	624.20	73.50	85.60	100.90	128.04
C	Riverside (MD/SCAQMD)	Summer	2028	361.74	417.23	489.25	624.45	73.51	85.69	100.92	128.18
C	Riverside (MD/SCAQMD)	Summer	2029	361.71	417.46	489.20	624.68	73.51	85.77	100.93	128.31
C	Riverside (MD/SCAQMD)	Summer	2030	361.70	417.60	489.17	624.93	73.51	85.84	100.94	128.44
C	Riverside (MD/SCAQMD)	Summer	2031	356.48	411.83	482.22	616.32	73.52	85.91	100.94	128.56
C	Riverside (MD/SCAQMD)	Summer	2032	356.47	411.98	482.20	616.56	73.52	85.98	100.95	128.67
C	Riverside (MD/SCAQMD)	Summer	2033	356.47	412.12	482.18	616.78	73.53	86.04	100.95	128.77
C	Riverside (MD/SCAQMD)	Summer	2034	356.47	412.23	482.15	616.96	73.53	86.09	100.95	128.86
C	Riverside (MD/SCAQMD)	Summer	2035	356.47	412.31	482.14	617.12	73.54	86.13	100.96	128.94
C	Riverside (MD/SCAQMD)	Winter	2010	367.80	420.60	500.90	626.55	74.21	89.30	100.37	124.62
C	Riverside (MD/SCAQMD)	Winter	2011	364.17	417.04	495.80	621.56	73.31	88.07	100.40	124.81
C	Riverside (MD/SCAQMD)	Winter	2012	364.60	417.67	495.51	622.64	73.47	87.63	100.46	125.06
C	Riverside (MD/SCAQMD)	Winter	2013	363.88	416.78	493.90	621.79	73.63	86.84	100.29	125.29
C	Riverside (MD/SCAQMD)	Winter	2014	364.09	416.89	493.73	622.68	73.54	85.83	100.38	125.53
C	Riverside (MD/SCAQMD)	Winter	2015	360.08	412.67	488.09	616.56	73.46	85.76	100.49	125.76
C	Riverside (MD/SCAQMD)	Winter	2016	360.32	412.95	487.99	617.59	73.61	85.42	100.59	125.87
C	Riverside (MD/SCAQMD)	Winter	2017	360.27	413.11	487.92	618.53	73.30	84.92	100.34	126.01
C	Riverside (MD/SCAQMD)	Winter	2018	360.46	413.26	487.85	619.11	73.42	84.56	100.45	126.29
C	Riverside (MD/SCAQMD)	Winter	2019	359.82	412.66	486.71	618.24	73.52	84.71	100.55	126.54
C	Riverside (MD/SCAQMD)	Winter	2020	359.79	412.87	486.67	618.68	73.53	84.74	100.63	126.78
C	Riverside (MD/SCAQMD)	Winter	2021	356.70	410.11	482.99	614.53	73.38	84.91	100.71	127.03
C	Riverside (MD/SCAQMD)	Winter	2022	356.70	410.42	482.95	614.94	73.37	85.06	100.75	127.25
C	Riverside (MD/SCAQMD)	Winter	2023	356.75	410.69	482.90	615.16	73.42	85.19	100.79	127.40
C	Riverside (MD/SCAQMD)	Winter	2024	353.42	407.06	478.42	609.70	73.45	85.28	100.82	127.55
C	Riverside (MD/SCAQMD)	Winter	2025	353.47	407.28	478.39	609.88	73.47	85.39	100.84	127.70
C	Riverside (MD/SCAQMD)	Winter	2026	353.48	407.52	478.37	610.14	73.49	85.50	100.88	127.88
C	Riverside (MD/SCAQMD)	Winter	2027	353.49	407.78	478.35	610.40	73.50	85.60	100.90	128.04
C	Riverside (MD/SCAQMD)	Winter	2028	353.49	408.00	478.32	610.63	73.51	85.69	100.92	128.18
C	Riverside (MD/SCAQMD)	Winter	2029	353.45	408.20	478.26	610.85	73.51	85.77	100.93	128.31
C	Riverside (MD/SCAQMD)	Winter	2030	353.44	408.34	478.24	611.09	73.51	85.84	100.94	128.44
C	Riverside (MD/SCAQMD)	Winter	2031	348.17	402.51	471.23	602.40	73.52	85.91	100.94	128.56
C	Riverside (MD/SCAQMD)	Winter	2032	348.17	402.65	471.21	602.63	73.52	85.98	100.95	128.67
C	Riverside (MD/SCAQMD)	Winter	2033	348.17	402.78	471.19	602.83	73.53	86.04	100.95	128.77
C	Riverside (MD/SCAQMD)	Winter	2034	348.16	402.88	471.16	603.01	73.53	86.09	100.95	128.86
C	Riverside (MD/SCAQMD)	Winter	2035	348.16	402.97	471.14	603.16	73.54	86.13	100.96	128.94
C	Riverside (SC)	Annual	2010	330.61	378.40	452.04	571.52	73.26	83.74	99.63	125.20
C	Riverside (SC)	Annual	2011	330.55	378.98	451.62	571.70	73.27	83.73	99.72	125.46
C	Riverside (SC)	Annual	2012	330.76	379.75	451.57	572.32	73.30	83.78	99.83	125.73
C	Riverside (SC)	Annual	2013	331.56	381.10	452.35	573.99	73.35	83.84	99.94	126.00
C	Riverside (SC)	Annual	2014	331.76	381.69	452.34	574.61	73.39	83.91	100.04	126.27
C	Riverside (SC)	Annual	2015	330.28	380.32	450.07	572.35	73.45	84.02	100.14	126.55

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Riverside (SC)	Annual	2016	330.47	380.81	450.07	572.90	73.52	84.14	100.24	126.81
C	Riverside (SC)	Annual	2017	330.61	381.25	450.08	573.42	73.57	84.25	100.32	127.07
C	Riverside (SC)	Annual	2018	330.73	381.62	450.08	573.86	73.62	84.36	100.39	127.30
C	Riverside (SC)	Annual	2019	330.84	382.00	450.08	574.28	73.67	84.54	100.48	127.53
C	Riverside (SC)	Annual	2020	330.93	382.33	450.08	574.64	73.76	84.73	100.56	127.74
C	Riverside (SC)	Annual	2021	331.65	383.36	450.95	576.02	73.83	84.91	100.65	127.90
C	Riverside (SC)	Annual	2022	331.69	383.60	450.94	576.24	73.88	85.06	100.71	128.05
C	Riverside (SC)	Annual	2023	331.71	383.78	450.92	576.41	73.92	85.20	100.77	128.20
C	Riverside (SC)	Annual	2024	332.10	384.41	451.45	577.22	73.94	85.32	100.81	128.33
C	Riverside (SC)	Annual	2025	332.10	384.56	451.44	577.35	73.96	85.43	100.85	128.45
C	Riverside (SC)	Annual	2026	332.12	384.71	451.42	577.47	73.98	85.53	100.89	128.57
C	Riverside (SC)	Annual	2027	332.13	384.85	451.41	577.58	73.99	85.62	100.91	128.67
C	Riverside (SC)	Annual	2028	332.13	385.00	451.40	577.69	74.00	85.70	100.93	128.76
C	Riverside (SC)	Annual	2029	332.13	385.14	451.39	577.80	74.01	85.78	100.94	128.85
C	Riverside (SC)	Annual	2030	332.13	385.28	451.38	577.91	74.01	85.85	100.95	128.92
C	Riverside (SC)	Annual	2031	332.06	385.34	451.29	577.92	74.02	85.92	100.96	129.00
C	Riverside (SC)	Annual	2032	332.06	385.47	451.29	578.03	74.02	85.99	100.97	129.07
C	Riverside (SC)	Annual	2033	332.06	385.59	451.29	578.14	74.02	86.05	100.97	129.13
C	Riverside (SC)	Annual	2034	332.05	385.69	451.28	578.24	74.03	86.10	100.98	129.19
C	Riverside (SC)	Annual	2035	332.05	385.77	451.28	578.33	74.03	86.15	100.98	129.25
C	Riverside (SC)	Summer	2010	357.99	406.64	488.13	617.11	73.26	83.74	99.63	125.20
C	Riverside (SC)	Summer	2011	358.00	407.69	487.77	617.21	73.27	83.73	99.72	125.46
C	Riverside (SC)	Summer	2012	358.27	408.86	487.80	617.86	73.30	83.78	99.83	125.73
C	Riverside (SC)	Summer	2013	359.18	410.58	488.73	619.69	73.35	83.84	99.94	126.00
C	Riverside (SC)	Summer	2014	359.43	411.42	488.83	620.44	73.39	83.91	100.04	126.27
C	Riverside (SC)	Summer	2015	357.84	410.09	486.45	618.08	73.45	84.02	100.14	126.55
C	Riverside (SC)	Summer	2016	358.07	410.74	486.54	618.78	73.52	84.14	100.24	126.81
C	Riverside (SC)	Summer	2017	358.25	411.31	486.60	619.42	73.57	84.25	100.32	127.07
C	Riverside (SC)	Summer	2018	358.38	411.77	486.62	619.96	73.62	84.36	100.39	127.30
C	Riverside (SC)	Summer	2019	358.52	412.25	486.65	620.48	73.67	84.54	100.48	127.53
C	Riverside (SC)	Summer	2020	358.63	412.66	486.66	620.93	73.76	84.73	100.56	127.74
C	Riverside (SC)	Summer	2021	359.40	413.82	487.58	622.43	73.83	84.91	100.65	127.90
C	Riverside (SC)	Summer	2022	359.44	414.11	487.54	622.67	73.88	85.06	100.71	128.05
C	Riverside (SC)	Summer	2023	359.45	414.35	487.50	622.84	73.92	85.20	100.77	128.20
C	Riverside (SC)	Summer	2024	359.88	415.08	488.05	623.73	73.94	85.32	100.81	128.33
C	Riverside (SC)	Summer	2025	359.88	415.29	488.02	623.84	73.96	85.43	100.85	128.45
C	Riverside (SC)	Summer	2026	359.88	415.48	488.00	623.94	73.98	85.53	100.89	128.57
C	Riverside (SC)	Summer	2027	359.89	415.67	487.98	624.04	73.99	85.62	100.91	128.67
C	Riverside (SC)	Summer	2028	359.90	415.85	487.97	624.14	74.00	85.70	100.93	128.76
C	Riverside (SC)	Summer	2029	359.90	416.04	487.97	624.25	74.01	85.78	100.94	128.85
C	Riverside (SC)	Summer	2030	359.90	416.22	487.97	624.36	74.01	85.85	100.95	128.92
C	Riverside (SC)	Summer	2031	359.83	416.35	487.90	624.40	74.02	85.92	100.96	129.00
C	Riverside (SC)	Summer	2032	359.82	416.52	487.90	624.53	74.02	85.99	100.97	129.07
C	Riverside (SC)	Summer	2033	359.82	416.67	487.90	624.65	74.02	86.05	100.97	129.13
C	Riverside (SC)	Summer	2034	359.82	416.80	487.89	624.78	74.03	86.10	100.98	129.19
C	Riverside (SC)	Summer	2035	359.82	416.89	487.89	624.88	74.03	86.15	100.98	129.25
C	Riverside (SC)	Winter	2010	325.98	373.62	445.94	563.82	73.26	83.74	99.63	125.20
C	Riverside (SC)	Winter	2011	325.92	374.13	445.52	564.01	73.27	83.73	99.72	125.46
C	Riverside (SC)	Winter	2012	326.12	374.83	445.45	564.63	73.30	83.78	99.83	125.73
C	Riverside (SC)	Winter	2013	326.90	376.11	446.20	566.26	73.35	83.84	99.94	126.00
C	Riverside (SC)	Winter	2014	327.08	376.67	446.18	566.87	73.39	83.91	100.04	126.27
C	Riverside (SC)	Winter	2015	325.62	375.29	443.92	564.62	73.45	84.02	100.14	126.55
C	Riverside (SC)	Winter	2016	325.80	375.75	443.91	565.15	73.52	84.14	100.24	126.81
C	Riverside (SC)	Winter	2017	325.94	376.17	443.90	565.64	73.57	84.25	100.32	127.07

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Riverside (SC)	Winter	2018	326.05	376.52	443.90	566.07	73.62	84.36	100.39	127.30
C	Riverside (SC)	Winter	2019	326.16	376.88	443.90	566.47	73.67	84.54	100.48	127.53
C	Riverside (SC)	Winter	2020	326.25	377.20	443.90	566.82	73.76	84.73	100.56	127.74
C	Riverside (SC)	Winter	2021	326.96	378.22	444.77	568.19	73.83	84.91	100.65	127.90
C	Riverside (SC)	Winter	2022	327.00	378.44	444.76	568.40	73.88	85.06	100.71	128.05
C	Riverside (SC)	Winter	2023	327.02	378.62	444.75	568.56	73.92	85.20	100.77	128.20
C	Riverside (SC)	Winter	2024	327.40	379.22	445.26	569.36	73.94	85.32	100.81	128.33
C	Riverside (SC)	Winter	2025	327.41	379.36	445.25	569.49	73.96	85.43	100.85	128.45
C	Riverside (SC)	Winter	2026	327.42	379.51	445.24	569.61	73.98	85.53	100.89	128.57
C	Riverside (SC)	Winter	2027	327.43	379.64	445.23	569.72	73.99	85.62	100.91	128.67
C	Riverside (SC)	Winter	2028	327.44	379.78	445.22	569.84	74.00	85.70	100.93	128.76
C	Riverside (SC)	Winter	2029	327.44	379.91	445.21	569.95	74.01	85.78	100.94	128.85
C	Riverside (SC)	Winter	2030	327.44	380.04	445.20	570.06	74.01	85.85	100.95	128.92
C	Riverside (SC)	Winter	2031	327.36	380.09	445.10	570.05	74.02	85.92	100.96	129.00
C	Riverside (SC)	Winter	2032	327.36	380.22	445.09	570.16	74.02	85.99	100.97	129.07
C	Riverside (SC)	Winter	2033	327.36	380.33	445.09	570.27	74.02	86.05	100.97	129.13
C	Riverside (SC)	Winter	2034	327.35	380.42	445.09	570.36	74.03	86.10	100.98	129.19
C	Riverside (SC)	Winter	2035	327.35	380.50	445.08	570.45	74.03	86.15	100.98	129.25
C	Riverside (SS)	Annual	2010	345.46	396.10	472.54	596.54	72.91	83.80	99.54	124.93
C	Riverside (SS)	Annual	2011	344.74	395.84	471.06	595.48	72.99	83.84	99.65	125.24
C	Riverside (SS)	Annual	2012	345.04	396.66	471.03	596.25	73.08	83.91	99.78	125.55
C	Riverside (SS)	Annual	2013	343.99	395.85	469.20	594.73	73.18	84.00	99.91	125.87
C	Riverside (SS)	Annual	2014	344.25	396.49	469.22	595.50	73.27	84.11	100.03	126.18
C	Riverside (SS)	Annual	2015	342.36	394.67	466.40	592.65	73.35	84.23	100.15	126.49
C	Riverside (SS)	Annual	2016	342.56	395.18	466.43	593.33	73.44	84.37	100.27	126.78
C	Riverside (SS)	Annual	2017	342.72	395.62	466.45	593.94	73.51	84.48	100.36	127.06
C	Riverside (SS)	Annual	2018	342.82	395.99	466.46	594.46	73.56	84.61	100.44	127.32
C	Riverside (SS)	Annual	2019	342.80	396.23	466.32	594.75	73.63	84.79	100.52	127.56
C	Riverside (SS)	Annual	2020	342.88	396.55	466.32	595.17	73.71	84.97	100.61	127.78
C	Riverside (SS)	Annual	2021	343.69	397.75	467.39	596.87	73.77	85.14	100.69	127.97
C	Riverside (SS)	Annual	2022	343.72	397.99	467.38	597.16	73.81	85.28	100.75	128.14
C	Riverside (SS)	Annual	2023	343.72	398.19	467.37	597.38	73.84	85.41	100.81	128.29
C	Riverside (SS)	Annual	2024	348.57	403.98	473.99	606.03	73.86	85.52	100.85	128.43
C	Riverside (SS)	Annual	2025	348.57	404.13	473.98	606.18	73.88	85.62	100.88	128.56
C	Riverside (SS)	Annual	2026	348.58	404.26	473.95	606.32	73.89	85.71	100.91	128.68
C	Riverside (SS)	Annual	2027	348.58	404.39	473.93	606.44	73.91	85.79	100.93	128.78
C	Riverside (SS)	Annual	2028	348.59	404.52	473.91	606.56	73.91	85.86	100.95	128.87
C	Riverside (SS)	Annual	2029	348.59	404.64	473.90	606.67	73.92	85.92	100.96	128.95
C	Riverside (SS)	Annual	2030	348.60	404.76	473.89	606.79	73.92	85.99	100.97	129.03
C	Riverside (SS)	Annual	2031	356.78	414.43	485.07	621.23	73.93	86.04	100.98	129.10
C	Riverside (SS)	Annual	2032	356.78	414.55	485.07	621.35	73.93	86.10	100.99	129.16
C	Riverside (SS)	Annual	2033	356.78	414.65	485.06	621.45	73.93	86.14	100.99	129.22
C	Riverside (SS)	Annual	2034	356.78	414.73	485.06	621.55	73.94	86.19	100.99	129.27
C	Riverside (SS)	Annual	2035	356.78	414.80	485.06	621.64	73.94	86.22	101.00	129.32
C	Riverside (SS)	Summer	2010	351.02	401.92	479.90	605.78	72.91	83.80	99.54	124.93
C	Riverside (SS)	Summer	2011	350.36	401.79	478.48	604.78	72.99	83.84	99.65	125.24
C	Riverside (SS)	Summer	2012	350.68	402.68	478.47	605.56	73.08	83.91	99.78	125.55
C	Riverside (SS)	Summer	2013	349.60	401.89	476.60	604.00	73.18	84.00	99.91	125.87
C	Riverside (SS)	Summer	2014	349.87	402.57	476.63	604.79	73.27	84.11	100.03	126.18
C	Riverside (SS)	Summer	2015	348.02	400.82	473.87	602.03	73.35	84.23	100.15	126.49
C	Riverside (SS)	Summer	2016	348.23	401.36	473.91	602.73	73.44	84.37	100.27	126.78
C	Riverside (SS)	Summer	2017	348.39	401.83	473.94	603.38	73.51	84.48	100.36	127.06
C	Riverside (SS)	Summer	2018	348.50	402.21	473.95	603.92	73.56	84.61	100.44	127.32
C	Riverside (SS)	Summer	2019	348.48	402.47	473.82	604.23	73.63	84.79	100.52	127.56

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Riverside (SS)	Summer	2020	348.57	402.81	473.83	604.66	73.71	84.97	100.61	127.78
C	Riverside (SS)	Summer	2021	349.38	404.03	474.91	606.40	73.77	85.14	100.69	127.97
C	Riverside (SS)	Summer	2022	349.41	404.29	474.90	606.70	73.81	85.28	100.75	128.14
C	Riverside (SS)	Summer	2023	349.41	404.50	474.89	606.93	73.84	85.41	100.81	128.29
C	Riverside (SS)	Summer	2024	354.32	410.38	481.59	615.69	73.86	85.52	100.85	128.43
C	Riverside (SS)	Summer	2025	354.32	410.53	481.58	615.85	73.88	85.62	100.88	128.56
C	Riverside (SS)	Summer	2026	354.33	410.67	481.55	615.98	73.89	85.71	100.91	128.68
C	Riverside (SS)	Summer	2027	354.33	410.80	481.52	616.10	73.91	85.79	100.93	128.78
C	Riverside (SS)	Summer	2028	354.34	410.94	481.50	616.22	73.91	85.86	100.95	128.87
C	Riverside (SS)	Summer	2029	354.35	411.07	481.49	616.33	73.92	85.92	100.96	128.95
C	Riverside (SS)	Summer	2030	354.35	411.20	481.48	616.45	73.92	85.99	100.97	129.03
C	Riverside (SS)	Summer	2031	362.73	421.10	492.92	631.22	73.93	86.04	100.98	129.10
C	Riverside (SS)	Summer	2032	362.73	421.22	492.92	631.34	73.93	86.10	100.99	129.16
C	Riverside (SS)	Summer	2033	362.73	421.32	492.91	631.45	73.93	86.14	100.99	129.22
C	Riverside (SS)	Summer	2034	362.73	421.41	492.91	631.55	73.94	86.19	100.99	129.27
C	Riverside (SS)	Summer	2035	362.72	421.48	492.91	631.64	73.94	86.22	101.00	129.32
C	Riverside (SS)	Winter	2010	325.60	375.29	446.23	563.52	72.91	83.80	99.54	124.93
C	Riverside (SS)	Winter	2011	324.87	374.79	444.80	562.57	72.99	83.84	99.65	125.24
C	Riverside (SS)	Winter	2012	325.11	375.37	444.73	563.31	73.08	83.91	99.78	125.55
C	Riverside (SS)	Winter	2013	324.10	374.44	442.96	561.85	73.18	84.00	99.91	125.87
C	Riverside (SS)	Winter	2014	324.31	374.92	442.92	562.52	73.27	84.11	100.03	126.18
C	Riverside (SS)	Winter	2015	322.52	373.10	440.22	559.77	73.35	84.23	100.15	126.49
C	Riverside (SS)	Winter	2016	322.69	373.51	440.21	560.35	73.44	84.37	100.27	126.78
C	Riverside (SS)	Winter	2017	322.83	373.87	440.19	560.87	73.51	84.48	100.36	127.06
C	Riverside (SS)	Winter	2018	322.93	374.18	440.18	561.32	73.56	84.61	100.44	127.32
C	Riverside (SS)	Winter	2019	322.91	374.36	440.04	561.55	73.63	84.79	100.52	127.56
C	Riverside (SS)	Winter	2020	322.98	374.63	440.03	561.91	73.71	84.97	100.61	127.78
C	Riverside (SS)	Winter	2021	323.74	375.72	441.03	563.48	73.77	85.14	100.69	127.97
C	Riverside (SS)	Winter	2022	323.78	375.91	441.03	563.73	73.81	85.28	100.75	128.14
C	Riverside (SS)	Winter	2023	323.79	376.06	441.02	563.92	73.84	85.41	100.81	128.29
C	Riverside (SS)	Winter	2024	328.34	381.51	447.26	572.06	73.86	85.52	100.85	128.43
C	Riverside (SS)	Winter	2025	328.35	381.62	447.25	572.22	73.88	85.62	100.88	128.56
C	Riverside (SS)	Winter	2026	328.36	381.74	447.25	572.36	73.89	85.71	100.91	128.68
C	Riverside (SS)	Winter	2027	328.37	381.84	447.24	572.49	73.91	85.79	100.93	128.78
C	Riverside (SS)	Winter	2028	328.38	381.95	447.23	572.61	73.91	85.86	100.95	128.87
C	Riverside (SS)	Winter	2029	328.38	382.05	447.22	572.73	73.92	85.92	100.96	128.95
C	Riverside (SS)	Winter	2030	328.38	382.15	447.22	572.85	73.92	85.99	100.97	129.03
C	Riverside (SS)	Winter	2031	336.08	391.25	457.76	586.47	73.93	86.04	100.98	129.10
C	Riverside (SS)	Winter	2032	336.08	391.34	457.75	586.58	73.93	86.10	100.99	129.16
C	Riverside (SS)	Winter	2033	336.08	391.43	457.75	586.68	73.93	86.14	100.99	129.22
C	Riverside (SS)	Winter	2034	336.08	391.50	457.75	586.76	73.94	86.19	100.99	129.27
C	Riverside (SS)	Winter	2035	336.08	391.56	457.74	586.84	73.94	86.22	101.00	129.32
C	Sacramento (SV)	Annual	2010	338.27	388.45	463.58	584.38	72.89	84.85	99.62	124.76
C	Sacramento (SV)	Annual	2011	338.59	389.26	463.49	584.93	72.94	84.61	99.69	124.96
C	Sacramento (SV)	Annual	2012	338.89	389.98	463.44	585.56	73.00	84.46	99.78	125.19
C	Sacramento (SV)	Annual	2013	339.19	390.61	463.40	586.25	73.08	84.39	99.88	125.44
C	Sacramento (SV)	Annual	2014	339.46	391.17	463.38	586.94	73.15	84.34	99.96	125.69
C	Sacramento (SV)	Annual	2015	339.72	391.68	463.38	587.65	73.24	84.33	100.03	125.96
C	Sacramento (SV)	Annual	2016	339.95	392.11	463.38	588.32	73.35	84.32	100.13	126.23
C	Sacramento (SV)	Annual	2017	340.12	392.49	463.38	588.95	73.41	84.30	100.21	126.50
C	Sacramento (SV)	Annual	2018	340.26	392.81	463.37	589.51	73.47	84.32	100.29	126.76
C	Sacramento (SV)	Annual	2019	338.61	391.09	460.99	586.96	73.53	84.47	100.38	126.99
C	Sacramento (SV)	Annual	2020	338.72	391.37	460.98	587.40	73.64	84.63	100.47	127.20
C	Sacramento (SV)	Annual	2021	338.80	391.64	460.97	587.73	73.72	84.80	100.57	127.38

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Sacramento (SV)	Annual	2022	338.84	391.86	460.96	588.00	73.78	84.95	100.64	127.54
C	Sacramento (SV)	Annual	2023	338.86	392.04	460.94	588.22	73.82	85.07	100.71	127.71
C	Sacramento (SV)	Annual	2024	338.87	392.19	460.92	588.37	73.85	85.19	100.76	127.86
C	Sacramento (SV)	Annual	2025	338.88	392.32	460.91	588.52	73.87	85.29	100.81	128.00
C	Sacramento (SV)	Annual	2026	338.89	392.46	460.90	588.69	73.89	85.39	100.85	128.15
C	Sacramento (SV)	Annual	2027	338.90	392.59	460.89	588.86	73.91	85.48	100.88	128.28
C	Sacramento (SV)	Annual	2028	338.91	392.72	460.89	589.02	73.92	85.56	100.90	128.39
C	Sacramento (SV)	Annual	2029	338.91	392.85	460.87	589.18	73.93	85.64	100.92	128.50
C	Sacramento (SV)	Annual	2030	338.91	392.98	460.87	589.35	73.93	85.71	100.93	128.60
C	Sacramento (SV)	Annual	2031	338.92	393.12	460.86	589.51	73.94	85.79	100.94	128.70
C	Sacramento (SV)	Annual	2032	338.92	393.24	460.86	589.69	73.94	85.85	100.95	128.80
C	Sacramento (SV)	Annual	2033	338.92	393.34	460.85	589.84	73.95	85.91	100.96	128.88
C	Sacramento (SV)	Annual	2034	338.92	393.44	460.84	589.99	73.95	85.97	100.96	128.96
C	Sacramento (SV)	Annual	2035	338.92	393.51	460.84	590.12	73.95	86.02	100.97	129.04
C	Sacramento (SV)	Summer	2010	375.62	427.51	513.20	646.48	72.89	84.85	99.62	124.76
C	Sacramento (SV)	Summer	2011	376.19	429.01	513.26	646.92	72.94	84.61	99.69	124.96
C	Sacramento (SV)	Summer	2012	376.70	430.30	513.35	647.57	73.00	84.46	99.78	125.19
C	Sacramento (SV)	Summer	2013	377.16	431.37	513.46	648.38	73.08	84.39	99.88	125.44
C	Sacramento (SV)	Summer	2014	377.55	432.28	513.62	649.25	73.15	84.34	99.96	125.69
C	Sacramento (SV)	Summer	2015	377.89	433.05	513.77	650.20	73.24	84.33	100.03	125.96
C	Sacramento (SV)	Summer	2016	378.19	433.69	513.89	651.12	73.35	84.32	100.13	126.23
C	Sacramento (SV)	Summer	2017	378.39	434.26	513.97	651.99	73.41	84.30	100.21	126.50
C	Sacramento (SV)	Summer	2018	378.53	434.71	513.99	652.74	73.47	84.32	100.29	126.76
C	Sacramento (SV)	Summer	2019	376.67	432.84	511.33	650.00	73.53	84.47	100.38	126.99
C	Sacramento (SV)	Summer	2020	376.76	433.18	511.31	650.57	73.64	84.63	100.47	127.20
C	Sacramento (SV)	Summer	2021	376.83	433.55	511.26	650.99	73.72	84.80	100.57	127.38
C	Sacramento (SV)	Summer	2022	376.86	433.86	511.21	651.34	73.78	84.95	100.64	127.54
C	Sacramento (SV)	Summer	2023	376.88	434.12	511.16	651.60	73.82	85.07	100.71	127.71
C	Sacramento (SV)	Summer	2024	376.89	434.33	511.11	651.76	73.85	85.19	100.76	127.86
C	Sacramento (SV)	Summer	2025	376.91	434.52	511.07	651.91	73.87	85.29	100.81	128.00
C	Sacramento (SV)	Summer	2026	376.91	434.70	511.07	652.09	73.89	85.39	100.85	128.15
C	Sacramento (SV)	Summer	2027	376.93	434.88	511.07	652.26	73.91	85.48	100.88	128.28
C	Sacramento (SV)	Summer	2028	376.94	435.06	511.07	652.43	73.92	85.56	100.90	128.39
C	Sacramento (SV)	Summer	2029	376.95	435.25	511.08	652.61	73.93	85.64	100.92	128.50
C	Sacramento (SV)	Summer	2030	376.96	435.44	511.08	652.80	73.93	85.71	100.93	128.60
C	Sacramento (SV)	Summer	2031	376.96	435.63	511.08	652.97	73.94	85.79	100.94	128.70
C	Sacramento (SV)	Summer	2032	376.97	435.80	511.07	653.16	73.94	85.85	100.95	128.80
C	Sacramento (SV)	Summer	2033	376.98	435.94	511.07	653.35	73.95	85.91	100.96	128.88
C	Sacramento (SV)	Summer	2034	376.98	436.06	511.06	653.53	73.95	85.97	100.96	128.96
C	Sacramento (SV)	Summer	2035	376.98	436.16	511.05	653.69	73.95	86.02	100.97	129.04
C	Sacramento (SV)	Winter	2010	328.26	377.97	450.28	567.73	72.89	84.85	99.62	124.76
C	Sacramento (SV)	Winter	2011	328.50	378.59	450.15	568.31	72.94	84.61	99.69	124.96
C	Sacramento (SV)	Winter	2012	328.76	379.17	450.05	568.93	73.00	84.46	99.78	125.19
C	Sacramento (SV)	Winter	2013	329.01	379.69	449.97	569.59	73.08	84.39	99.88	125.44
C	Sacramento (SV)	Winter	2014	329.25	380.15	449.91	570.23	73.15	84.34	99.96	125.69
C	Sacramento (SV)	Winter	2015	329.48	380.58	449.87	570.88	73.24	84.33	100.03	125.96
C	Sacramento (SV)	Winter	2016	329.69	380.95	449.84	571.48	73.35	84.32	100.13	126.23
C	Sacramento (SV)	Winter	2017	329.86	381.29	449.81	572.05	73.41	84.30	100.21	126.50
C	Sacramento (SV)	Winter	2018	329.99	381.58	449.80	572.55	73.47	84.32	100.29	126.76
C	Sacramento (SV)	Winter	2019	328.41	379.90	447.49	570.06	73.53	84.47	100.38	126.99
C	Sacramento (SV)	Winter	2020	328.52	380.16	447.49	570.46	73.64	84.63	100.47	127.20
C	Sacramento (SV)	Winter	2021	328.60	380.41	447.49	570.77	73.72	84.80	100.57	127.38
C	Sacramento (SV)	Winter	2022	328.65	380.61	447.49	571.03	73.78	84.95	100.64	127.54
C	Sacramento (SV)	Winter	2023	328.67	380.77	447.48	571.23	73.82	85.07	100.71	127.71

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Sacramento (SV)	Winter	2024	328.67	380.89	447.47	571.38	73.85	85.19	100.76	127.86
C	Sacramento (SV)	Winter	2025	328.68	381.01	447.47	571.53	73.87	85.29	100.81	128.00
C	Sacramento (SV)	Winter	2026	328.70	381.14	447.46	571.70	73.89	85.39	100.85	128.15
C	Sacramento (SV)	Winter	2027	328.71	381.25	447.45	571.86	73.91	85.48	100.88	128.28
C	Sacramento (SV)	Winter	2028	328.72	381.37	447.43	572.02	73.92	85.56	100.90	128.39
C	Sacramento (SV)	Winter	2029	328.72	381.49	447.42	572.18	73.93	85.64	100.92	128.50
C	Sacramento (SV)	Winter	2030	328.72	381.60	447.41	572.34	73.93	85.71	100.93	128.60
C	Sacramento (SV)	Winter	2031	328.72	381.72	447.40	572.50	73.94	85.79	100.94	128.70
C	Sacramento (SV)	Winter	2032	328.72	381.83	447.39	572.67	73.94	85.85	100.95	128.80
C	Sacramento (SV)	Winter	2033	328.72	381.92	447.39	572.82	73.95	85.91	100.96	128.88
C	Sacramento (SV)	Winter	2034	328.72	382.01	447.38	572.96	73.95	85.97	100.96	128.96
C	Sacramento (SV)	Winter	2035	328.71	382.08	447.37	573.07	73.95	86.02	100.97	129.04
C	San Benito (NCC)	Annual	2010	325.03	378.79	446.10	558.62	73.58	90.26	100.51	124.39
C	San Benito (NCC)	Annual	2011	324.49	377.95	444.83	558.19	73.44	89.27	100.47	124.58
C	San Benito (NCC)	Annual	2012	324.56	377.80	444.45	558.83	73.36	88.39	100.46	124.79
C	San Benito (NCC)	Annual	2013	324.65	377.73	444.16	559.51	73.29	87.78	100.47	125.03
C	San Benito (NCC)	Annual	2014	324.77	377.62	443.93	560.19	73.27	87.07	100.45	125.29
C	San Benito (NCC)	Annual	2015	324.91	377.55	443.75	560.89	73.27	86.50	100.41	125.55
C	San Benito (NCC)	Annual	2016	325.03	377.52	443.61	561.56	73.28	86.06	100.42	125.83
C	San Benito (NCC)	Annual	2017	325.14	377.48	443.50	562.21	73.30	85.60	100.47	126.11
C	San Benito (NCC)	Annual	2018	325.25	377.47	443.42	562.78	73.34	85.28	100.54	126.37
C	San Benito (NCC)	Annual	2019	325.34	377.52	443.35	563.28	73.38	85.14	100.57	126.63
C	San Benito (NCC)	Annual	2020	325.44	377.57	443.30	563.72	73.48	85.11	100.63	126.87
C	San Benito (NCC)	Annual	2021	327.69	380.23	446.27	567.90	73.56	85.21	100.71	127.04
C	San Benito (NCC)	Annual	2022	327.72	380.33	446.23	568.20	73.62	85.30	100.77	127.19
C	San Benito (NCC)	Annual	2023	327.73	380.40	446.18	568.43	73.65	85.38	100.82	127.38
C	San Benito (NCC)	Annual	2024	327.70	380.45	446.14	568.59	73.67	85.46	100.87	127.55
C	San Benito (NCC)	Annual	2025	327.68	380.50	446.10	568.77	73.69	85.53	100.90	127.71
C	San Benito (NCC)	Annual	2026	326.83	379.57	444.86	567.43	73.71	85.60	100.93	127.87
C	San Benito (NCC)	Annual	2027	326.84	379.64	444.80	567.61	73.73	85.66	100.94	128.01
C	San Benito (NCC)	Annual	2028	326.84	379.71	444.76	567.79	73.74	85.72	100.96	128.14
C	San Benito (NCC)	Annual	2029	326.84	379.78	444.71	567.97	73.75	85.78	100.96	128.26
C	San Benito (NCC)	Annual	2030	326.83	379.86	444.66	568.16	73.75	85.83	100.96	128.38
C	San Benito (NCC)	Annual	2031	326.83	379.95	444.63	568.37	73.76	85.89	100.97	128.50
C	San Benito (NCC)	Annual	2032	326.83	380.02	444.61	568.59	73.76	85.94	100.97	128.62
C	San Benito (NCC)	Annual	2033	326.83	380.08	444.59	568.79	73.77	85.98	100.97	128.73
C	San Benito (NCC)	Annual	2034	326.82	380.15	444.56	568.97	73.77	86.03	100.98	128.83
C	San Benito (NCC)	Annual	2035	326.82	380.20	444.55	569.13	73.77	86.07	100.98	128.92
C	San Benito (NCC)	Summer	2010	348.46	403.82	476.85	597.56	73.58	90.26	100.51	124.39
C	San Benito (NCC)	Summer	2011	348.02	403.22	475.82	597.01	73.44	89.27	100.47	124.58
C	San Benito (NCC)	Summer	2012	348.22	403.33	475.66	597.67	73.36	88.39	100.46	124.79
C	San Benito (NCC)	Summer	2013	348.41	403.45	475.54	598.44	73.29	87.78	100.47	125.03
C	San Benito (NCC)	Summer	2014	348.61	403.53	475.46	599.25	73.27	87.07	100.45	125.29
C	San Benito (NCC)	Summer	2015	348.80	403.62	475.40	600.11	73.27	86.50	100.41	125.55
C	San Benito (NCC)	Summer	2016	348.97	403.71	475.33	600.96	73.28	86.06	100.42	125.83
C	San Benito (NCC)	Summer	2017	349.11	403.80	475.24	601.77	73.30	85.60	100.47	126.11
C	San Benito (NCC)	Summer	2018	349.22	403.90	475.15	602.48	73.34	85.28	100.54	126.37
C	San Benito (NCC)	Summer	2019	349.32	404.05	475.09	603.09	73.38	85.14	100.57	126.63
C	San Benito (NCC)	Summer	2020	349.41	404.18	475.03	603.62	73.48	85.11	100.63	126.87
C	San Benito (NCC)	Summer	2021	351.80	407.05	478.18	608.12	73.56	85.21	100.71	127.04
C	San Benito (NCC)	Summer	2022	351.84	407.19	478.12	608.48	73.62	85.30	100.77	127.19
C	San Benito (NCC)	Summer	2023	351.84	407.30	478.07	608.74	73.65	85.38	100.82	127.38
C	San Benito (NCC)	Summer	2024	351.83	407.39	478.02	608.91	73.67	85.46	100.87	127.55
C	San Benito (NCC)	Summer	2025	351.81	407.48	477.98	609.08	73.69	85.53	100.90	127.71

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Benito (NCC)	Summer	2026	350.90	406.50	476.68	607.62	73.71	85.60	100.93	127.87
C	San Benito (NCC)	Summer	2027	350.91	406.57	476.64	607.79	73.73	85.66	100.94	128.01
C	San Benito (NCC)	Summer	2028	350.91	406.66	476.62	607.96	73.74	85.72	100.96	128.14
C	San Benito (NCC)	Summer	2029	350.92	406.76	476.59	608.15	73.75	85.78	100.96	128.26
C	San Benito (NCC)	Summer	2030	350.91	406.88	476.56	608.35	73.75	85.83	100.96	128.38
C	San Benito (NCC)	Summer	2031	350.91	406.98	476.54	608.60	73.76	85.89	100.97	128.50
C	San Benito (NCC)	Summer	2032	350.91	407.07	476.53	608.85	73.76	85.94	100.97	128.62
C	San Benito (NCC)	Summer	2033	350.91	407.14	476.52	609.09	73.77	85.98	100.97	128.73
C	San Benito (NCC)	Summer	2034	350.91	407.22	476.50	609.32	73.77	86.03	100.98	128.83
C	San Benito (NCC)	Summer	2035	350.90	407.28	476.48	609.52	73.77	86.07	100.98	128.92
C	San Benito (NCC)	Winter	2010	322.42	376.00	442.67	554.28	73.58	90.26	100.51	124.39
C	San Benito (NCC)	Winter	2011	321.86	375.13	441.38	553.87	73.44	89.27	100.47	124.58
C	San Benito (NCC)	Winter	2012	321.93	374.95	440.98	554.50	73.36	88.39	100.46	124.79
C	San Benito (NCC)	Winter	2013	322.00	374.87	440.67	555.17	73.29	87.78	100.47	125.03
C	San Benito (NCC)	Winter	2014	322.12	374.73	440.42	555.83	73.27	87.07	100.45	125.29
C	San Benito (NCC)	Winter	2015	322.25	374.65	440.23	556.52	73.27	86.50	100.41	125.55
C	San Benito (NCC)	Winter	2016	322.36	374.60	440.08	557.17	73.28	86.06	100.42	125.83
C	San Benito (NCC)	Winter	2017	322.47	374.54	439.96	557.80	73.30	85.60	100.47	126.11
C	San Benito (NCC)	Winter	2018	322.58	374.52	439.88	558.36	73.34	85.28	100.54	126.37
C	San Benito (NCC)	Winter	2019	322.67	374.56	439.82	558.85	73.38	85.14	100.57	126.63
C	San Benito (NCC)	Winter	2020	322.76	374.60	439.77	559.28	73.48	85.11	100.63	126.87
C	San Benito (NCC)	Winter	2021	325.00	377.24	442.71	563.42	73.56	85.21	100.71	127.04
C	San Benito (NCC)	Winter	2022	325.04	377.33	442.67	563.71	73.62	85.30	100.77	127.19
C	San Benito (NCC)	Winter	2023	325.04	377.40	442.63	563.94	73.65	85.38	100.82	127.38
C	San Benito (NCC)	Winter	2024	325.01	377.45	442.59	564.10	73.67	85.46	100.87	127.55
C	San Benito (NCC)	Winter	2025	324.99	377.50	442.55	564.28	73.69	85.53	100.90	127.71
C	San Benito (NCC)	Winter	2026	324.15	376.57	441.32	562.96	73.71	85.60	100.93	127.87
C	San Benito (NCC)	Winter	2027	324.16	376.63	441.26	563.14	73.73	85.66	100.94	128.01
C	San Benito (NCC)	Winter	2028	324.16	376.70	441.21	563.31	73.74	85.72	100.96	128.14
C	San Benito (NCC)	Winter	2029	324.15	376.78	441.16	563.50	73.75	85.78	100.96	128.26
C	San Benito (NCC)	Winter	2030	324.15	376.85	441.11	563.68	73.75	85.83	100.96	128.38
C	San Benito (NCC)	Winter	2031	324.15	376.93	441.08	563.89	73.76	85.89	100.97	128.50
C	San Benito (NCC)	Winter	2032	324.14	377.01	441.05	564.10	73.76	85.94	100.97	128.62
C	San Benito (NCC)	Winter	2033	324.14	377.07	441.03	564.30	73.77	85.98	100.97	128.73
C	San Benito (NCC)	Winter	2034	324.14	377.13	441.00	564.48	73.77	86.03	100.98	128.83
C	San Benito (NCC)	Winter	2035	324.13	377.18	440.99	564.63	73.77	86.07	100.98	128.92
C	San Bernardino (MD)	Annual	2010	340.99	391.67	465.83	586.60	73.90	86.73	100.39	125.34
C	San Bernardino (MD)	Annual	2011	340.30	391.38	464.50	585.97	73.82	86.20	100.37	125.56
C	San Bernardino (MD)	Annual	2012	340.45	391.95	464.33	586.73	73.80	85.85	100.40	125.81
C	San Bernardino (MD)	Annual	2013	339.36	390.94	462.54	585.33	73.76	85.58	100.42	126.05
C	San Bernardino (MD)	Annual	2014	339.48	391.26	462.45	586.03	73.71	85.30	100.42	126.29
C	San Bernardino (MD)	Annual	2015	336.34	387.79	457.95	581.12	73.70	85.10	100.45	126.55
C	San Bernardino (MD)	Annual	2016	336.48	388.06	457.90	581.76	73.72	84.97	100.48	126.80
C	San Bernardino (MD)	Annual	2017	336.59	388.29	457.86	582.35	73.71	84.82	100.50	127.04
C	San Bernardino (MD)	Annual	2018	336.66	388.49	457.82	582.86	73.70	84.74	100.51	127.27
C	San Bernardino (MD)	Annual	2019	335.72	387.59	456.41	581.59	73.71	84.81	100.56	127.49
C	San Bernardino (MD)	Annual	2020	335.80	387.84	456.38	582.01	73.79	84.93	100.63	127.69
C	San Bernardino (MD)	Annual	2021	334.92	387.02	455.09	580.70	73.85	85.08	100.70	127.85
C	San Bernardino (MD)	Annual	2022	334.94	387.24	455.05	580.96	73.89	85.22	100.76	127.97
C	San Bernardino (MD)	Annual	2023	334.94	387.42	455.02	581.16	73.92	85.34	100.81	128.13
C	San Bernardino (MD)	Annual	2024	334.33	386.89	454.20	580.31	73.93	85.44	100.85	128.27
C	San Bernardino (MD)	Annual	2025	334.33	387.03	454.18	580.47	73.95	85.54	100.89	128.40
C	San Bernardino (MD)	Annual	2026	334.34	387.19	454.15	580.62	73.97	85.64	100.91	128.53
C	San Bernardino (MD)	Annual	2027	334.35	387.33	454.12	580.76	73.98	85.72	100.93	128.64

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Bernardino (MD)	Annual	2028	334.35	387.47	454.10	580.90	73.99	85.80	100.95	128.74
C	San Bernardino (MD)	Annual	2029	334.35	387.61	454.07	581.04	74.00	85.87	100.96	128.83
C	San Bernardino (MD)	Annual	2030	334.34	387.74	454.05	581.17	74.00	85.93	100.96	128.92
C	San Bernardino (MD)	Annual	2031	333.08	386.42	452.34	579.13	74.01	86.00	100.97	129.00
C	San Bernardino (MD)	Annual	2032	333.08	386.54	452.33	579.26	74.01	86.06	100.98	129.07
C	San Bernardino (MD)	Annual	2033	333.08	386.65	452.32	579.38	74.01	86.11	100.98	129.14
C	San Bernardino (MD)	Annual	2034	333.07	386.73	452.31	579.49	74.02	86.16	100.99	129.20
C	San Bernardino (MD)	Annual	2035	333.07	386.80	452.30	579.59	74.02	86.20	100.99	129.25
C	San Bernardino (MD)	Summer	2010	377.87	429.15	513.95	647.62	73.90	86.73	100.39	125.34
C	San Bernardino (MD)	Summer	2011	377.22	429.71	512.80	646.86	73.82	86.20	100.37	125.56
C	San Bernardino (MD)	Summer	2012	377.49	430.99	512.88	647.75	73.80	85.85	100.40	125.81
C	San Bernardino (MD)	Summer	2013	376.35	430.29	511.11	646.28	73.76	85.58	100.42	126.05
C	San Bernardino (MD)	Summer	2014	376.53	431.00	511.22	647.17	73.71	85.30	100.42	126.29
C	San Bernardino (MD)	Summer	2015	373.08	427.39	506.40	641.89	73.70	85.10	100.45	126.55
C	San Bernardino (MD)	Summer	2016	373.30	427.88	506.49	642.74	73.72	84.97	100.48	126.80
C	San Bernardino (MD)	Summer	2017	373.45	428.30	506.54	643.55	73.71	84.82	100.50	127.04
C	San Bernardino (MD)	Summer	2018	373.54	428.65	506.55	644.21	73.70	84.74	100.51	127.27
C	San Bernardino (MD)	Summer	2019	372.54	427.76	505.03	642.91	73.71	84.81	100.56	127.49
C	San Bernardino (MD)	Summer	2020	372.64	428.12	505.01	643.47	73.79	84.93	100.63	127.69
C	San Bernardino (MD)	Summer	2021	371.67	427.32	503.58	642.10	73.85	85.08	100.70	127.85
C	San Bernardino (MD)	Summer	2022	371.71	427.66	503.54	642.44	73.89	85.22	100.76	127.97
C	San Bernardino (MD)	Summer	2023	371.71	427.95	503.51	642.70	73.92	85.34	100.81	128.13
C	San Bernardino (MD)	Summer	2024	371.03	427.44	502.59	641.76	73.93	85.44	100.85	128.27
C	San Bernardino (MD)	Summer	2025	371.03	427.68	502.57	641.95	73.95	85.54	100.89	128.40
C	San Bernardino (MD)	Summer	2026	371.04	427.91	502.53	642.10	73.97	85.64	100.91	128.53
C	San Bernardino (MD)	Summer	2027	371.04	428.12	502.50	642.24	73.98	85.72	100.93	128.64
C	San Bernardino (MD)	Summer	2028	371.04	428.32	502.48	642.38	73.99	85.80	100.95	128.74
C	San Bernardino (MD)	Summer	2029	371.04	428.52	502.46	642.52	74.00	85.87	100.96	128.83
C	San Bernardino (MD)	Summer	2030	371.04	428.71	502.44	642.66	74.00	85.93	100.96	128.92
C	San Bernardino (MD)	Summer	2031	369.65	427.34	500.58	640.44	74.01	86.00	100.97	129.00
C	San Bernardino (MD)	Summer	2032	369.64	427.51	500.58	640.59	74.01	86.06	100.98	129.07
C	San Bernardino (MD)	Summer	2033	369.64	427.65	500.58	640.73	74.01	86.11	100.98	129.14
C	San Bernardino (MD)	Summer	2034	369.64	427.77	500.57	640.87	74.02	86.16	100.99	129.20
C	San Bernardino (MD)	Summer	2035	369.64	427.86	500.57	640.99	74.02	86.20	100.99	129.25
C	San Bernardino (MD)	Winter	2010	330.16	380.67	451.70	568.69	73.90	86.73	100.39	125.34
C	San Bernardino (MD)	Winter	2011	329.46	380.14	450.33	568.10	73.82	86.20	100.37	125.56
C	San Bernardino (MD)	Winter	2012	329.59	380.50	450.09	568.82	73.80	85.85	100.40	125.81
C	San Bernardino (MD)	Winter	2013	328.50	379.38	448.27	567.43	73.76	85.58	100.42	126.05
C	San Bernardino (MD)	Winter	2014	328.60	379.59	448.13	568.07	73.71	85.30	100.42	126.29
C	San Bernardino (MD)	Winter	2015	325.56	376.16	443.73	563.29	73.70	85.10	100.45	126.55
C	San Bernardino (MD)	Winter	2016	325.68	376.37	443.64	563.85	73.72	84.97	100.48	126.80
C	San Bernardino (MD)	Winter	2017	325.76	376.54	443.57	564.39	73.71	84.82	100.50	127.04
C	San Bernardino (MD)	Winter	2018	325.83	376.71	443.51	564.85	73.70	84.74	100.51	127.27
C	San Bernardino (MD)	Winter	2019	324.92	375.81	442.14	563.59	73.71	84.81	100.56	127.49
C	San Bernardino (MD)	Winter	2020	324.99	376.02	442.11	563.97	73.79	84.93	100.63	127.69
C	San Bernardino (MD)	Winter	2021	324.14	375.20	440.86	562.69	73.85	85.08	100.70	127.85
C	San Bernardino (MD)	Winter	2022	324.16	375.38	440.83	562.93	73.89	85.22	100.76	127.97
C	San Bernardino (MD)	Winter	2023	324.15	375.53	440.80	563.11	73.92	85.34	100.81	128.13
C	San Bernardino (MD)	Winter	2024	323.56	375.00	440.01	562.29	73.93	85.44	100.85	128.27
C	San Bernardino (MD)	Winter	2025	323.56	375.11	439.99	562.44	73.95	85.54	100.89	128.40
C	San Bernardino (MD)	Winter	2026	323.57	375.24	439.95	562.59	73.97	85.64	100.91	128.53
C	San Bernardino (MD)	Winter	2027	323.58	375.37	439.93	562.73	73.98	85.72	100.93	128.64
C	San Bernardino (MD)	Winter	2028	323.58	375.49	439.91	562.87	73.99	85.80	100.95	128.74
C	San Bernardino (MD)	Winter	2029	323.58	375.60	439.88	563.00	74.00	85.87	100.96	128.83

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Bernardino (MD)	Winter	2030	323.58	375.72	439.85	563.13	74.00	85.93	100.96	128.92
C	San Bernardino (MD)	Winter	2031	322.35	374.41	438.18	561.14	74.01	86.00	100.97	129.00
C	San Bernardino (MD)	Winter	2032	322.35	374.52	438.17	561.27	74.01	86.06	100.98	129.07
C	San Bernardino (MD)	Winter	2033	322.35	374.61	438.16	561.38	74.01	86.11	100.98	129.14
C	San Bernardino (MD)	Winter	2034	322.34	374.69	438.15	561.48	74.02	86.16	100.99	129.20
C	San Bernardino (MD)	Winter	2035	322.34	374.76	438.14	561.57	74.02	86.20	100.99	129.25
C	San Bernardino (SC)	Annual	2010	339.66	388.73	464.33	586.23	73.39	84.10	99.67	125.16
C	San Bernardino (SC)	Annual	2011	341.99	392.10	467.19	590.60	73.38	84.04	99.75	125.39
C	San Bernardino (SC)	Annual	2012	342.17	392.88	467.10	591.25	73.40	84.04	99.85	125.63
C	San Bernardino (SC)	Annual	2013	343.26	394.52	468.27	593.42	73.45	84.04	99.95	125.87
C	San Bernardino (SC)	Annual	2014	343.43	395.06	468.23	594.04	73.48	84.04	100.03	126.12
C	San Bernardino (SC)	Annual	2015	345.48	397.75	470.76	597.94	73.53	84.10	100.12	126.38
C	San Bernardino (SC)	Annual	2016	345.67	398.22	470.75	598.55	73.60	84.17	100.22	126.63
C	San Bernardino (SC)	Annual	2017	345.81	398.64	470.74	599.13	73.64	84.24	100.30	126.88
C	San Bernardino (SC)	Annual	2018	345.92	399.00	470.73	599.62	73.67	84.33	100.37	127.12
C	San Bernardino (SC)	Annual	2019	344.25	397.30	468.27	596.96	73.72	84.50	100.45	127.34
C	San Bernardino (SC)	Annual	2020	344.34	397.63	468.27	597.37	73.81	84.69	100.54	127.55
C	San Bernardino (SC)	Annual	2021	346.63	400.48	471.28	601.51	73.89	84.86	100.63	127.71
C	San Bernardino (SC)	Annual	2022	346.66	400.72	471.26	601.76	73.94	85.01	100.70	127.85
C	San Bernardino (SC)	Annual	2023	346.67	400.92	471.24	601.94	73.97	85.15	100.75	128.01
C	San Bernardino (SC)	Annual	2024	350.85	405.93	476.91	609.35	73.99	85.27	100.80	128.14
C	San Bernardino (SC)	Annual	2025	350.85	406.09	476.89	609.49	74.01	85.37	100.84	128.28
C	San Bernardino (SC)	Annual	2026	350.86	406.25	476.88	609.62	74.03	85.48	100.87	128.40
C	San Bernardino (SC)	Annual	2027	350.87	406.40	476.86	609.75	74.05	85.57	100.90	128.51
C	San Bernardino (SC)	Annual	2028	350.87	406.55	476.84	609.88	74.06	85.66	100.92	128.61
C	San Bernardino (SC)	Annual	2029	350.87	406.71	476.83	610.02	74.06	85.74	100.93	128.70
C	San Bernardino (SC)	Annual	2030	350.87	406.87	476.82	610.15	74.07	85.81	100.94	128.79
C	San Bernardino (SC)	Annual	2031	352.60	409.05	479.18	613.34	74.07	85.89	100.95	128.88
C	San Bernardino (SC)	Annual	2032	352.60	409.21	479.18	613.50	74.08	85.96	100.96	128.96
C	San Bernardino (SC)	Annual	2033	352.60	409.34	479.17	613.65	74.08	86.02	100.97	129.03
C	San Bernardino (SC)	Annual	2034	352.60	409.46	479.17	613.78	74.08	86.08	100.97	129.10
C	San Bernardino (SC)	Annual	2035	352.59	409.55	479.16	613.89	74.09	86.13	100.98	129.17
C	San Bernardino (SC)	Summer	2010	368.22	417.94	501.93	633.75	73.39	84.10	99.67	125.16
C	San Bernardino (SC)	Summer	2011	370.87	422.11	505.20	638.44	73.38	84.04	99.75	125.39
C	San Bernardino (SC)	Summer	2012	371.15	423.36	505.23	639.12	73.40	84.04	99.85	125.63
C	San Bernardino (SC)	Summer	2013	372.38	425.43	506.60	641.49	73.45	84.04	99.95	125.87
C	San Bernardino (SC)	Summer	2014	372.60	426.25	506.67	642.21	73.48	84.04	100.03	126.12
C	San Bernardino (SC)	Summer	2015	374.88	429.36	509.55	646.57	73.53	84.10	100.12	126.38
C	San Bernardino (SC)	Summer	2016	375.13	430.02	509.63	647.35	73.60	84.17	100.22	126.63
C	San Bernardino (SC)	Summer	2017	375.32	430.61	509.69	648.09	73.64	84.24	100.30	126.88
C	San Bernardino (SC)	Summer	2018	375.45	431.08	509.71	648.71	73.67	84.33	100.37	127.12
C	San Bernardino (SC)	Summer	2019	373.62	429.29	507.04	645.87	73.72	84.50	100.45	127.34
C	San Bernardino (SC)	Summer	2020	373.74	429.71	507.04	646.38	73.81	84.69	100.54	127.55
C	San Bernardino (SC)	Summer	2021	376.24	432.88	510.33	650.95	73.89	84.86	100.63	127.71
C	San Bernardino (SC)	Summer	2022	376.28	433.20	510.29	651.23	73.94	85.01	100.70	127.85
C	San Bernardino (SC)	Summer	2023	376.28	433.46	510.25	651.43	73.97	85.15	100.75	128.01
C	San Bernardino (SC)	Summer	2024	380.91	439.05	516.50	659.60	73.99	85.27	100.80	128.14
C	San Bernardino (SC)	Summer	2025	380.90	439.27	516.47	659.73	74.01	85.37	100.84	128.28
C	San Bernardino (SC)	Summer	2026	380.91	439.49	516.44	659.84	74.03	85.48	100.87	128.40
C	San Bernardino (SC)	Summer	2027	380.91	439.69	516.43	659.96	74.05	85.57	100.90	128.51
C	San Bernardino (SC)	Summer	2028	380.91	439.90	516.42	660.08	74.06	85.66	100.92	128.61
C	San Bernardino (SC)	Summer	2029	380.91	440.11	516.41	660.21	74.06	85.74	100.93	128.70
C	San Bernardino (SC)	Summer	2030	380.92	440.32	516.41	660.35	74.07	85.81	100.94	128.79
C	San Bernardino (SC)	Summer	2031	382.84	442.80	519.04	663.90	74.07	85.89	100.95	128.88

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Bernardino (SC)	Summer	2032	382.83	443.01	519.04	664.10	74.08	85.96	100.96	128.96
C	San Bernardino (SC)	Summer	2033	382.83	443.18	519.04	664.28	74.08	86.02	100.97	129.03
C	San Bernardino (SC)	Summer	2034	382.83	443.34	519.04	664.45	74.08	86.08	100.97	129.10
C	San Bernardino (SC)	Summer	2035	382.83	443.45	519.03	664.60	74.09	86.13	100.98	129.17
C	San Bernardino (SC)	Winter	2010	334.32	383.27	457.30	577.34	73.39	84.10	99.67	125.16
C	San Bernardino (SC)	Winter	2011	336.58	386.48	460.07	581.64	73.38	84.04	99.75	125.39
C	San Bernardino (SC)	Winter	2012	336.74	387.17	459.96	582.29	73.40	84.04	99.85	125.63
C	San Bernardino (SC)	Winter	2013	337.81	388.73	461.09	584.42	73.45	84.04	99.95	125.87
C	San Bernardino (SC)	Winter	2014	337.97	389.22	461.03	585.02	73.48	84.04	100.03	126.12
C	San Bernardino (SC)	Winter	2015	339.97	391.82	463.49	588.82	73.53	84.10	100.12	126.38
C	San Bernardino (SC)	Winter	2016	340.15	392.25	463.46	589.40	73.60	84.17	100.22	126.63
C	San Bernardino (SC)	Winter	2017	340.28	392.65	463.44	589.94	73.64	84.24	100.30	126.88
C	San Bernardino (SC)	Winter	2018	340.39	392.99	463.42	590.42	73.67	84.33	100.37	127.12
C	San Bernardino (SC)	Winter	2019	338.74	391.31	461.01	587.80	73.72	84.50	100.45	127.34
C	San Bernardino (SC)	Winter	2020	338.84	391.63	461.00	588.19	73.81	84.69	100.54	127.55
C	San Bernardino (SC)	Winter	2021	341.07	394.40	463.95	592.23	73.89	84.86	100.63	127.71
C	San Bernardino (SC)	Winter	2022	341.11	394.63	463.94	592.47	73.94	85.01	100.70	127.85
C	San Bernardino (SC)	Winter	2023	341.12	394.81	463.92	592.65	73.97	85.15	100.75	128.01
C	San Bernardino (SC)	Winter	2024	345.19	399.71	469.47	599.90	73.99	85.27	100.80	128.14
C	San Bernardino (SC)	Winter	2025	345.19	399.85	469.45	600.04	74.01	85.37	100.84	128.28
C	San Bernardino (SC)	Winter	2026	345.21	400.00	469.43	600.18	74.03	85.48	100.87	128.40
C	San Bernardino (SC)	Winter	2027	345.22	400.14	469.42	600.31	74.05	85.57	100.90	128.51
C	San Bernardino (SC)	Winter	2028	345.22	400.28	469.40	600.45	74.06	85.66	100.92	128.61
C	San Bernardino (SC)	Winter	2029	345.22	400.43	469.39	600.58	74.06	85.74	100.93	128.70
C	San Bernardino (SC)	Winter	2030	345.22	400.57	469.37	600.71	74.07	85.81	100.94	128.79
C	San Bernardino (SC)	Winter	2031	346.90	402.69	471.67	603.81	74.07	85.89	100.95	128.88
C	San Bernardino (SC)	Winter	2032	346.90	402.83	471.66	603.96	74.08	85.96	100.96	128.96
C	San Bernardino (SC)	Winter	2033	346.90	402.96	471.65	604.10	74.08	86.02	100.97	129.03
C	San Bernardino (SC)	Winter	2034	346.90	403.07	471.65	604.22	74.08	86.08	100.97	129.10
C	San Bernardino (SC)	Winter	2035	346.89	403.16	471.64	604.33	74.09	86.13	100.98	129.17
C	San Diego (SD)	Annual	2010	352.52	405.15	482.46	610.22	72.99	83.92	99.34	125.27
C	San Diego (SD)	Annual	2011	353.81	407.05	483.85	612.57	73.01	83.88	99.44	125.44
C	San Diego (SD)	Annual	2012	354.03	407.67	483.80	613.09	73.05	83.89	99.57	125.64
C	San Diego (SD)	Annual	2013	354.28	408.23	483.77	613.65	73.12	83.94	99.70	125.85
C	San Diego (SD)	Annual	2014	354.50	408.76	483.75	614.21	73.17	83.99	99.82	126.06
C	San Diego (SD)	Annual	2015	354.72	409.25	483.74	614.79	73.24	84.07	99.93	126.29
C	San Diego (SD)	Annual	2016	354.92	409.69	483.74	615.32	73.32	84.16	100.05	126.52
C	San Diego (SD)	Annual	2017	355.08	410.10	483.73	615.84	73.37	84.25	100.15	126.74
C	San Diego (SD)	Annual	2018	355.21	410.47	483.74	616.29	73.41	84.35	100.25	126.96
C	San Diego (SD)	Annual	2019	355.33	410.82	483.74	616.69	73.46	84.52	100.35	127.15
C	San Diego (SD)	Annual	2020	355.43	411.15	483.75	617.07	73.55	84.69	100.45	127.34
C	San Diego (SD)	Annual	2021	356.07	412.11	484.56	618.41	73.62	84.87	100.55	127.52
C	San Diego (SD)	Annual	2022	356.11	412.36	484.56	618.69	73.67	85.02	100.63	127.67
C	San Diego (SD)	Annual	2023	356.12	412.55	484.56	618.89	73.71	85.15	100.70	127.83
C	San Diego (SD)	Annual	2024	356.12	412.71	484.55	619.06	73.72	85.27	100.76	127.98
C	San Diego (SD)	Annual	2025	356.11	412.86	484.55	619.23	73.74	85.38	100.81	128.12
C	San Diego (SD)	Annual	2026	356.13	413.01	484.54	619.39	73.76	85.48	100.85	128.26
C	San Diego (SD)	Annual	2027	356.14	413.16	484.53	619.54	73.77	85.57	100.88	128.38
C	San Diego (SD)	Annual	2028	356.15	413.30	484.51	619.69	73.78	85.66	100.90	128.48
C	San Diego (SD)	Annual	2029	356.15	413.45	484.50	619.84	73.79	85.74	100.92	128.58
C	San Diego (SD)	Annual	2030	356.14	413.59	484.49	619.98	73.79	85.81	100.93	128.68
C	San Diego (SD)	Annual	2031	356.14	413.74	484.48	620.13	73.80	85.89	100.94	128.77
C	San Diego (SD)	Annual	2032	356.14	413.87	484.48	620.29	73.80	85.96	100.95	128.86
C	San Diego (SD)	Annual	2033	356.14	414.00	484.47	620.43	73.80	86.02	100.96	128.93

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Diego (SD)	Annual	2034	356.13	414.10	484.46	620.55	73.80	86.08	100.97	129.01
C	San Diego (SD)	Annual	2035	356.13	414.20	484.46	620.67	73.81	86.13	100.97	129.08
C	San Diego (SD)	Summer	2010	372.46	426.19	509.00	643.64	72.99	83.92	99.34	125.27
C	San Diego (SD)	Summer	2011	373.89	428.41	510.48	645.96	73.01	83.88	99.44	125.44
C	San Diego (SD)	Summer	2012	374.19	429.26	510.46	646.43	73.05	83.89	99.57	125.64
C	San Diego (SD)	Summer	2013	374.48	430.00	510.47	646.99	73.12	83.94	99.70	125.85
C	San Diego (SD)	Summer	2014	374.75	430.67	510.51	647.60	73.17	83.99	99.82	126.06
C	San Diego (SD)	Summer	2015	375.00	431.27	510.56	648.26	73.24	84.07	99.93	126.29
C	San Diego (SD)	Summer	2016	375.24	431.81	510.61	648.90	73.32	84.16	100.05	126.52
C	San Diego (SD)	Summer	2017	375.42	432.30	510.65	649.52	73.37	84.25	100.15	126.74
C	San Diego (SD)	Summer	2018	375.55	432.74	510.67	650.05	73.41	84.35	100.25	126.96
C	San Diego (SD)	Summer	2019	375.68	433.15	510.68	650.53	73.46	84.52	100.35	127.15
C	San Diego (SD)	Summer	2020	375.78	433.52	510.68	650.97	73.55	84.69	100.45	127.34
C	San Diego (SD)	Summer	2021	376.47	434.60	511.57	652.47	73.62	84.87	100.55	127.52
C	San Diego (SD)	Summer	2022	376.52	434.90	511.57	652.82	73.67	85.02	100.63	127.67
C	San Diego (SD)	Summer	2023	376.54	435.14	511.57	653.07	73.71	85.15	100.70	127.83
C	San Diego (SD)	Summer	2024	376.54	435.34	511.56	653.27	73.72	85.27	100.76	127.98
C	San Diego (SD)	Summer	2025	376.54	435.52	511.56	653.45	73.74	85.38	100.81	128.12
C	San Diego (SD)	Summer	2026	376.55	435.72	511.54	653.62	73.76	85.48	100.85	128.26
C	San Diego (SD)	Summer	2027	376.56	435.90	511.53	653.77	73.77	85.57	100.88	128.38
C	San Diego (SD)	Summer	2028	376.57	436.07	511.51	653.92	73.78	85.66	100.90	128.48
C	San Diego (SD)	Summer	2029	376.58	436.25	511.49	654.06	73.79	85.74	100.92	128.58
C	San Diego (SD)	Summer	2030	376.58	436.43	511.48	654.21	73.79	85.81	100.93	128.68
C	San Diego (SD)	Summer	2031	376.57	436.61	511.47	654.35	73.80	85.89	100.94	128.77
C	San Diego (SD)	Summer	2032	376.57	436.77	511.46	654.51	73.80	85.96	100.95	128.86
C	San Diego (SD)	Summer	2033	376.57	436.92	511.45	654.65	73.80	86.02	100.96	128.93
C	San Diego (SD)	Summer	2034	376.57	437.04	511.45	654.79	73.80	86.08	100.97	129.01
C	San Diego (SD)	Summer	2035	376.57	437.14	511.44	654.92	73.81	86.13	100.97	129.08
C	San Diego (SD)	Winter	2010	348.91	401.34	477.65	604.17	72.99	83.92	99.34	125.27
C	San Diego (SD)	Winter	2011	350.18	403.18	479.04	606.53	73.01	83.88	99.44	125.44
C	San Diego (SD)	Winter	2012	350.39	403.76	478.98	607.06	73.05	83.89	99.57	125.64
C	San Diego (SD)	Winter	2013	350.62	404.30	478.94	607.62	73.12	83.94	99.70	125.85
C	San Diego (SD)	Winter	2014	350.83	404.79	478.91	608.17	73.17	83.99	99.82	126.06
C	San Diego (SD)	Winter	2015	351.05	405.26	478.89	608.73	73.24	84.07	99.93	126.29
C	San Diego (SD)	Winter	2016	351.25	405.69	478.88	609.25	73.32	84.16	100.05	126.52
C	San Diego (SD)	Winter	2017	351.40	406.08	478.87	609.75	73.37	84.25	100.15	126.74
C	San Diego (SD)	Winter	2018	351.53	406.44	478.86	610.18	73.41	84.35	100.25	126.96
C	San Diego (SD)	Winter	2019	351.65	406.78	478.87	610.57	73.46	84.52	100.35	127.15
C	San Diego (SD)	Winter	2020	351.75	407.10	478.87	610.94	73.55	84.69	100.45	127.34
C	San Diego (SD)	Winter	2021	352.38	408.04	479.67	612.25	73.62	84.87	100.55	127.52
C	San Diego (SD)	Winter	2022	352.42	408.28	479.67	612.51	73.67	85.02	100.63	127.67
C	San Diego (SD)	Winter	2023	352.43	408.47	479.67	612.71	73.71	85.15	100.70	127.83
C	San Diego (SD)	Winter	2024	352.42	408.62	479.66	612.87	73.72	85.27	100.76	127.98
C	San Diego (SD)	Winter	2025	352.42	408.75	479.66	613.03	73.74	85.38	100.81	128.12
C	San Diego (SD)	Winter	2026	352.43	408.90	479.65	613.20	73.76	85.48	100.85	128.26
C	San Diego (SD)	Winter	2027	352.44	409.04	479.64	613.35	73.77	85.57	100.88	128.38
C	San Diego (SD)	Winter	2028	352.45	409.18	479.63	613.50	73.78	85.66	100.90	128.48
C	San Diego (SD)	Winter	2029	352.45	409.32	479.62	613.64	73.79	85.74	100.92	128.58
C	San Diego (SD)	Winter	2030	352.45	409.46	479.60	613.79	73.79	85.81	100.93	128.68
C	San Diego (SD)	Winter	2031	352.44	409.60	479.60	613.94	73.80	85.89	100.94	128.77
C	San Diego (SD)	Winter	2032	352.44	409.73	479.59	614.10	73.80	85.96	100.95	128.86
C	San Diego (SD)	Winter	2033	352.44	409.85	479.59	614.23	73.80	86.02	100.96	128.93
C	San Diego (SD)	Winter	2034	352.44	409.95	479.58	614.36	73.80	86.08	100.97	129.01
C	San Diego (SD)	Winter	2035	352.43	410.04	479.57	614.47	73.81	86.13	100.97	129.08

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Francisco (SF)	Annual	2010	371.60	426.62	509.35	643.69	72.64	83.27	99.11	125.09
C	San Francisco (SF)	Annual	2011	371.82	427.18	509.24	644.17	72.74	83.30	99.23	125.27
C	San Francisco (SF)	Annual	2012	372.04	427.76	509.17	644.70	72.83	83.38	99.38	125.47
C	San Francisco (SF)	Annual	2013	372.29	428.30	509.11	645.27	72.93	83.46	99.53	125.68
C	San Francisco (SF)	Annual	2014	372.52	428.84	509.06	645.84	73.02	83.59	99.67	125.91
C	San Francisco (SF)	Annual	2015	372.76	429.37	509.04	646.43	73.13	83.72	99.83	126.14
C	San Francisco (SF)	Annual	2016	372.99	429.87	509.03	646.98	73.24	83.88	99.96	126.36
C	San Francisco (SF)	Annual	2017	373.17	430.33	509.01	647.52	73.31	84.02	100.10	126.59
C	San Francisco (SF)	Annual	2018	373.32	430.73	509.01	647.97	73.38	84.17	100.21	126.81
C	San Francisco (SF)	Annual	2019	373.44	431.08	509.02	648.39	73.44	84.32	100.32	127.01
C	San Francisco (SF)	Annual	2020	373.57	431.40	509.03	648.77	73.54	84.48	100.42	127.20
C	San Francisco (SF)	Annual	2021	373.65	431.70	509.03	649.09	73.62	84.65	100.52	127.37
C	San Francisco (SF)	Annual	2022	373.71	431.95	509.04	649.36	73.68	84.79	100.60	127.51
C	San Francisco (SF)	Annual	2023	373.73	432.14	509.03	649.57	73.72	84.92	100.67	127.66
C	San Francisco (SF)	Annual	2024	373.72	432.29	509.03	649.73	73.74	85.03	100.73	127.80
C	San Francisco (SF)	Annual	2025	373.72	432.42	509.02	649.90	73.77	85.13	100.78	127.94
C	San Francisco (SF)	Annual	2026	373.74	432.57	509.01	650.08	73.79	85.23	100.82	128.07
C	San Francisco (SF)	Annual	2027	373.76	432.71	509.00	650.24	73.81	85.31	100.85	128.19
C	San Francisco (SF)	Annual	2028	373.76	432.86	508.98	650.41	73.82	85.39	100.88	128.29
C	San Francisco (SF)	Annual	2029	373.76	433.01	508.96	650.58	73.83	85.47	100.89	128.39
C	San Francisco (SF)	Annual	2030	373.75	433.17	508.95	650.75	73.83	85.54	100.91	128.49
C	San Francisco (SF)	Annual	2031	373.75	433.33	508.94	650.93	73.84	85.62	100.92	128.59
C	San Francisco (SF)	Annual	2032	373.75	433.50	508.93	651.11	73.84	85.69	100.93	128.68
C	San Francisco (SF)	Annual	2033	373.75	433.64	508.92	651.27	73.85	85.75	100.94	128.76
C	San Francisco (SF)	Annual	2034	373.74	433.77	508.91	651.42	73.85	85.81	100.94	128.84
C	San Francisco (SF)	Annual	2035	373.74	433.88	508.90	651.56	73.85	85.87	100.95	128.91
C	San Francisco (SF)	Summer	2010	395.05	451.58	540.63	683.09	72.64	83.27	99.11	125.09
C	San Francisco (SF)	Summer	2011	395.38	452.34	540.53	683.40	72.74	83.30	99.23	125.27
C	San Francisco (SF)	Summer	2012	395.71	453.09	540.48	683.83	72.83	83.38	99.38	125.47
C	San Francisco (SF)	Summer	2013	396.03	453.80	540.46	684.36	72.93	83.46	99.53	125.68
C	San Francisco (SF)	Summer	2014	396.33	454.46	540.48	684.94	73.02	83.59	99.67	125.91
C	San Francisco (SF)	Summer	2015	396.62	455.11	540.51	685.61	73.13	83.72	99.83	126.14
C	San Francisco (SF)	Summer	2016	396.88	455.72	540.56	686.28	73.24	83.88	99.96	126.36
C	San Francisco (SF)	Summer	2017	397.07	456.29	540.60	686.95	73.31	84.02	100.10	126.59
C	San Francisco (SF)	Summer	2018	397.24	456.76	540.61	687.49	73.38	84.17	100.21	126.81
C	San Francisco (SF)	Summer	2019	397.37	457.20	540.63	688.00	73.44	84.32	100.32	127.01
C	San Francisco (SF)	Summer	2020	397.50	457.58	540.65	688.47	73.54	84.48	100.42	127.20
C	San Francisco (SF)	Summer	2021	397.58	457.93	540.66	688.86	73.62	84.65	100.52	127.37
C	San Francisco (SF)	Summer	2022	397.64	458.23	540.66	689.20	73.68	84.79	100.60	127.51
C	San Francisco (SF)	Summer	2023	397.66	458.47	540.66	689.46	73.72	84.92	100.67	127.66
C	San Francisco (SF)	Summer	2024	397.65	458.66	540.64	689.67	73.74	85.03	100.73	127.80
C	San Francisco (SF)	Summer	2025	397.65	458.84	540.63	689.88	73.77	85.13	100.78	127.94
C	San Francisco (SF)	Summer	2026	397.67	459.02	540.61	690.09	73.79	85.23	100.82	128.07
C	San Francisco (SF)	Summer	2027	397.69	459.20	540.59	690.26	73.81	85.31	100.85	128.19
C	San Francisco (SF)	Summer	2028	397.70	459.38	540.57	690.44	73.82	85.39	100.88	128.29
C	San Francisco (SF)	Summer	2029	397.70	459.57	540.54	690.62	73.83	85.47	100.89	128.39
C	San Francisco (SF)	Summer	2030	397.70	459.77	540.53	690.81	73.83	85.54	100.91	128.49
C	San Francisco (SF)	Summer	2031	397.70	459.99	540.52	690.99	73.84	85.62	100.92	128.59
C	San Francisco (SF)	Summer	2032	397.71	460.19	540.51	691.17	73.84	85.69	100.93	128.68
C	San Francisco (SF)	Summer	2033	397.71	460.36	540.50	691.35	73.85	85.75	100.94	128.76
C	San Francisco (SF)	Summer	2034	397.71	460.52	540.50	691.51	73.85	85.81	100.94	128.84
C	San Francisco (SF)	Summer	2035	397.70	460.65	540.49	691.66	73.85	85.87	100.95	128.91
C	San Francisco (SF)	Winter	2010	370.78	425.74	508.25	642.31	72.64	83.27	99.11	125.09
C	San Francisco (SF)	Winter	2011	370.99	426.30	508.14	642.79	72.74	83.30	99.23	125.27

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Francisco (SF)	Winter	2012	371.21	426.87	508.07	643.32	72.83	83.38	99.38	125.47
C	San Francisco (SF)	Winter	2013	371.46	427.41	508.01	643.90	72.93	83.46	99.53	125.68
C	San Francisco (SF)	Winter	2014	371.69	427.94	507.96	644.46	73.02	83.59	99.67	125.91
C	San Francisco (SF)	Winter	2015	371.93	428.46	507.94	645.05	73.13	83.72	99.83	126.14
C	San Francisco (SF)	Winter	2016	372.16	428.96	507.92	645.60	73.24	83.88	99.96	126.36
C	San Francisco (SF)	Winter	2017	372.33	429.42	507.91	646.13	73.31	84.02	100.10	126.59
C	San Francisco (SF)	Winter	2018	372.48	429.81	507.90	646.58	73.38	84.17	100.21	126.81
C	San Francisco (SF)	Winter	2019	372.60	430.17	507.91	647.00	73.44	84.32	100.32	127.01
C	San Francisco (SF)	Winter	2020	372.73	430.49	507.92	647.38	73.54	84.48	100.42	127.20
C	San Francisco (SF)	Winter	2021	372.81	430.78	507.92	647.69	73.62	84.65	100.52	127.37
C	San Francisco (SF)	Winter	2022	372.87	431.02	507.93	647.96	73.68	84.79	100.60	127.51
C	San Francisco (SF)	Winter	2023	372.89	431.21	507.92	648.17	73.72	84.92	100.67	127.66
C	San Francisco (SF)	Winter	2024	372.88	431.36	507.92	648.33	73.74	85.03	100.73	127.80
C	San Francisco (SF)	Winter	2025	372.88	431.50	507.91	648.50	73.77	85.13	100.78	127.94
C	San Francisco (SF)	Winter	2026	372.90	431.64	507.90	648.67	73.79	85.23	100.82	128.07
C	San Francisco (SF)	Winter	2027	372.92	431.78	507.89	648.84	73.81	85.31	100.85	128.19
C	San Francisco (SF)	Winter	2028	372.92	431.93	507.87	649.00	73.82	85.39	100.88	128.29
C	San Francisco (SF)	Winter	2029	372.92	432.08	507.85	649.17	73.83	85.47	100.89	128.39
C	San Francisco (SF)	Winter	2030	372.91	432.23	507.84	649.34	73.83	85.54	100.91	128.49
C	San Francisco (SF)	Winter	2031	372.91	432.40	507.83	649.52	73.84	85.62	100.92	128.59
C	San Francisco (SF)	Winter	2032	372.91	432.56	507.82	649.71	73.84	85.69	100.93	128.68
C	San Francisco (SF)	Winter	2033	372.91	432.70	507.81	649.87	73.85	85.75	100.94	128.76
C	San Francisco (SF)	Winter	2034	372.90	432.83	507.81	650.02	73.85	85.81	100.94	128.84
C	San Francisco (SF)	Winter	2035	372.90	432.95	507.80	650.15	73.85	85.87	100.95	128.91
C	San Joaquin (SJV)	Annual	2010	341.15	391.09	467.02	587.28	73.38	84.95	100.04	124.39
C	San Joaquin (SJV)	Annual	2011	341.42	391.91	466.87	587.92	73.37	84.69	100.05	124.61
C	San Joaquin (SJV)	Annual	2012	340.62	391.44	465.29	586.82	73.40	84.55	100.10	124.86
C	San Joaquin (SJV)	Annual	2013	340.63	391.84	464.86	587.24	73.41	84.46	100.15	125.16
C	San Joaquin (SJV)	Annual	2014	340.87	392.44	464.82	588.06	73.44	84.41	100.20	125.45
C	San Joaquin (SJV)	Annual	2015	342.48	394.54	466.66	591.27	73.49	84.37	100.25	125.76
C	San Joaquin (SJV)	Annual	2016	342.68	395.00	466.64	592.05	73.55	84.37	100.31	126.07
C	San Joaquin (SJV)	Annual	2017	342.83	395.40	466.61	592.77	73.57	84.38	100.33	126.38
C	San Joaquin (SJV)	Annual	2018	341.73	394.34	464.95	591.28	73.61	84.41	100.38	126.66
C	San Joaquin (SJV)	Annual	2019	341.83	394.66	464.93	591.82	73.66	84.55	100.43	126.92
C	San Joaquin (SJV)	Annual	2020	341.92	394.95	464.91	592.29	73.75	84.71	100.52	127.16
C	San Joaquin (SJV)	Annual	2021	340.58	393.59	462.99	590.24	73.83	84.88	100.61	127.36
C	San Joaquin (SJV)	Annual	2022	340.62	393.80	462.97	590.55	73.88	85.03	100.68	127.52
C	San Joaquin (SJV)	Annual	2023	340.62	393.98	462.95	590.80	73.91	85.16	100.74	127.71
C	San Joaquin (SJV)	Annual	2024	338.98	392.24	460.72	588.16	73.93	85.27	100.79	127.88
C	San Joaquin (SJV)	Annual	2025	338.99	392.38	460.71	588.34	73.95	85.37	100.83	128.04
C	San Joaquin (SJV)	Annual	2026	338.96	392.48	460.64	588.42	73.97	85.47	100.87	128.18
C	San Joaquin (SJV)	Annual	2027	338.97	392.63	460.62	588.56	73.99	85.56	100.89	128.30
C	San Joaquin (SJV)	Annual	2028	338.98	392.77	460.61	588.70	74.00	85.65	100.91	128.42
C	San Joaquin (SJV)	Annual	2029	338.98	392.91	460.59	588.85	74.00	85.73	100.93	128.53
C	San Joaquin (SJV)	Annual	2030	338.98	393.05	460.58	589.01	74.01	85.80	100.94	128.63
C	San Joaquin (SJV)	Annual	2031	338.98	393.19	460.57	589.19	74.01	85.88	100.95	128.73
C	San Joaquin (SJV)	Annual	2032	338.98	393.31	460.56	589.38	74.02	85.94	100.95	128.83
C	San Joaquin (SJV)	Annual	2033	338.98	393.42	460.55	589.55	74.02	86.00	100.96	128.92
C	San Joaquin (SJV)	Annual	2034	338.98	393.52	460.54	589.70	74.03	86.06	100.97	129.00
C	San Joaquin (SJV)	Annual	2035	338.97	393.60	460.53	589.84	74.03	86.10	100.97	129.07
C	San Joaquin (SJV)	Summer	2010	372.14	422.80	507.85	638.60	73.38	84.95	100.04	124.39
C	San Joaquin (SJV)	Summer	2011	372.63	424.33	507.90	639.20	73.37	84.69	100.05	124.61
C	San Joaquin (SJV)	Summer	2012	371.92	424.32	506.38	638.02	73.40	84.55	100.10	124.86
C	San Joaquin (SJV)	Summer	2013	372.06	425.18	506.12	638.59	73.41	84.46	100.15	125.16

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Joaquin (SJV)	Summer	2014	372.42	426.15	506.26	639.64	73.44	84.41	100.20	125.45
C	San Joaquin (SJV)	Summer	2015	374.24	428.69	508.43	643.31	73.49	84.37	100.25	125.76
C	San Joaquin (SJV)	Summer	2016	374.50	429.38	508.53	644.34	73.55	84.37	100.31	126.07
C	San Joaquin (SJV)	Summer	2017	374.68	429.96	508.59	645.29	73.57	84.38	100.33	126.38
C	San Joaquin (SJV)	Summer	2018	373.47	428.89	506.81	643.78	73.61	84.41	100.38	126.66
C	San Joaquin (SJV)	Summer	2019	373.56	429.29	506.79	644.44	73.66	84.55	100.43	126.92
C	San Joaquin (SJV)	Summer	2020	373.63	429.66	506.76	645.01	73.75	84.71	100.52	127.16
C	San Joaquin (SJV)	Summer	2021	372.14	428.21	504.64	642.81	73.83	84.88	100.61	127.36
C	San Joaquin (SJV)	Summer	2022	372.16	428.49	504.59	643.19	73.88	85.03	100.68	127.52
C	San Joaquin (SJV)	Summer	2023	372.17	428.73	504.55	643.46	73.91	85.16	100.74	127.71
C	San Joaquin (SJV)	Summer	2024	370.38	426.89	502.11	640.59	73.93	85.27	100.79	127.88
C	San Joaquin (SJV)	Summer	2025	370.39	427.09	502.08	640.78	73.95	85.37	100.83	128.04
C	San Joaquin (SJV)	Summer	2026	370.34	427.23	501.98	640.76	73.97	85.47	100.87	128.18
C	San Joaquin (SJV)	Summer	2027	370.36	427.43	501.95	640.85	73.99	85.56	100.89	128.30
C	San Joaquin (SJV)	Summer	2028	370.37	427.63	501.94	640.96	74.00	85.65	100.91	128.42
C	San Joaquin (SJV)	Summer	2029	370.39	427.83	501.92	641.09	74.00	85.73	100.93	128.53
C	San Joaquin (SJV)	Summer	2030	370.40	428.04	501.92	641.25	74.01	85.80	100.94	128.63
C	San Joaquin (SJV)	Summer	2031	370.39	428.23	501.91	641.47	74.01	85.88	100.95	128.73
C	San Joaquin (SJV)	Summer	2032	370.39	428.39	501.90	641.69	74.02	85.94	100.95	128.83
C	San Joaquin (SJV)	Summer	2033	370.39	428.53	501.89	641.91	74.02	86.00	100.96	128.92
C	San Joaquin (SJV)	Summer	2034	370.38	428.65	501.89	642.11	74.03	86.06	100.97	129.00
C	San Joaquin (SJV)	Summer	2035	370.38	428.74	501.89	642.30	74.03	86.10	100.97	129.07
C	San Joaquin (SJV)	Winter	2010	331.39	381.10	454.15	571.11	73.38	84.95	100.04	124.39
C	San Joaquin (SJV)	Winter	2011	331.58	381.70	453.94	571.76	73.37	84.69	100.05	124.61
C	San Joaquin (SJV)	Winter	2012	330.76	381.08	452.34	570.69	73.40	84.55	100.10	124.86
C	San Joaquin (SJV)	Winter	2013	330.73	381.33	451.86	571.05	73.41	84.46	100.15	125.16
C	San Joaquin (SJV)	Winter	2014	330.93	381.81	451.76	571.81	73.44	84.41	100.20	125.45
C	San Joaquin (SJV)	Winter	2015	332.47	383.78	453.50	574.87	73.49	84.37	100.25	125.76
C	San Joaquin (SJV)	Winter	2016	332.66	384.17	453.44	575.57	73.55	84.37	100.31	126.07
C	San Joaquin (SJV)	Winter	2017	332.79	384.52	453.39	576.22	73.57	84.38	100.33	126.38
C	San Joaquin (SJV)	Winter	2018	331.73	383.45	451.75	574.74	73.61	84.41	100.38	126.66
C	San Joaquin (SJV)	Winter	2019	331.83	383.74	451.73	575.23	73.66	84.55	100.43	126.92
C	San Joaquin (SJV)	Winter	2020	331.93	384.01	451.72	575.67	73.75	84.71	100.52	127.16
C	San Joaquin (SJV)	Winter	2021	330.64	382.68	449.87	573.67	73.83	84.88	100.61	127.36
C	San Joaquin (SJV)	Winter	2022	330.67	382.87	449.86	573.97	73.88	85.03	100.68	127.52
C	San Joaquin (SJV)	Winter	2023	330.68	383.03	449.84	574.20	73.91	85.16	100.74	127.71
C	San Joaquin (SJV)	Winter	2024	329.09	381.32	447.68	571.64	73.93	85.27	100.79	127.88
C	San Joaquin (SJV)	Winter	2025	329.10	381.44	447.67	571.82	73.95	85.37	100.83	128.04
C	San Joaquin (SJV)	Winter	2026	329.07	381.53	447.62	571.92	73.97	85.47	100.87	128.18
C	San Joaquin (SJV)	Winter	2027	329.08	381.66	447.60	572.08	73.99	85.56	100.89	128.30
C	San Joaquin (SJV)	Winter	2028	329.09	381.79	447.58	572.23	74.00	85.65	100.91	128.42
C	San Joaquin (SJV)	Winter	2029	329.09	381.91	447.56	572.39	74.00	85.73	100.93	128.53
C	San Joaquin (SJV)	Winter	2030	329.08	382.03	447.55	572.55	74.01	85.80	100.94	128.63
C	San Joaquin (SJV)	Winter	2031	329.08	382.15	447.54	572.72	74.01	85.88	100.95	128.73
C	San Joaquin (SJV)	Winter	2032	329.08	382.26	447.53	572.89	74.02	85.94	100.95	128.83
C	San Joaquin (SJV)	Winter	2033	329.08	382.36	447.52	573.05	74.02	86.00	100.96	128.92
C	San Joaquin (SJV)	Winter	2034	329.08	382.45	447.51	573.19	74.03	86.06	100.97	129.00
C	San Joaquin (SJV)	Winter	2035	329.08	382.52	447.50	573.31	74.03	86.10	100.97	129.07
C	San Luis Obispo (SCC)	Annual	2010	323.71	378.06	444.34	556.25	73.66	90.73	100.02	124.73
C	San Luis Obispo (SCC)	Annual	2011	323.66	377.48	443.78	556.86	73.53	89.58	100.04	124.90
C	San Luis Obispo (SCC)	Annual	2012	323.65	377.05	443.34	557.51	73.41	88.66	100.08	125.11
C	San Luis Obispo (SCC)	Annual	2013	323.72	376.63	442.99	558.19	73.36	87.82	100.14	125.34
C	San Luis Obispo (SCC)	Annual	2014	323.79	376.32	442.72	558.85	73.31	87.15	100.20	125.58
C	San Luis Obispo (SCC)	Annual	2015	323.89	376.00	442.50	559.54	73.31	86.48	100.25	125.85

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Luis Obispo (SCC)	Annual	2016	323.99	375.75	442.33	560.18	73.31	85.95	100.33	126.11
C	San Luis Obispo (SCC)	Annual	2017	324.07	375.53	442.19	560.79	73.31	85.47	100.39	126.38
C	San Luis Obispo (SCC)	Annual	2018	324.12	375.39	442.08	561.33	73.30	85.15	100.47	126.64
C	San Luis Obispo (SCC)	Annual	2019	324.17	375.38	441.99	561.79	73.31	85.03	100.54	126.87
C	San Luis Obispo (SCC)	Annual	2020	324.24	375.40	441.92	562.20	73.40	85.04	100.62	127.10
C	San Luis Obispo (SCC)	Annual	2021	324.29	375.51	441.85	562.51	73.47	85.15	100.70	127.27
C	San Luis Obispo (SCC)	Annual	2022	324.32	375.62	441.79	562.77	73.52	85.25	100.76	127.41
C	San Luis Obispo (SCC)	Annual	2023	324.30	375.69	441.73	562.97	73.56	85.34	100.82	127.59
C	San Luis Obispo (SCC)	Annual	2024	324.27	375.76	441.66	563.12	73.57	85.42	100.86	127.74
C	San Luis Obispo (SCC)	Annual	2025	324.25	375.82	441.61	563.29	73.59	85.49	100.89	127.90
C	San Luis Obispo (SCC)	Annual	2026	324.27	375.91	441.54	563.46	73.61	85.57	100.92	128.06
C	San Luis Obispo (SCC)	Annual	2027	324.28	375.99	441.47	563.63	73.63	85.63	100.94	128.19
C	San Luis Obispo (SCC)	Annual	2028	324.28	376.07	441.40	563.80	73.64	85.68	100.95	128.31
C	San Luis Obispo (SCC)	Annual	2029	324.27	376.16	441.32	563.96	73.64	85.74	100.95	128.43
C	San Luis Obispo (SCC)	Annual	2030	324.26	376.24	441.24	564.13	73.65	85.79	100.95	128.54
C	San Luis Obispo (SCC)	Annual	2031	324.26	376.33	441.20	564.31	73.65	85.84	100.96	128.65
C	San Luis Obispo (SCC)	Annual	2032	324.26	376.41	441.16	564.49	73.66	85.88	100.96	128.75
C	San Luis Obispo (SCC)	Annual	2033	324.25	376.48	441.13	564.65	73.66	85.92	100.97	128.84
C	San Luis Obispo (SCC)	Annual	2034	324.25	376.54	441.10	564.79	73.67	85.96	100.97	128.93
C	San Luis Obispo (SCC)	Annual	2035	324.24	376.60	441.08	564.92	73.67	86.00	100.97	129.01
C	San Luis Obispo (SCC)	Summer	2010	337.08	392.11	461.85	578.62	73.66	90.73	100.02	124.73
C	San Luis Obispo (SCC)	Summer	2011	337.15	391.73	461.44	579.22	73.53	89.58	100.04	124.90
C	San Luis Obispo (SCC)	Summer	2012	337.23	391.46	461.13	579.91	73.41	88.66	100.08	125.11
C	San Luis Obispo (SCC)	Summer	2013	337.36	391.21	460.89	580.65	73.36	87.82	100.14	125.34
C	San Luis Obispo (SCC)	Summer	2014	337.49	391.02	460.71	581.40	73.31	87.15	100.20	125.58
C	San Luis Obispo (SCC)	Summer	2015	337.63	390.82	460.57	582.19	73.31	86.48	100.25	125.85
C	San Luis Obispo (SCC)	Summer	2016	337.76	390.68	460.46	582.94	73.31	85.95	100.33	126.11
C	San Luis Obispo (SCC)	Summer	2017	337.85	390.56	460.36	583.64	73.31	85.47	100.39	126.38
C	San Luis Obispo (SCC)	Summer	2018	337.91	390.51	460.26	584.25	73.30	85.15	100.47	126.64
C	San Luis Obispo (SCC)	Summer	2019	337.96	390.55	460.18	584.77	73.31	85.03	100.54	126.87
C	San Luis Obispo (SCC)	Summer	2020	338.03	390.62	460.11	585.24	73.40	85.04	100.62	127.10
C	San Luis Obispo (SCC)	Summer	2021	338.07	390.76	460.04	585.58	73.47	85.15	100.70	127.27
C	San Luis Obispo (SCC)	Summer	2022	338.10	390.89	459.97	585.87	73.52	85.25	100.76	127.41
C	San Luis Obispo (SCC)	Summer	2023	338.08	390.99	459.91	586.10	73.56	85.34	100.82	127.59
C	San Luis Obispo (SCC)	Summer	2024	338.05	391.07	459.85	586.26	73.57	85.42	100.86	127.74
C	San Luis Obispo (SCC)	Summer	2025	338.04	391.16	459.80	586.42	73.59	85.49	100.89	127.90
C	San Luis Obispo (SCC)	Summer	2026	338.05	391.26	459.73	586.60	73.61	85.57	100.92	128.06
C	San Luis Obispo (SCC)	Summer	2027	338.07	391.36	459.67	586.77	73.63	85.63	100.94	128.19
C	San Luis Obispo (SCC)	Summer	2028	338.07	391.45	459.61	586.94	73.64	85.68	100.95	128.31
C	San Luis Obispo (SCC)	Summer	2029	338.07	391.55	459.54	587.11	73.64	85.74	100.95	128.43
C	San Luis Obispo (SCC)	Summer	2030	338.06	391.65	459.47	587.29	73.65	85.79	100.95	128.54
C	San Luis Obispo (SCC)	Summer	2031	338.06	391.75	459.44	587.47	73.65	85.84	100.96	128.65
C	San Luis Obispo (SCC)	Summer	2032	338.06	391.85	459.41	587.66	73.66	85.88	100.96	128.75
C	San Luis Obispo (SCC)	Summer	2033	338.06	391.93	459.38	587.84	73.66	85.92	100.97	128.84
C	San Luis Obispo (SCC)	Summer	2034	338.06	391.99	459.35	588.00	73.67	85.96	100.97	128.93
C	San Luis Obispo (SCC)	Summer	2035	338.05	392.05	459.33	588.14	73.67	86.00	100.97	129.01
C	San Luis Obispo (SCC)	Winter	2010	321.04	375.26	440.86	551.80	73.66	90.73	100.02	124.73
C	San Luis Obispo (SCC)	Winter	2011	320.97	374.65	440.26	552.41	73.53	89.58	100.04	124.90
C	San Luis Obispo (SCC)	Winter	2012	320.95	374.18	439.80	553.05	73.41	88.66	100.08	125.11
C	San Luis Obispo (SCC)	Winter	2013	321.01	373.73	439.43	553.72	73.36	87.82	100.14	125.34
C	San Luis Obispo (SCC)	Winter	2014	321.07	373.40	439.14	554.36	73.31	87.15	100.20	125.58
C	San Luis Obispo (SCC)	Winter	2015	321.16	373.05	438.90	555.03	73.31	86.48	100.25	125.85
C	San Luis Obispo (SCC)	Winter	2016	321.25	372.78	438.72	555.65	73.31	85.95	100.33	126.11
C	San Luis Obispo (SCC)	Winter	2017	321.32	372.53	438.57	556.25	73.31	85.47	100.39	126.38

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Luis Obispo (SCC)	Winter	2018	321.37	372.38	438.46	556.77	73.30	85.15	100.47	126.64
C	San Luis Obispo (SCC)	Winter	2019	321.42	372.35	438.37	557.21	73.31	85.03	100.54	126.87
C	San Luis Obispo (SCC)	Winter	2020	321.50	372.37	438.30	557.61	73.40	85.04	100.62	127.10
C	San Luis Obispo (SCC)	Winter	2021	321.55	372.47	438.23	557.91	73.47	85.15	100.70	127.27
C	San Luis Obispo (SCC)	Winter	2022	321.57	372.57	438.17	558.16	73.52	85.25	100.76	127.41
C	San Luis Obispo (SCC)	Winter	2023	321.56	372.64	438.10	558.37	73.56	85.34	100.82	127.59
C	San Luis Obispo (SCC)	Winter	2024	321.53	372.71	438.04	558.51	73.57	85.42	100.86	127.74
C	San Luis Obispo (SCC)	Winter	2025	321.51	372.77	437.99	558.68	73.59	85.49	100.89	127.90
C	San Luis Obispo (SCC)	Winter	2026	321.52	372.85	437.92	558.85	73.61	85.57	100.92	128.06
C	San Luis Obispo (SCC)	Winter	2027	321.53	372.93	437.84	559.02	73.63	85.63	100.94	128.19
C	San Luis Obispo (SCC)	Winter	2028	321.53	373.01	437.77	559.19	73.64	85.68	100.95	128.31
C	San Luis Obispo (SCC)	Winter	2029	321.52	373.09	437.69	559.35	73.64	85.74	100.95	128.43
C	San Luis Obispo (SCC)	Winter	2030	321.51	373.17	437.61	559.52	73.65	85.79	100.95	128.54
C	San Luis Obispo (SCC)	Winter	2031	321.51	373.25	437.57	559.69	73.65	85.84	100.96	128.65
C	San Luis Obispo (SCC)	Winter	2032	321.51	373.33	437.53	559.87	73.66	85.88	100.96	128.75
C	San Luis Obispo (SCC)	Winter	2033	321.50	373.40	437.50	560.03	73.66	85.92	100.97	128.84
C	San Luis Obispo (SCC)	Winter	2034	321.50	373.46	437.47	560.17	73.67	85.96	100.97	128.93
C	San Luis Obispo (SCC)	Winter	2035	321.49	373.52	437.45	560.29	73.67	86.00	100.97	129.01
C	San Mateo (SF)	Annual	2010	331.46	381.30	453.00	571.70	73.17	84.42	99.27	124.79
C	San Mateo (SF)	Annual	2011	331.52	381.54	452.87	572.19	73.20	84.32	99.39	124.99
C	San Mateo (SF)	Annual	2012	331.59	381.82	452.77	572.72	73.21	84.27	99.52	125.21
C	San Mateo (SF)	Annual	2013	331.72	382.13	452.69	573.27	73.27	84.28	99.65	125.45
C	San Mateo (SF)	Annual	2014	331.82	382.41	452.63	573.84	73.28	84.28	99.79	125.69
C	San Mateo (SF)	Annual	2015	331.97	382.71	452.60	574.41	73.35	84.33	99.92	125.94
C	San Mateo (SF)	Annual	2016	332.12	383.02	452.57	574.97	73.43	84.40	100.06	126.20
C	San Mateo (SF)	Annual	2017	332.23	383.29	452.55	575.50	73.47	84.45	100.17	126.46
C	San Mateo (SF)	Annual	2018	332.33	383.54	452.54	575.97	73.52	84.52	100.27	126.70
C	San Mateo (SF)	Annual	2019	332.44	383.81	452.54	576.38	73.58	84.64	100.37	126.93
C	San Mateo (SF)	Annual	2020	332.53	384.05	452.54	576.75	73.67	84.78	100.47	127.15
C	San Mateo (SF)	Annual	2021	332.60	384.28	452.54	577.07	73.74	84.93	100.56	127.33
C	San Mateo (SF)	Annual	2022	332.63	384.48	452.54	577.34	73.79	85.06	100.64	127.49
C	San Mateo (SF)	Annual	2023	332.64	384.63	452.53	577.54	73.83	85.17	100.70	127.66
C	San Mateo (SF)	Annual	2024	332.61	384.75	452.52	577.70	73.85	85.27	100.76	127.81
C	San Mateo (SF)	Annual	2025	332.60	384.86	452.51	577.87	73.87	85.37	100.81	127.96
C	San Mateo (SF)	Annual	2026	332.62	385.00	452.50	578.03	73.89	85.46	100.84	128.10
C	San Mateo (SF)	Annual	2027	332.63	385.15	452.48	578.19	73.90	85.54	100.87	128.23
C	San Mateo (SF)	Annual	2028	332.63	385.29	452.46	578.34	73.91	85.61	100.89	128.34
C	San Mateo (SF)	Annual	2029	332.63	385.44	452.44	578.49	73.92	85.69	100.91	128.45
C	San Mateo (SF)	Annual	2030	332.62	385.59	452.42	578.65	73.92	85.76	100.92	128.55
C	San Mateo (SF)	Annual	2031	332.61	385.75	452.41	578.81	73.93	85.83	100.93	128.65
C	San Mateo (SF)	Annual	2032	332.61	385.91	452.40	578.98	73.93	85.89	100.94	128.74
C	San Mateo (SF)	Annual	2033	332.61	386.05	452.38	579.13	73.93	85.95	100.95	128.83
C	San Mateo (SF)	Annual	2034	332.60	386.18	452.37	579.27	73.94	86.01	100.96	128.91
C	San Mateo (SF)	Annual	2035	332.60	386.30	452.36	579.39	73.94	86.06	100.96	128.99
C	San Mateo (SF)	Summer	2010	352.26	402.67	480.50	606.46	73.17	84.42	99.27	124.79
C	San Mateo (SF)	Summer	2011	352.41	403.17	480.38	606.84	73.20	84.32	99.39	124.99
C	San Mateo (SF)	Summer	2012	352.55	403.67	480.30	607.32	73.21	84.27	99.52	125.21
C	San Mateo (SF)	Summer	2013	352.74	404.17	480.27	607.88	73.27	84.28	99.65	125.45
C	San Mateo (SF)	Summer	2014	352.88	404.61	480.26	608.49	73.28	84.28	99.79	125.69
C	San Mateo (SF)	Summer	2015	353.05	405.04	480.27	609.14	73.35	84.33	99.92	125.94
C	San Mateo (SF)	Summer	2016	353.22	405.45	480.29	609.82	73.43	84.40	100.06	126.20
C	San Mateo (SF)	Summer	2017	353.34	405.84	480.32	610.47	73.47	84.45	100.17	126.46
C	San Mateo (SF)	Summer	2018	353.44	406.19	480.34	611.04	73.52	84.52	100.27	126.70
C	San Mateo (SF)	Summer	2019	353.55	406.55	480.36	611.53	73.58	84.64	100.37	126.93

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	San Mateo (SF)	Summer	2020	353.65	406.87	480.38	611.98	73.67	84.78	100.47	127.15
C	San Mateo (SF)	Summer	2021	353.72	407.17	480.38	612.36	73.74	84.93	100.56	127.33
C	San Mateo (SF)	Summer	2022	353.76	407.44	480.37	612.69	73.79	85.06	100.64	127.49
C	San Mateo (SF)	Summer	2023	353.77	407.65	480.36	612.93	73.83	85.17	100.70	127.66
C	San Mateo (SF)	Summer	2024	353.75	407.83	480.34	613.13	73.85	85.27	100.76	127.81
C	San Mateo (SF)	Summer	2025	353.74	408.00	480.32	613.31	73.87	85.37	100.81	127.96
C	San Mateo (SF)	Summer	2026	353.77	408.19	480.30	613.48	73.89	85.46	100.84	128.10
C	San Mateo (SF)	Summer	2027	353.78	408.39	480.28	613.64	73.90	85.54	100.87	128.23
C	San Mateo (SF)	Summer	2028	353.79	408.58	480.25	613.80	73.91	85.61	100.89	128.34
C	San Mateo (SF)	Summer	2029	353.79	408.79	480.23	613.96	73.92	85.69	100.91	128.45
C	San Mateo (SF)	Summer	2030	353.78	408.99	480.21	614.12	73.92	85.76	100.92	128.55
C	San Mateo (SF)	Summer	2031	353.78	409.21	480.20	614.29	73.93	85.83	100.93	128.65
C	San Mateo (SF)	Summer	2032	353.78	409.41	480.19	614.46	73.93	85.89	100.94	128.74
C	San Mateo (SF)	Summer	2033	353.78	409.59	480.19	614.63	73.93	85.95	100.95	128.83
C	San Mateo (SF)	Summer	2034	353.78	409.75	480.18	614.78	73.94	86.01	100.96	128.91
C	San Mateo (SF)	Summer	2035	353.77	409.88	480.17	614.93	73.94	86.06	100.96	128.99
C	San Mateo (SF)	Winter	2010	330.18	379.99	451.31	569.56	73.17	84.42	99.27	124.79
C	San Mateo (SF)	Winter	2011	330.23	380.21	451.18	570.06	73.20	84.32	99.39	124.99
C	San Mateo (SF)	Winter	2012	330.30	380.48	451.08	570.59	73.21	84.27	99.52	125.21
C	San Mateo (SF)	Winter	2013	330.43	380.78	451.00	571.15	73.27	84.28	99.65	125.45
C	San Mateo (SF)	Winter	2014	330.52	381.04	450.94	571.71	73.28	84.28	99.79	125.69
C	San Mateo (SF)	Winter	2015	330.67	381.34	450.90	572.28	73.35	84.33	99.92	125.94
C	San Mateo (SF)	Winter	2016	330.82	381.64	450.87	572.83	73.43	84.40	100.06	126.20
C	San Mateo (SF)	Winter	2017	330.94	381.91	450.84	573.35	73.47	84.45	100.17	126.46
C	San Mateo (SF)	Winter	2018	331.03	382.14	450.83	573.82	73.52	84.52	100.27	126.70
C	San Mateo (SF)	Winter	2019	331.14	382.41	450.83	574.22	73.58	84.64	100.37	126.93
C	San Mateo (SF)	Winter	2020	331.23	382.65	450.83	574.59	73.67	84.78	100.47	127.15
C	San Mateo (SF)	Winter	2021	331.30	382.88	450.83	574.90	73.74	84.93	100.56	127.33
C	San Mateo (SF)	Winter	2022	331.34	383.07	450.83	575.17	73.79	85.06	100.64	127.49
C	San Mateo (SF)	Winter	2023	331.34	383.21	450.82	575.36	73.83	85.17	100.70	127.66
C	San Mateo (SF)	Winter	2024	331.31	383.33	450.81	575.53	73.85	85.27	100.76	127.81
C	San Mateo (SF)	Winter	2025	331.30	383.44	450.81	575.69	73.87	85.37	100.81	127.96
C	San Mateo (SF)	Winter	2026	331.32	383.58	450.79	575.85	73.89	85.46	100.84	128.10
C	San Mateo (SF)	Winter	2027	331.33	383.72	450.77	576.01	73.90	85.54	100.87	128.23
C	San Mateo (SF)	Winter	2028	331.33	383.86	450.75	576.16	73.91	85.61	100.89	128.34
C	San Mateo (SF)	Winter	2029	331.33	384.00	450.73	576.31	73.92	85.69	100.91	128.45
C	San Mateo (SF)	Winter	2030	331.31	384.15	450.71	576.47	73.92	85.76	100.92	128.55
C	San Mateo (SF)	Winter	2031	331.31	384.31	450.70	576.63	73.93	85.83	100.93	128.65
C	San Mateo (SF)	Winter	2032	331.31	384.47	450.69	576.80	73.93	85.89	100.94	128.74
C	San Mateo (SF)	Winter	2033	331.31	384.61	450.67	576.95	73.93	85.95	100.95	128.83
C	San Mateo (SF)	Winter	2034	331.30	384.74	450.66	577.09	73.94	86.01	100.96	128.91
C	San Mateo (SF)	Winter	2035	331.30	384.85	450.65	577.21	73.94	86.06	100.96	128.99
C	Santa Barbara-North of Santa Ynez	Annual	2010	310.84	363.09	427.75	535.11	73.30	88.99	99.96	124.67
C	Santa Barbara-North of Santa Ynez	Annual	2011	310.88	362.63	427.11	535.68	73.27	88.16	99.98	124.88
C	Santa Barbara-North of Santa Ynez	Annual	2012	310.95	362.25	426.61	536.31	73.24	87.48	100.03	125.11
C	Santa Barbara-North of Santa Ynez	Annual	2013	311.07	361.91	426.21	536.98	73.26	86.88	100.11	125.37
C	Santa Barbara-North of Santa Ynez	Annual	2014	311.18	361.62	425.89	537.62	73.27	86.37	100.18	125.64
C	Santa Barbara-North of Santa Ynez	Annual	2015	313.00	363.39	428.01	541.26	73.31	85.95	100.25	125.92
C	Santa Barbara-North of Santa Ynez	Annual	2016	313.13	363.16	427.81	541.86	73.36	85.55	100.33	126.20
C	Santa Barbara-North of Santa Ynez	Annual	2017	313.22	362.94	427.65	542.43	73.38	85.18	100.40	126.48
C	Santa Barbara-North of Santa Ynez	Annual	2018	313.28	362.85	427.53	542.93	73.40	85.00	100.47	126.74
C	Santa Barbara-North of Santa Ynez	Annual	2019	313.35	362.86	427.43	543.35	73.43	84.95	100.55	126.99
C	Santa Barbara-North of Santa Ynez	Annual	2020	313.43	362.88	427.35	543.74	73.53	84.99	100.64	127.22
C	Santa Barbara-North of Santa Ynez	Annual	2021	313.48	362.96	427.30	543.99	73.59	85.09	100.71	127.38

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Santa Barbara-North of Santa Ynez	Annual	2022	313.49	363.03	427.24	544.20	73.64	85.18	100.77	127.51
C	Santa Barbara-North of Santa Ynez	Annual	2023	313.48	363.09	427.17	544.37	73.67	85.26	100.82	127.66
C	Santa Barbara-North of Santa Ynez	Annual	2024	313.44	363.12	427.11	544.49	73.68	85.33	100.86	127.80
C	Santa Barbara-North of Santa Ynez	Annual	2025	313.43	363.17	427.06	544.63	73.70	85.40	100.90	127.95
C	Santa Barbara-North of Santa Ynez	Annual	2026	311.28	360.68	423.96	540.92	73.71	85.47	100.92	128.08
C	Santa Barbara-North of Santa Ynez	Annual	2027	311.28	360.75	423.88	541.07	73.73	85.52	100.94	128.21
C	Santa Barbara-North of Santa Ynez	Annual	2028	311.28	360.82	423.82	541.22	73.74	85.58	100.95	128.32
C	Santa Barbara-North of Santa Ynez	Annual	2029	311.28	360.90	423.73	541.36	73.74	85.63	100.95	128.43
C	Santa Barbara-North of Santa Ynez	Annual	2030	311.26	360.97	423.64	541.52	73.75	85.67	100.95	128.53
C	Santa Barbara-North of Santa Ynez	Annual	2031	311.26	361.06	423.58	541.68	73.75	85.72	100.96	128.63
C	Santa Barbara-North of Santa Ynez	Annual	2032	311.25	361.13	423.54	541.85	73.76	85.77	100.96	128.73
C	Santa Barbara-North of Santa Ynez	Annual	2033	311.25	361.21	423.50	542.00	73.76	85.81	100.96	128.82
C	Santa Barbara-North of Santa Ynez	Annual	2034	311.24	361.27	423.46	542.14	73.76	85.85	100.97	128.90
C	Santa Barbara-North of Santa Ynez	Annual	2035	311.24	361.32	423.43	542.26	73.77	85.88	100.97	128.98
C	Santa Barbara-North of Santa Ynez	Summer	2010	318.00	370.60	437.04	547.10	73.30	88.99	99.96	124.67
C	Santa Barbara-North of Santa Ynez	Summer	2011	318.11	370.21	436.50	547.67	73.27	88.16	99.98	124.88
C	Santa Barbara-North of Santa Ynez	Summer	2012	318.23	369.92	436.07	548.31	73.24	87.48	100.03	125.11
C	Santa Barbara-North of Santa Ynez	Summer	2013	318.39	369.65	435.73	549.01	73.26	86.88	100.11	125.37
C	Santa Barbara-North of Santa Ynez	Summer	2014	318.53	369.43	435.47	549.69	73.27	86.37	100.18	125.64
C	Santa Barbara-North of Santa Ynez	Summer	2015	320.38	371.28	437.66	553.41	73.31	85.95	100.25	125.92
C	Santa Barbara-North of Santa Ynez	Summer	2016	320.52	371.11	437.49	554.06	73.36	85.55	100.33	126.20
C	Santa Barbara-North of Santa Ynez	Summer	2017	320.61	370.94	437.35	554.68	73.38	85.18	100.40	126.48
C	Santa Barbara-North of Santa Ynez	Summer	2018	320.68	370.90	437.24	555.21	73.40	85.00	100.47	126.74
C	Santa Barbara-North of Santa Ynez	Summer	2019	320.75	370.93	437.14	555.67	73.43	84.95	100.55	126.99
C	Santa Barbara-North of Santa Ynez	Summer	2020	320.82	370.99	437.07	556.08	73.53	84.99	100.64	127.22
C	Santa Barbara-North of Santa Ynez	Summer	2021	320.86	371.07	437.00	556.34	73.59	85.09	100.71	127.38
C	Santa Barbara-North of Santa Ynez	Summer	2022	320.87	371.15	436.93	556.55	73.64	85.18	100.77	127.51
C	Santa Barbara-North of Santa Ynez	Summer	2023	320.85	371.21	436.86	556.71	73.67	85.26	100.82	127.66
C	Santa Barbara-North of Santa Ynez	Summer	2024	320.82	371.26	436.79	556.83	73.68	85.33	100.86	127.80
C	Santa Barbara-North of Santa Ynez	Summer	2025	320.80	371.31	436.74	556.96	73.70	85.40	100.90	127.95
C	Santa Barbara-North of Santa Ynez	Summer	2026	318.61	368.79	433.59	553.19	73.71	85.47	100.92	128.08
C	Santa Barbara-North of Santa Ynez	Summer	2027	318.61	368.86	433.51	553.33	73.73	85.52	100.94	128.21
C	Santa Barbara-North of Santa Ynez	Summer	2028	318.62	368.94	433.45	553.48	73.74	85.58	100.95	128.32
C	Santa Barbara-North of Santa Ynez	Summer	2029	318.61	369.02	433.37	553.64	73.74	85.63	100.95	128.43
C	Santa Barbara-North of Santa Ynez	Summer	2030	318.60	369.11	433.28	553.80	73.75	85.67	100.95	128.53
C	Santa Barbara-North of Santa Ynez	Summer	2031	318.60	369.20	433.24	553.96	73.75	85.72	100.96	128.63
C	Santa Barbara-North of Santa Ynez	Summer	2032	318.60	369.29	433.20	554.14	73.76	85.77	100.96	128.73
C	Santa Barbara-North of Santa Ynez	Summer	2033	318.60	369.37	433.17	554.30	73.76	85.81	100.96	128.82
C	Santa Barbara-North of Santa Ynez	Summer	2034	318.59	369.44	433.13	554.45	73.76	85.85	100.97	128.90
C	Santa Barbara-North of Santa Ynez	Summer	2035	318.59	369.50	433.10	554.58	73.77	85.88	100.97	128.98
C	Santa Barbara-North of Santa Ynez	Winter	2010	310.39	362.63	427.17	534.37	73.30	88.99	99.96	124.67
C	Santa Barbara-North of Santa Ynez	Winter	2011	310.43	362.16	426.53	534.94	73.27	88.16	99.98	124.88
C	Santa Barbara-North of Santa Ynez	Winter	2012	310.50	361.77	426.02	535.57	73.24	87.48	100.03	125.11
C	Santa Barbara-North of Santa Ynez	Winter	2013	310.62	361.43	425.62	536.23	73.26	86.88	100.11	125.37
C	Santa Barbara-North of Santa Ynez	Winter	2014	310.73	361.13	425.30	536.87	73.27	86.37	100.18	125.64
C	Santa Barbara-North of Santa Ynez	Winter	2015	312.55	362.90	427.42	540.51	73.31	85.95	100.25	125.92
C	Santa Barbara-North of Santa Ynez	Winter	2016	312.67	362.67	427.21	541.11	73.36	85.55	100.33	126.20
C	Santa Barbara-North of Santa Ynez	Winter	2017	312.76	362.45	427.05	541.68	73.38	85.18	100.40	126.48
C	Santa Barbara-North of Santa Ynez	Winter	2018	312.83	362.36	426.93	542.17	73.40	85.00	100.47	126.74
C	Santa Barbara-North of Santa Ynez	Winter	2019	312.90	362.36	426.83	542.59	73.43	84.95	100.55	126.99
C	Santa Barbara-North of Santa Ynez	Winter	2020	312.97	362.38	426.75	542.98	73.53	84.99	100.64	127.22
C	Santa Barbara-North of Santa Ynez	Winter	2021	313.02	362.45	426.70	543.23	73.59	85.09	100.71	127.38
C	Santa Barbara-North of Santa Ynez	Winter	2022	313.04	362.53	426.64	543.44	73.64	85.18	100.77	127.51
C	Santa Barbara-North of Santa Ynez	Winter	2023	313.02	362.58	426.57	543.61	73.67	85.26	100.82	127.66

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Santa Barbara-North of Santa Ynez	Winter	2024	312.99	362.62	426.51	543.73	73.68	85.33	100.86	127.80
C	Santa Barbara-North of Santa Ynez	Winter	2025	312.98	362.66	426.46	543.87	73.70	85.40	100.90	127.95
C	Santa Barbara-North of Santa Ynez	Winter	2026	310.82	360.18	423.37	540.16	73.71	85.47	100.92	128.08
C	Santa Barbara-North of Santa Ynez	Winter	2027	310.83	360.25	423.29	540.31	73.73	85.52	100.94	128.21
C	Santa Barbara-North of Santa Ynez	Winter	2028	310.83	360.32	423.22	540.46	73.74	85.58	100.95	128.32
C	Santa Barbara-North of Santa Ynez	Winter	2029	310.82	360.40	423.14	540.60	73.74	85.63	100.95	128.43
C	Santa Barbara-North of Santa Ynez	Winter	2030	310.81	360.47	423.04	540.76	73.75	85.67	100.95	128.53
C	Santa Barbara-North of Santa Ynez	Winter	2031	310.80	360.55	422.99	540.92	73.75	85.72	100.96	128.63
C	Santa Barbara-North of Santa Ynez	Winter	2032	310.80	360.63	422.94	541.09	73.76	85.77	100.96	128.73
C	Santa Barbara-North of Santa Ynez	Winter	2033	310.80	360.70	422.90	541.24	73.76	85.81	100.96	128.82
C	Santa Barbara-North of Santa Ynez	Winter	2034	310.79	360.76	422.87	541.38	73.76	85.85	100.97	128.90
C	Santa Barbara-North of Santa Ynez	Winter	2035	310.78	360.82	422.83	541.50	73.77	85.88	100.97	128.98
C	Santa Barbara-South of Santa Ynez Ran	Annual	2010	310.84	363.09	427.75	535.11	73.30	88.99	99.96	124.67
C	Santa Barbara-South of Santa Ynez Ran	Annual	2011	310.88	362.63	427.11	535.68	73.27	88.16	99.98	124.88
C	Santa Barbara-South of Santa Ynez Ran	Annual	2012	310.95	362.25	426.61	536.31	73.24	87.48	100.03	125.11
C	Santa Barbara-South of Santa Ynez Ran	Annual	2013	311.07	361.91	426.21	536.98	73.26	86.88	100.11	125.37
C	Santa Barbara-South of Santa Ynez Ran	Annual	2014	311.18	361.62	425.89	537.62	73.27	86.37	100.18	125.64
C	Santa Barbara-South of Santa Ynez Ran	Annual	2015	313.00	363.39	428.01	541.26	73.31	85.95	100.25	125.92
C	Santa Barbara-South of Santa Ynez Ran	Annual	2016	313.13	363.16	427.81	541.86	73.36	85.55	100.33	126.20
C	Santa Barbara-South of Santa Ynez Ran	Annual	2017	313.22	362.94	427.65	542.43	73.38	85.18	100.40	126.48
C	Santa Barbara-South of Santa Ynez Ran	Annual	2018	313.28	362.85	427.53	542.93	73.40	85.00	100.47	126.74
C	Santa Barbara-South of Santa Ynez Ran	Annual	2019	313.35	362.86	427.43	543.35	73.43	84.95	100.55	126.99
C	Santa Barbara-South of Santa Ynez Ran	Annual	2020	313.43	362.88	427.35	543.74	73.53	84.99	100.64	127.22
C	Santa Barbara-South of Santa Ynez Ran	Annual	2021	313.48	362.96	427.30	543.99	73.59	85.09	100.71	127.38
C	Santa Barbara-South of Santa Ynez Ran	Annual	2022	313.49	363.03	427.24	544.20	73.64	85.18	100.77	127.51
C	Santa Barbara-South of Santa Ynez Ran	Annual	2023	313.48	363.09	427.17	544.37	73.67	85.26	100.82	127.66
C	Santa Barbara-South of Santa Ynez Ran	Annual	2024	313.44	363.12	427.11	544.49	73.68	85.33	100.86	127.80
C	Santa Barbara-South of Santa Ynez Ran	Annual	2025	313.43	363.17	427.06	544.63	73.70	85.40	100.90	127.95
C	Santa Barbara-South of Santa Ynez Ran	Annual	2026	311.28	360.68	423.96	540.92	73.71	85.47	100.92	128.08
C	Santa Barbara-South of Santa Ynez Ran	Annual	2027	311.28	360.75	423.88	541.07	73.73	85.52	100.94	128.21
C	Santa Barbara-South of Santa Ynez Ran	Annual	2028	311.28	360.82	423.82	541.22	73.74	85.58	100.95	128.32
C	Santa Barbara-South of Santa Ynez Ran	Annual	2029	311.28	360.90	423.73	541.36	73.74	85.63	100.95	128.43
C	Santa Barbara-South of Santa Ynez Ran	Annual	2030	311.26	360.97	423.64	541.52	73.75	85.67	100.95	128.53
C	Santa Barbara-South of Santa Ynez Ran	Annual	2031	311.26	361.06	423.58	541.68	73.75	85.72	100.96	128.63
C	Santa Barbara-South of Santa Ynez Ran	Annual	2032	311.25	361.13	423.54	541.85	73.76	85.77	100.96	128.73
C	Santa Barbara-South of Santa Ynez Ran	Annual	2033	311.25	361.21	423.50	542.00	73.76	85.81	100.96	128.82
C	Santa Barbara-South of Santa Ynez Ran	Annual	2034	311.24	361.27	423.46	542.14	73.76	85.85	100.97	128.90
C	Santa Barbara-South of Santa Ynez Ran	Annual	2035	311.24	361.32	423.43	542.26	73.77	85.88	100.97	128.98
C	Santa Barbara-South of Santa Ynez Ran	Summer	2010	318.00	370.60	437.04	547.10	73.30	88.99	99.96	124.67
C	Santa Barbara-South of Santa Ynez Ran	Summer	2011	318.11	370.21	436.50	547.67	73.27	88.16	99.98	124.88
C	Santa Barbara-South of Santa Ynez Ran	Summer	2012	318.23	369.92	436.07	548.31	73.24	87.48	100.03	125.11
C	Santa Barbara-South of Santa Ynez Ran	Summer	2013	318.39	369.65	435.73	549.01	73.26	86.88	100.11	125.37
C	Santa Barbara-South of Santa Ynez Ran	Summer	2014	318.53	369.43	435.47	549.69	73.27	86.37	100.18	125.64
C	Santa Barbara-South of Santa Ynez Ran	Summer	2015	320.38	371.28	437.66	553.41	73.31	85.95	100.25	125.92
C	Santa Barbara-South of Santa Ynez Ran	Summer	2016	320.52	371.11	437.49	554.06	73.36	85.55	100.33	126.20
C	Santa Barbara-South of Santa Ynez Ran	Summer	2017	320.61	370.94	437.35	554.68	73.38	85.18	100.40	126.48
C	Santa Barbara-South of Santa Ynez Ran	Summer	2018	320.68	370.90	437.24	555.21	73.40	85.00	100.47	126.74
C	Santa Barbara-South of Santa Ynez Ran	Summer	2019	320.75	370.93	437.14	555.67	73.43	84.95	100.55	126.99
C	Santa Barbara-South of Santa Ynez Ran	Summer	2020	320.82	370.99	437.07	556.08	73.53	84.99	100.64	127.22
C	Santa Barbara-South of Santa Ynez Ran	Summer	2021	320.86	371.07	437.00	556.34	73.59	85.09	100.71	127.38
C	Santa Barbara-South of Santa Ynez Ran	Summer	2022	320.87	371.15	436.93	556.55	73.64	85.18	100.77	127.51
C	Santa Barbara-South of Santa Ynez Ran	Summer	2023	320.85	371.21	436.86	556.71	73.67	85.26	100.82	127.66
C	Santa Barbara-South of Santa Ynez Ran	Summer	2024	320.82	371.26	436.79	556.83	73.68	85.33	100.86	127.80
C	Santa Barbara-South of Santa Ynez Ran	Summer	2025	320.80	371.31	436.74	556.96	73.70	85.40	100.90	127.95

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Santa Barbara-South of Santa Ynez Ran	Summer	2026	318.61	368.79	433.59	553.19	73.71	85.47	100.92	128.08
C	Santa Barbara-South of Santa Ynez Ran	Summer	2027	318.61	368.86	433.51	553.33	73.73	85.52	100.94	128.21
C	Santa Barbara-South of Santa Ynez Ran	Summer	2028	318.62	368.94	433.45	553.48	73.74	85.58	100.95	128.32
C	Santa Barbara-South of Santa Ynez Ran	Summer	2029	318.61	369.02	433.37	553.64	73.74	85.63	100.95	128.43
C	Santa Barbara-South of Santa Ynez Ran	Summer	2030	318.60	369.11	433.28	553.80	73.75	85.67	100.95	128.53
C	Santa Barbara-South of Santa Ynez Ran	Summer	2031	318.60	369.20	433.24	553.96	73.75	85.72	100.96	128.63
C	Santa Barbara-South of Santa Ynez Ran	Summer	2032	318.60	369.29	433.20	554.14	73.76	85.77	100.96	128.73
C	Santa Barbara-South of Santa Ynez Ran	Summer	2033	318.60	369.37	433.17	554.30	73.76	85.81	100.96	128.82
C	Santa Barbara-South of Santa Ynez Ran	Summer	2034	318.59	369.44	433.13	554.45	73.76	85.85	100.97	128.90
C	Santa Barbara-South of Santa Ynez Ran	Summer	2035	318.59	369.50	433.10	554.58	73.77	85.88	100.97	128.98
C	Santa Barbara-South of Santa Ynez Ran	Winter	2010	310.39	362.63	427.17	534.37	73.30	88.99	99.96	124.67
C	Santa Barbara-South of Santa Ynez Ran	Winter	2011	310.43	362.16	426.53	534.94	73.27	88.16	99.98	124.88
C	Santa Barbara-South of Santa Ynez Ran	Winter	2012	310.50	361.77	426.02	535.57	73.24	87.48	100.03	125.11
C	Santa Barbara-South of Santa Ynez Ran	Winter	2013	310.62	361.43	425.62	536.23	73.26	86.88	100.11	125.37
C	Santa Barbara-South of Santa Ynez Ran	Winter	2014	310.73	361.13	425.30	536.87	73.27	86.37	100.18	125.64
C	Santa Barbara-South of Santa Ynez Ran	Winter	2015	312.55	362.90	427.42	540.51	73.31	85.95	100.25	125.92
C	Santa Barbara-South of Santa Ynez Ran	Winter	2016	312.67	362.67	427.21	541.11	73.36	85.55	100.33	126.20
C	Santa Barbara-South of Santa Ynez Ran	Winter	2017	312.76	362.45	427.05	541.68	73.38	85.18	100.40	126.48
C	Santa Barbara-South of Santa Ynez Ran	Winter	2018	312.83	362.36	426.93	542.17	73.40	85.00	100.47	126.74
C	Santa Barbara-South of Santa Ynez Ran	Winter	2019	312.90	362.36	426.83	542.59	73.43	84.95	100.55	126.99
C	Santa Barbara-South of Santa Ynez Ran	Winter	2020	312.97	362.38	426.75	542.98	73.53	84.99	100.64	127.22
C	Santa Barbara-South of Santa Ynez Ran	Winter	2021	313.02	362.45	426.70	543.23	73.59	85.09	100.71	127.38
C	Santa Barbara-South of Santa Ynez Ran	Winter	2022	313.04	362.53	426.64	543.44	73.64	85.18	100.77	127.51
C	Santa Barbara-South of Santa Ynez Ran	Winter	2023	313.02	362.58	426.57	543.61	73.67	85.26	100.82	127.66
C	Santa Barbara-South of Santa Ynez Ran	Winter	2024	312.99	362.62	426.51	543.73	73.68	85.33	100.86	127.80
C	Santa Barbara-South of Santa Ynez Ran	Winter	2025	312.98	362.66	426.46	543.87	73.70	85.40	100.90	127.95
C	Santa Barbara-South of Santa Ynez Ran	Winter	2026	310.82	360.18	423.37	540.16	73.71	85.47	100.92	128.08
C	Santa Barbara-South of Santa Ynez Ran	Winter	2027	310.83	360.25	423.29	540.31	73.73	85.52	100.94	128.21
C	Santa Barbara-South of Santa Ynez Ran	Winter	2028	310.83	360.32	423.22	540.46	73.74	85.58	100.95	128.32
C	Santa Barbara-South of Santa Ynez Ran	Winter	2029	310.82	360.40	423.14	540.60	73.74	85.63	100.95	128.43
C	Santa Barbara-South of Santa Ynez Ran	Winter	2030	310.81	360.47	423.04	540.76	73.75	85.67	100.95	128.53
C	Santa Barbara-South of Santa Ynez Ran	Winter	2031	310.80	360.55	422.99	540.92	73.75	85.72	100.96	128.63
C	Santa Barbara-South of Santa Ynez Ran	Winter	2032	310.80	360.63	422.94	541.09	73.76	85.77	100.96	128.73
C	Santa Barbara-South of Santa Ynez Ran	Winter	2033	310.80	360.70	422.90	541.24	73.76	85.81	100.96	128.82
C	Santa Barbara-South of Santa Ynez Ran	Winter	2034	310.79	360.76	422.87	541.38	73.76	85.85	100.97	128.90
C	Santa Barbara-South of Santa Ynez Ran	Winter	2035	310.78	360.82	422.83	541.50	73.77	85.88	100.97	128.98
C	Santa Clara (SF)	Annual	2010	329.54	379.42	451.34	568.91	72.72	84.35	99.27	124.50
C	Santa Clara (SF)	Annual	2011	329.74	379.85	451.25	569.47	72.79	84.25	99.38	124.72
C	Santa Clara (SF)	Annual	2012	329.96	380.27	451.20	570.08	72.88	84.20	99.53	124.96
C	Santa Clara (SF)	Annual	2013	330.20	380.67	451.15	570.74	72.98	84.20	99.67	125.22
C	Santa Clara (SF)	Annual	2014	330.42	381.04	451.13	571.39	73.07	84.19	99.80	125.48
C	Santa Clara (SF)	Annual	2015	330.66	381.39	451.11	572.06	73.19	84.22	99.92	125.76
C	Santa Clara (SF)	Annual	2016	330.88	381.76	451.11	572.69	73.31	84.28	100.05	126.03
C	Santa Clara (SF)	Annual	2017	331.05	382.11	451.10	573.29	73.40	84.35	100.15	126.31
C	Santa Clara (SF)	Annual	2018	331.20	382.41	451.10	573.81	73.48	84.42	100.25	126.57
C	Santa Clara (SF)	Annual	2019	331.33	382.70	451.11	574.27	73.56	84.54	100.35	126.81
C	Santa Clara (SF)	Annual	2020	331.44	382.97	451.11	574.68	73.67	84.69	100.45	127.04
C	Santa Clara (SF)	Annual	2021	331.53	383.22	451.12	575.01	73.75	84.85	100.55	127.23
C	Santa Clara (SF)	Annual	2022	331.58	383.42	451.12	575.30	73.81	84.99	100.63	127.38
C	Santa Clara (SF)	Annual	2023	331.60	383.59	451.11	575.52	73.85	85.11	100.70	127.56
C	Santa Clara (SF)	Annual	2024	331.59	383.72	451.11	575.69	73.88	85.22	100.75	127.72
C	Santa Clara (SF)	Annual	2025	331.60	383.84	451.10	575.86	73.91	85.32	100.80	127.87
C	Santa Clara (SF)	Annual	2026	331.62	383.98	451.09	576.04	73.93	85.42	100.84	128.02
C	Santa Clara (SF)	Annual	2027	331.63	384.13	451.08	576.20	73.94	85.51	100.87	128.15

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Santa Clara (SF)	Annual	2028	331.63	384.27	451.07	576.37	73.95	85.59	100.89	128.27
C	Santa Clara (SF)	Annual	2029	331.63	384.42	451.05	576.54	73.96	85.67	100.91	128.38
C	Santa Clara (SF)	Annual	2030	331.63	384.57	451.04	576.71	73.97	85.74	100.93	128.49
C	Santa Clara (SF)	Annual	2031	331.63	384.73	451.03	576.89	73.97	85.82	100.94	128.60
C	Santa Clara (SF)	Annual	2032	331.62	384.87	451.03	577.08	73.98	85.89	100.95	128.70
C	Santa Clara (SF)	Annual	2033	331.62	385.01	451.02	577.25	73.98	85.95	100.95	128.80
C	Santa Clara (SF)	Annual	2034	331.62	385.12	451.01	577.41	73.99	86.01	100.96	128.88
C	Santa Clara (SF)	Annual	2035	331.62	385.22	451.00	577.55	73.99	86.06	100.97	128.96
C	Santa Clara (SF)	Summer	2010	355.01	405.62	485.21	611.43	72.72	84.35	99.27	124.50
C	Santa Clara (SF)	Summer	2011	355.38	406.43	485.18	611.92	72.79	84.25	99.38	124.72
C	Santa Clara (SF)	Summer	2012	355.73	407.17	485.18	612.54	72.88	84.20	99.53	124.96
C	Santa Clara (SF)	Summer	2013	356.08	407.85	485.21	613.25	72.98	84.20	99.67	125.22
C	Santa Clara (SF)	Summer	2014	356.38	408.44	485.27	614.00	73.07	84.19	99.80	125.48
C	Santa Clara (SF)	Summer	2015	356.67	408.98	485.34	614.82	73.19	84.22	99.92	125.76
C	Santa Clara (SF)	Summer	2016	356.93	409.53	485.41	615.61	73.31	84.28	100.05	126.03
C	Santa Clara (SF)	Summer	2017	357.13	410.03	485.47	616.36	73.40	84.35	100.15	126.31
C	Santa Clara (SF)	Summer	2018	357.28	410.48	485.51	617.01	73.48	84.42	100.25	126.57
C	Santa Clara (SF)	Summer	2019	357.41	410.89	485.53	617.56	73.56	84.54	100.35	126.81
C	Santa Clara (SF)	Summer	2020	357.52	411.27	485.53	618.06	73.67	84.69	100.45	127.04
C	Santa Clara (SF)	Summer	2021	357.60	411.59	485.53	618.46	73.75	84.85	100.55	127.23
C	Santa Clara (SF)	Summer	2022	357.65	411.88	485.52	618.80	73.81	84.99	100.63	127.38
C	Santa Clara (SF)	Summer	2023	357.67	412.12	485.51	619.06	73.85	85.11	100.70	127.56
C	Santa Clara (SF)	Summer	2024	357.67	412.32	485.49	619.25	73.88	85.22	100.75	127.72
C	Santa Clara (SF)	Summer	2025	357.67	412.50	485.48	619.43	73.91	85.32	100.80	127.87
C	Santa Clara (SF)	Summer	2026	357.69	412.71	485.46	619.61	73.93	85.42	100.84	128.02
C	Santa Clara (SF)	Summer	2027	357.71	412.91	485.44	619.78	73.94	85.51	100.87	128.15
C	Santa Clara (SF)	Summer	2028	357.72	413.11	485.42	619.95	73.95	85.59	100.89	128.27
C	Santa Clara (SF)	Summer	2029	357.73	413.32	485.41	620.13	73.96	85.67	100.91	128.38
C	Santa Clara (SF)	Summer	2030	357.73	413.53	485.40	620.32	73.97	85.74	100.93	128.49
C	Santa Clara (SF)	Summer	2031	357.73	413.75	485.39	620.53	73.97	85.82	100.94	128.60
C	Santa Clara (SF)	Summer	2032	357.74	413.95	485.38	620.74	73.98	85.89	100.95	128.70
C	Santa Clara (SF)	Summer	2033	357.74	414.12	485.38	620.94	73.98	85.95	100.95	128.80
C	Santa Clara (SF)	Summer	2034	357.74	414.27	485.37	621.13	73.99	86.01	100.96	128.88
C	Santa Clara (SF)	Summer	2035	357.73	414.39	485.37	621.30	73.99	86.06	100.97	128.96
C	Santa Clara (SF)	Winter	2010	325.35	375.11	445.76	561.90	72.72	84.35	99.27	124.50
C	Santa Clara (SF)	Winter	2011	325.51	375.47	445.67	562.47	72.79	84.25	99.38	124.72
C	Santa Clara (SF)	Winter	2012	325.71	375.83	445.60	563.09	72.88	84.20	99.53	124.96
C	Santa Clara (SF)	Winter	2013	325.93	376.19	445.54	563.73	72.98	84.20	99.67	125.22
C	Santa Clara (SF)	Winter	2014	326.15	376.52	445.50	564.37	73.07	84.19	99.80	125.48
C	Santa Clara (SF)	Winter	2015	326.37	376.85	445.47	565.01	73.19	84.22	99.92	125.76
C	Santa Clara (SF)	Winter	2016	326.59	377.19	445.45	565.62	73.31	84.28	100.05	126.03
C	Santa Clara (SF)	Winter	2017	326.76	377.50	445.44	566.19	73.40	84.35	100.15	126.31
C	Santa Clara (SF)	Winter	2018	326.90	377.78	445.43	566.70	73.48	84.42	100.25	126.57
C	Santa Clara (SF)	Winter	2019	327.03	378.05	445.44	567.14	73.56	84.54	100.35	126.81
C	Santa Clara (SF)	Winter	2020	327.15	378.31	445.44	567.53	73.67	84.69	100.45	127.04
C	Santa Clara (SF)	Winter	2021	327.23	378.54	445.45	567.85	73.75	84.85	100.55	127.23
C	Santa Clara (SF)	Winter	2022	327.28	378.74	445.45	568.13	73.81	84.99	100.63	127.38
C	Santa Clara (SF)	Winter	2023	327.30	378.89	445.45	568.35	73.85	85.11	100.70	127.56
C	Santa Clara (SF)	Winter	2024	327.30	379.01	445.44	568.51	73.88	85.22	100.75	127.72
C	Santa Clara (SF)	Winter	2025	327.30	379.11	445.44	568.68	73.91	85.32	100.80	127.87
C	Santa Clara (SF)	Winter	2026	327.32	379.25	445.43	568.86	73.93	85.42	100.84	128.02
C	Santa Clara (SF)	Winter	2027	327.33	379.38	445.42	569.02	73.94	85.51	100.87	128.15
C	Santa Clara (SF)	Winter	2028	327.33	379.52	445.41	569.19	73.95	85.59	100.89	128.27
C	Santa Clara (SF)	Winter	2029	327.33	379.66	445.39	569.35	73.96	85.67	100.91	128.38

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Santa Clara (SF)	Winter	2030	327.33	379.80	445.38	569.52	73.97	85.74	100.93	128.49
C	Santa Clara (SF)	Winter	2031	327.32	379.94	445.37	569.70	73.97	85.82	100.94	128.60
C	Santa Clara (SF)	Winter	2032	327.32	380.08	445.37	569.89	73.98	85.89	100.95	128.70
C	Santa Clara (SF)	Winter	2033	327.32	380.21	445.36	570.06	73.98	85.95	100.95	128.80
C	Santa Clara (SF)	Winter	2034	327.32	380.32	445.35	570.21	73.99	86.01	100.96	128.88
C	Santa Clara (SF)	Winter	2035	327.31	380.42	445.34	570.34	73.99	86.06	100.97	128.96
C	Santa Cruz (NCC)	Annual	2010	342.18	398.70	471.90	588.13	72.83	89.70	99.97	123.98
C	Santa Cruz (NCC)	Annual	2011	344.76	401.21	474.70	593.14	72.81	88.62	99.97	124.15
C	Santa Cruz (NCC)	Annual	2012	344.81	400.83	474.13	593.83	72.75	87.71	100.01	124.36
C	Santa Cruz (NCC)	Annual	2013	344.95	400.57	473.67	594.62	72.78	87.04	100.08	124.60
C	Santa Cruz (NCC)	Annual	2014	345.06	400.34	473.31	595.40	72.76	86.42	100.14	124.86
C	Santa Cruz (NCC)	Annual	2015	345.22	400.10	473.04	596.22	72.81	85.81	100.22	125.15
C	Santa Cruz (NCC)	Annual	2016	345.38	399.90	472.82	597.00	72.88	85.29	100.31	125.44
C	Santa Cruz (NCC)	Annual	2017	345.51	399.79	472.64	597.74	72.93	84.93	100.39	125.75
C	Santa Cruz (NCC)	Annual	2018	345.60	399.69	472.51	598.40	72.95	84.60	100.46	126.03
C	Santa Cruz (NCC)	Annual	2019	345.68	399.71	472.40	598.98	72.99	84.49	100.53	126.31
C	Santa Cruz (NCC)	Annual	2020	345.78	399.78	472.32	599.51	73.09	84.55	100.62	126.57
C	Santa Cruz (NCC)	Annual	2021	347.98	402.45	475.22	603.70	73.17	84.68	100.70	126.78
C	Santa Cruz (NCC)	Annual	2022	348.01	402.58	475.14	604.04	73.23	84.80	100.77	126.94
C	Santa Cruz (NCC)	Annual	2023	347.99	402.69	475.06	604.31	73.26	84.91	100.82	127.15
C	Santa Cruz (NCC)	Annual	2024	347.94	402.76	474.98	604.50	73.27	85.00	100.86	127.33
C	Santa Cruz (NCC)	Annual	2025	347.93	402.83	474.91	604.71	73.30	85.09	100.90	127.51
C	Santa Cruz (NCC)	Annual	2026	347.93	402.92	474.83	604.93	73.32	85.18	100.92	127.68
C	Santa Cruz (NCC)	Annual	2027	347.94	403.00	474.74	605.14	73.33	85.25	100.94	127.83
C	Santa Cruz (NCC)	Annual	2028	347.93	403.10	474.65	605.36	73.34	85.31	100.95	127.98
C	Santa Cruz (NCC)	Annual	2029	347.92	403.20	474.53	605.57	73.35	85.38	100.95	128.11
C	Santa Cruz (NCC)	Annual	2030	347.91	403.30	474.43	605.80	73.35	85.44	100.94	128.24
C	Santa Cruz (NCC)	Annual	2031	347.90	403.41	474.37	606.04	73.36	85.50	100.95	128.37
C	Santa Cruz (NCC)	Annual	2032	347.90	403.52	474.32	606.30	73.37	85.56	100.95	128.50
C	Santa Cruz (NCC)	Annual	2033	347.90	403.62	474.28	606.52	73.37	85.61	100.96	128.62
C	Santa Cruz (NCC)	Annual	2034	347.89	403.71	474.24	606.73	73.38	85.66	100.96	128.72
C	Santa Cruz (NCC)	Annual	2035	347.88	403.77	474.20	606.91	73.38	85.70	100.96	128.83
C	Santa Cruz (NCC)	Summer	2010	359.20	416.81	494.15	616.49	72.83	89.70	99.97	123.98
C	Santa Cruz (NCC)	Summer	2011	362.08	419.64	497.38	621.70	72.81	88.62	99.97	124.15
C	Santa Cruz (NCC)	Summer	2012	362.25	419.43	497.01	622.43	72.75	87.71	100.01	124.36
C	Santa Cruz (NCC)	Summer	2013	362.49	419.31	496.73	623.32	72.78	87.04	100.08	124.60
C	Santa Cruz (NCC)	Summer	2014	362.67	419.21	496.51	624.22	72.76	86.42	100.14	124.86
C	Santa Cruz (NCC)	Summer	2015	362.88	419.11	496.33	625.19	72.81	85.81	100.22	125.15
C	Santa Cruz (NCC)	Summer	2016	363.08	419.04	496.18	626.11	72.88	85.29	100.31	125.44
C	Santa Cruz (NCC)	Summer	2017	363.22	419.05	496.05	626.99	72.93	84.93	100.39	125.75
C	Santa Cruz (NCC)	Summer	2018	363.31	419.05	495.92	627.77	72.95	84.60	100.46	126.03
C	Santa Cruz (NCC)	Summer	2019	363.39	419.15	495.82	628.45	72.99	84.49	100.53	126.31
C	Santa Cruz (NCC)	Summer	2020	363.48	419.29	495.74	629.06	73.09	84.55	100.62	126.57
C	Santa Cruz (NCC)	Summer	2021	365.79	422.13	498.77	633.49	73.17	84.68	100.70	126.78
C	Santa Cruz (NCC)	Summer	2022	365.81	422.31	498.69	633.89	73.23	84.80	100.77	126.94
C	Santa Cruz (NCC)	Summer	2023	365.79	422.46	498.61	634.19	73.26	84.91	100.82	127.15
C	Santa Cruz (NCC)	Summer	2024	365.75	422.57	498.54	634.39	73.27	85.00	100.86	127.33
C	Santa Cruz (NCC)	Summer	2025	365.74	422.66	498.48	634.61	73.30	85.09	100.90	127.51
C	Santa Cruz (NCC)	Summer	2026	365.75	422.78	498.40	634.82	73.32	85.18	100.92	127.68
C	Santa Cruz (NCC)	Summer	2027	365.76	422.88	498.33	635.04	73.33	85.25	100.94	127.83
C	Santa Cruz (NCC)	Summer	2028	365.76	422.99	498.25	635.25	73.34	85.31	100.95	127.98
C	Santa Cruz (NCC)	Summer	2029	365.75	423.11	498.15	635.48	73.35	85.38	100.95	128.11
C	Santa Cruz (NCC)	Summer	2030	365.75	423.23	498.06	635.71	73.35	85.44	100.94	128.24
C	Santa Cruz (NCC)	Summer	2031	365.75	423.36	498.02	635.98	73.36	85.50	100.95	128.37

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Santa Cruz (NCC)	Summer	2032	365.75	423.49	497.98	636.26	73.37	85.56	100.95	128.50
C	Santa Cruz (NCC)	Summer	2033	365.75	423.60	497.95	636.52	73.37	85.61	100.96	128.62
C	Santa Cruz (NCC)	Summer	2034	365.75	423.70	497.91	636.76	73.38	85.66	100.96	128.72
C	Santa Cruz (NCC)	Summer	2035	365.74	423.77	497.88	636.97	73.38	85.70	100.96	128.83
C	Santa Cruz (NCC)	Winter	2010	341.89	398.39	471.51	587.64	72.83	89.70	99.97	123.98
C	Santa Cruz (NCC)	Winter	2011	344.46	400.89	474.31	592.65	72.81	88.62	99.97	124.15
C	Santa Cruz (NCC)	Winter	2012	344.51	400.51	473.73	593.34	72.75	87.71	100.01	124.36
C	Santa Cruz (NCC)	Winter	2013	344.64	400.25	473.27	594.13	72.78	87.04	100.08	124.60
C	Santa Cruz (NCC)	Winter	2014	344.75	400.01	472.91	594.90	72.76	86.42	100.14	124.86
C	Santa Cruz (NCC)	Winter	2015	344.91	399.77	472.63	595.72	72.81	85.81	100.22	125.15
C	Santa Cruz (NCC)	Winter	2016	345.08	399.57	472.41	596.49	72.88	85.29	100.31	125.44
C	Santa Cruz (NCC)	Winter	2017	345.20	399.46	472.24	597.23	72.93	84.93	100.39	125.75
C	Santa Cruz (NCC)	Winter	2018	345.29	399.35	472.10	597.89	72.95	84.60	100.46	126.03
C	Santa Cruz (NCC)	Winter	2019	345.38	399.37	472.00	598.47	72.99	84.49	100.53	126.31
C	Santa Cruz (NCC)	Winter	2020	345.47	399.45	471.92	598.99	73.09	84.55	100.62	126.57
C	Santa Cruz (NCC)	Winter	2021	347.68	402.11	474.81	603.18	73.17	84.68	100.70	126.78
C	Santa Cruz (NCC)	Winter	2022	347.70	402.24	474.73	603.53	73.23	84.80	100.77	126.94
C	Santa Cruz (NCC)	Winter	2023	347.69	402.34	474.65	603.79	73.26	84.91	100.82	127.15
C	Santa Cruz (NCC)	Winter	2024	347.64	402.42	474.57	603.98	73.27	85.00	100.86	127.33
C	Santa Cruz (NCC)	Winter	2025	347.62	402.49	474.51	604.19	73.30	85.09	100.90	127.51
C	Santa Cruz (NCC)	Winter	2026	347.63	402.58	474.42	604.41	73.32	85.18	100.92	127.68
C	Santa Cruz (NCC)	Winter	2027	347.63	402.66	474.33	604.63	73.33	85.25	100.94	127.83
C	Santa Cruz (NCC)	Winter	2028	347.63	402.75	474.24	604.84	73.34	85.31	100.95	127.98
C	Santa Cruz (NCC)	Winter	2029	347.61	402.85	474.12	605.05	73.35	85.38	100.95	128.11
C	Santa Cruz (NCC)	Winter	2030	347.60	402.96	474.02	605.28	73.35	85.44	100.94	128.24
C	Santa Cruz (NCC)	Winter	2031	347.60	403.07	473.96	605.52	73.36	85.50	100.95	128.37
C	Santa Cruz (NCC)	Winter	2032	347.59	403.18	473.91	605.78	73.37	85.56	100.95	128.50
C	Santa Cruz (NCC)	Winter	2033	347.59	403.27	473.87	606.01	73.37	85.61	100.96	128.62
C	Santa Cruz (NCC)	Winter	2034	347.58	403.36	473.83	606.21	73.38	85.66	100.96	128.72
C	Santa Cruz (NCC)	Winter	2035	347.58	403.43	473.79	606.39	73.38	85.70	100.96	128.83
C	Shasta (SV)	Annual	2010	350.80	413.29	482.10	601.62	74.15	98.71	101.24	125.46
C	Shasta (SV)	Annual	2011	350.90	412.33	481.45	602.23	73.97	96.26	101.09	125.49
C	Shasta (SV)	Annual	2012	351.01	411.55	480.95	602.95	73.79	94.20	101.00	125.59
C	Shasta (SV)	Annual	2013	351.16	410.88	480.56	603.76	73.67	92.45	100.93	125.73
C	Shasta (SV)	Annual	2014	351.28	410.22	480.26	604.58	73.54	90.71	100.85	125.88
C	Shasta (SV)	Annual	2015	351.43	409.72	480.02	605.45	73.48	89.34	100.76	126.07
C	Shasta (SV)	Annual	2016	351.59	409.32	479.82	606.30	73.48	88.23	100.75	126.28
C	Shasta (SV)	Annual	2017	351.70	408.85	479.65	607.09	73.46	86.94	100.68	126.51
C	Shasta (SV)	Annual	2018	351.78	408.50	479.51	607.77	73.42	85.93	100.65	126.73
C	Shasta (SV)	Annual	2019	351.86	408.40	479.39	608.38	73.43	85.58	100.66	126.93
C	Shasta (SV)	Annual	2020	351.92	408.34	479.30	608.94	73.52	85.46	100.71	127.12
C	Shasta (SV)	Annual	2021	351.97	408.41	479.21	609.29	73.59	85.54	100.78	127.19
C	Shasta (SV)	Annual	2022	352.00	408.47	479.13	609.57	73.64	85.60	100.83	127.24
C	Shasta (SV)	Annual	2023	351.99	408.52	479.04	609.77	73.67	85.66	100.87	127.40
C	Shasta (SV)	Annual	2024	351.96	408.57	478.97	609.93	73.69	85.71	100.90	127.56
C	Shasta (SV)	Annual	2025	351.96	408.62	478.91	610.13	73.71	85.77	100.93	127.72
C	Shasta (SV)	Annual	2026	351.98	408.69	478.84	610.34	73.73	85.83	100.95	127.89
C	Shasta (SV)	Annual	2027	351.99	408.74	478.77	610.55	73.74	85.87	100.96	128.04
C	Shasta (SV)	Annual	2028	352.00	408.80	478.71	610.77	73.75	85.92	100.97	128.18
C	Shasta (SV)	Annual	2029	352.00	408.87	478.63	610.99	73.76	85.96	100.97	128.31
C	Shasta (SV)	Annual	2030	351.99	408.94	478.56	611.21	73.76	86.00	100.96	128.43
C	Shasta (SV)	Annual	2031	351.99	409.00	478.53	611.45	73.77	86.04	100.96	128.55
C	Shasta (SV)	Annual	2032	351.99	409.07	478.50	611.69	73.78	86.08	100.96	128.67
C	Shasta (SV)	Annual	2033	351.98	409.12	478.47	611.91	73.78	86.11	100.97	128.77

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Shasta (SV)	Annual	2034	351.98	409.16	478.44	612.11	73.78	86.14	100.97	128.87
C	Shasta (SV)	Annual	2035	351.97	409.20	478.42	612.29	73.79	86.17	100.97	128.96
C	Shasta (SV)	Summer	2010	377.12	440.81	516.16	644.42	74.15	98.71	101.24	125.46
C	Shasta (SV)	Summer	2011	377.45	440.35	515.97	645.10	73.97	96.26	101.09	125.49
C	Shasta (SV)	Summer	2012	377.75	439.98	515.82	645.96	73.79	94.20	101.00	125.59
C	Shasta (SV)	Summer	2013	378.03	439.65	515.70	646.99	73.67	92.45	100.93	125.73
C	Shasta (SV)	Summer	2014	378.26	439.31	515.62	648.05	73.54	90.71	100.85	125.88
C	Shasta (SV)	Summer	2015	378.49	439.05	515.56	649.19	73.48	89.34	100.76	126.07
C	Shasta (SV)	Summer	2016	378.71	438.86	515.49	650.32	73.48	88.23	100.75	126.28
C	Shasta (SV)	Summer	2017	378.85	438.66	515.40	651.36	73.46	86.94	100.68	126.51
C	Shasta (SV)	Summer	2018	378.93	438.50	515.27	652.24	73.42	85.93	100.65	126.73
C	Shasta (SV)	Summer	2019	379.01	438.48	515.17	653.03	73.43	85.58	100.66	126.93
C	Shasta (SV)	Summer	2020	379.07	438.49	515.07	653.75	73.52	85.46	100.71	127.12
C	Shasta (SV)	Summer	2021	379.11	438.58	514.97	654.24	73.59	85.54	100.78	127.19
C	Shasta (SV)	Summer	2022	379.12	438.68	514.88	654.63	73.64	85.60	100.83	127.24
C	Shasta (SV)	Summer	2023	379.11	438.76	514.80	654.91	73.67	85.66	100.87	127.40
C	Shasta (SV)	Summer	2024	379.10	438.85	514.73	655.11	73.69	85.71	100.90	127.56
C	Shasta (SV)	Summer	2025	379.11	438.93	514.68	655.32	73.71	85.77	100.93	127.72
C	Shasta (SV)	Summer	2026	379.13	439.02	514.61	655.54	73.73	85.83	100.95	127.89
C	Shasta (SV)	Summer	2027	379.15	439.10	514.56	655.77	73.74	85.87	100.96	128.04
C	Shasta (SV)	Summer	2028	379.16	439.18	514.51	656.00	73.75	85.92	100.97	128.18
C	Shasta (SV)	Summer	2029	379.17	439.28	514.46	656.24	73.76	85.96	100.97	128.31
C	Shasta (SV)	Summer	2030	379.18	439.37	514.41	656.49	73.76	86.00	100.96	128.43
C	Shasta (SV)	Summer	2031	379.17	439.46	514.40	656.77	73.77	86.04	100.96	128.55
C	Shasta (SV)	Summer	2032	379.17	439.53	514.40	657.05	73.78	86.08	100.96	128.67
C	Shasta (SV)	Summer	2033	379.17	439.59	514.38	657.31	73.78	86.11	100.97	128.77
C	Shasta (SV)	Summer	2034	379.16	439.64	514.37	657.55	73.78	86.14	100.97	128.87
C	Shasta (SV)	Summer	2035	379.16	439.67	514.35	657.77	73.79	86.17	100.97	128.96
C	Shasta (SV)	Winter	2010	339.28	401.24	467.18	582.88	74.15	98.71	101.24	125.46
C	Shasta (SV)	Winter	2011	339.28	400.06	466.34	583.46	73.97	96.26	101.09	125.49
C	Shasta (SV)	Winter	2012	339.31	399.10	465.69	584.12	73.79	94.20	101.00	125.59
C	Shasta (SV)	Winter	2013	339.39	398.29	465.18	584.84	73.67	92.45	100.93	125.73
C	Shasta (SV)	Winter	2014	339.47	397.49	464.78	585.56	73.54	90.71	100.85	125.88
C	Shasta (SV)	Winter	2015	339.58	396.87	464.45	586.30	73.48	89.34	100.76	126.07
C	Shasta (SV)	Winter	2016	339.72	396.38	464.21	587.03	73.48	88.23	100.75	126.28
C	Shasta (SV)	Winter	2017	339.82	395.81	464.01	587.71	73.46	86.94	100.68	126.51
C	Shasta (SV)	Winter	2018	339.89	395.36	463.85	588.30	73.42	85.93	100.65	126.73
C	Shasta (SV)	Winter	2019	339.97	395.23	463.73	588.83	73.43	85.58	100.66	126.93
C	Shasta (SV)	Winter	2020	340.04	395.15	463.64	589.32	73.52	85.46	100.71	127.12
C	Shasta (SV)	Winter	2021	340.09	395.20	463.55	589.61	73.59	85.54	100.78	127.19
C	Shasta (SV)	Winter	2022	340.12	395.24	463.47	589.84	73.64	85.60	100.83	127.24
C	Shasta (SV)	Winter	2023	340.11	395.29	463.39	590.01	73.67	85.66	100.87	127.40
C	Shasta (SV)	Winter	2024	340.09	395.32	463.31	590.15	73.69	85.71	100.90	127.56
C	Shasta (SV)	Winter	2025	340.08	395.35	463.25	590.34	73.71	85.77	100.93	127.72
C	Shasta (SV)	Winter	2026	340.10	395.41	463.18	590.55	73.73	85.83	100.95	127.89
C	Shasta (SV)	Winter	2027	340.11	395.45	463.10	590.76	73.74	85.87	100.96	128.04
C	Shasta (SV)	Winter	2028	340.11	395.50	463.03	590.97	73.75	85.92	100.97	128.18
C	Shasta (SV)	Winter	2029	340.10	395.56	462.95	591.18	73.76	85.96	100.97	128.31
C	Shasta (SV)	Winter	2030	340.09	395.62	462.87	591.39	73.76	86.00	100.96	128.43
C	Shasta (SV)	Winter	2031	340.09	395.67	462.82	591.61	73.77	86.04	100.96	128.55
C	Shasta (SV)	Winter	2032	340.09	395.73	462.78	591.84	73.78	86.08	100.96	128.67
C	Shasta (SV)	Winter	2033	340.08	395.78	462.74	592.04	73.78	86.11	100.97	128.77
C	Shasta (SV)	Winter	2034	340.08	395.82	462.71	592.22	73.78	86.14	100.97	128.87
C	Shasta (SV)	Winter	2035	340.07	395.85	462.69	592.38	73.79	86.17	100.97	128.96

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Sierra (MC)	Annual	2010	394.31	460.95	537.66	667.48	75.24	95.17	101.22	124.75
C	Sierra (MC)	Annual	2011	393.91	460.02	536.89	668.54	74.99	93.66	101.08	124.84
C	Sierra (MC)	Annual	2012	393.71	459.20	536.28	669.74	74.85	92.36	100.98	124.99
C	Sierra (MC)	Annual	2013	393.19	458.30	535.81	670.93	74.35	90.80	100.93	125.18
C	Sierra (MC)	Annual	2014	393.12	457.50	535.44	672.21	74.25	89.29	100.90	125.31
C	Sierra (MC)	Annual	2015	393.22	457.02	535.14	673.47	74.30	88.37	100.90	125.53
C	Sierra (MC)	Annual	2016	393.24	456.69	534.90	674.71	74.27	87.71	100.92	125.76
C	Sierra (MC)	Annual	2017	393.16	456.21	534.68	675.79	74.16	86.66	100.76	126.04
C	Sierra (MC)	Annual	2018	393.07	456.05	534.52	676.75	74.05	86.33	100.74	126.28
C	Sierra (MC)	Annual	2019	393.02	455.89	534.40	677.53	73.99	85.96	100.82	126.51
C	Sierra (MC)	Annual	2020	392.91	455.79	534.29	678.12	74.03	85.85	100.87	126.76
C	Sierra (MC)	Annual	2021	392.57	455.71	534.18	678.52	73.98	85.83	100.91	126.84
C	Sierra (MC)	Annual	2022	392.58	455.55	534.05	678.95	74.03	85.77	100.92	127.02
C	Sierra (MC)	Annual	2023	392.31	455.42	533.96	679.25	74.00	85.73	100.95	127.23
C	Sierra (MC)	Annual	2024	392.00	455.21	533.85	679.49	73.94	85.67	100.96	127.42
C	Sierra (MC)	Annual	2025	391.81	455.26	533.79	679.66	73.93	85.73	100.98	127.58
C	Sierra (MC)	Annual	2026	391.81	455.38	533.71	679.96	73.95	85.81	101.00	127.77
C	Sierra (MC)	Annual	2027	391.82	455.49	533.63	680.24	73.96	85.89	101.01	127.94
C	Sierra (MC)	Annual	2028	391.79	455.60	533.57	680.51	73.97	85.96	101.02	128.10
C	Sierra (MC)	Annual	2029	391.77	455.71	533.49	680.80	73.97	86.02	101.01	128.25
C	Sierra (MC)	Annual	2030	391.72	455.81	533.43	681.08	73.97	86.09	101.01	128.39
C	Sierra (MC)	Annual	2031	391.70	455.92	533.38	681.39	73.98	86.15	101.01	128.53
C	Sierra (MC)	Annual	2032	391.69	456.01	533.35	681.70	73.98	86.20	101.01	128.66
C	Sierra (MC)	Annual	2033	391.68	456.10	533.32	681.99	73.99	86.25	101.01	128.78
C	Sierra (MC)	Annual	2034	391.67	456.18	533.30	682.24	73.99	86.30	101.02	128.89
C	Sierra (MC)	Annual	2035	391.66	456.24	533.28	682.46	73.99	86.34	101.02	129.00
C	Sierra (MC)	Summer	2010	417.17	483.16	568.10	703.78	75.24	95.17	101.22	124.75
C	Sierra (MC)	Summer	2011	417.07	483.15	567.61	705.13	74.99	93.66	101.08	124.84
C	Sierra (MC)	Summer	2012	417.11	483.07	567.23	706.66	74.85	92.36	100.98	124.99
C	Sierra (MC)	Summer	2013	416.81	482.81	566.93	708.19	74.35	90.80	100.93	125.18
C	Sierra (MC)	Summer	2014	416.85	482.52	566.72	709.83	74.25	89.29	100.90	125.31
C	Sierra (MC)	Summer	2015	417.03	482.41	566.56	711.46	74.30	88.37	100.90	125.53
C	Sierra (MC)	Summer	2016	417.11	482.32	566.42	713.05	74.27	87.71	100.92	125.76
C	Sierra (MC)	Summer	2017	417.07	482.13	566.32	714.42	74.16	86.66	100.76	126.04
C	Sierra (MC)	Summer	2018	416.99	482.09	566.20	715.64	74.05	86.33	100.74	126.28
C	Sierra (MC)	Summer	2019	416.95	482.09	566.09	716.63	73.99	85.96	100.82	126.51
C	Sierra (MC)	Summer	2020	416.84	482.12	565.99	717.36	74.03	85.85	100.87	126.76
C	Sierra (MC)	Summer	2021	416.51	482.14	565.90	717.92	73.98	85.83	100.91	126.84
C	Sierra (MC)	Summer	2022	416.51	482.11	565.79	718.46	74.03	85.77	100.92	127.02
C	Sierra (MC)	Summer	2023	416.26	482.09	565.70	718.85	74.00	85.73	100.95	127.23
C	Sierra (MC)	Summer	2024	415.97	482.00	565.61	719.16	73.94	85.67	100.96	127.42
C	Sierra (MC)	Summer	2025	415.79	482.07	565.55	719.41	73.93	85.73	100.98	127.58
C	Sierra (MC)	Summer	2026	415.80	482.23	565.48	719.74	73.95	85.81	101.00	127.77
C	Sierra (MC)	Summer	2027	415.82	482.38	565.42	720.07	73.96	85.89	101.01	127.94
C	Sierra (MC)	Summer	2028	415.81	482.52	565.37	720.41	73.97	85.96	101.02	128.10
C	Sierra (MC)	Summer	2029	415.80	482.68	565.30	720.76	73.97	86.02	101.01	128.25
C	Sierra (MC)	Summer	2030	415.77	482.82	565.25	721.10	73.97	86.09	101.01	128.39
C	Sierra (MC)	Summer	2031	415.77	482.97	565.22	721.46	73.98	86.15	101.01	128.53
C	Sierra (MC)	Summer	2032	415.76	483.08	565.20	721.82	73.98	86.20	101.01	128.66
C	Sierra (MC)	Summer	2033	415.75	483.19	565.18	722.16	73.99	86.25	101.01	128.78
C	Sierra (MC)	Summer	2034	415.74	483.29	565.16	722.46	73.99	86.30	101.02	128.89
C	Sierra (MC)	Summer	2035	415.73	483.36	565.14	722.72	73.99	86.34	101.02	129.00
C	Sierra (MC)	Winter	2010	390.52	457.27	532.61	661.46	75.24	95.17	101.22	124.75
C	Sierra (MC)	Winter	2011	390.06	456.18	531.79	662.48	74.99	93.66	101.08	124.84

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Sierra (MC)	Winter	2012	389.83	455.24	531.15	663.62	74.85	92.36	100.98	124.99
C	Sierra (MC)	Winter	2013	389.27	454.24	530.65	664.75	74.35	90.80	100.93	125.18
C	Sierra (MC)	Winter	2014	389.18	453.35	530.26	665.97	74.25	89.29	100.90	125.31
C	Sierra (MC)	Winter	2015	389.27	452.81	529.93	667.17	74.30	88.37	100.90	125.53
C	Sierra (MC)	Winter	2016	389.28	452.44	529.67	668.35	74.27	87.71	100.92	125.76
C	Sierra (MC)	Winter	2017	389.20	451.91	529.44	669.38	74.16	86.66	100.76	126.04
C	Sierra (MC)	Winter	2018	389.10	451.73	529.27	670.31	74.05	86.33	100.74	126.28
C	Sierra (MC)	Winter	2019	389.05	451.54	529.14	671.05	73.99	85.96	100.82	126.51
C	Sierra (MC)	Winter	2020	388.94	451.43	529.03	671.61	74.03	85.85	100.87	126.76
C	Sierra (MC)	Winter	2021	388.60	451.33	528.92	671.99	73.98	85.83	100.91	126.84
C	Sierra (MC)	Winter	2022	388.61	451.15	528.78	672.40	74.03	85.77	100.92	127.02
C	Sierra (MC)	Winter	2023	388.34	451.00	528.70	672.69	74.00	85.73	100.95	127.23
C	Sierra (MC)	Winter	2024	388.02	450.77	528.58	672.91	73.94	85.67	100.96	127.42
C	Sierra (MC)	Winter	2025	387.84	450.82	528.52	673.07	73.93	85.73	100.98	127.58
C	Sierra (MC)	Winter	2026	387.83	450.93	528.44	673.36	73.95	85.81	101.00	127.77
C	Sierra (MC)	Winter	2027	387.85	451.03	528.36	673.63	73.96	85.89	101.01	127.94
C	Sierra (MC)	Winter	2028	387.81	451.14	528.30	673.89	73.97	85.96	101.02	128.10
C	Sierra (MC)	Winter	2029	387.79	451.24	528.22	674.17	73.97	86.02	101.01	128.25
C	Sierra (MC)	Winter	2030	387.74	451.33	528.15	674.45	73.97	86.09	101.01	128.39
C	Sierra (MC)	Winter	2031	387.71	451.44	528.10	674.74	73.98	86.15	101.01	128.53
C	Sierra (MC)	Winter	2032	387.70	451.52	528.07	675.05	73.98	86.20	101.01	128.66
C	Sierra (MC)	Winter	2033	387.69	451.61	528.04	675.33	73.99	86.25	101.01	128.78
C	Sierra (MC)	Winter	2034	387.68	451.68	528.01	675.57	73.99	86.30	101.02	128.89
C	Sierra (MC)	Winter	2035	387.67	451.74	527.99	675.79	73.99	86.34	101.02	129.00
C	Siskiyou (NEP)	Annual	2010	378.80	444.35	519.95	649.03	74.19	93.56	102.24	125.12
C	Siskiyou (NEP)	Annual	2011	378.73	443.52	519.19	649.67	74.04	92.11	102.01	125.20
C	Siskiyou (NEP)	Annual	2012	378.70	442.82	518.58	650.49	73.88	90.89	101.82	125.30
C	Siskiyou (NEP)	Annual	2013	378.69	442.25	518.06	651.35	73.68	89.89	101.54	125.46
C	Siskiyou (NEP)	Annual	2014	378.76	441.72	517.67	652.21	73.60	88.92	101.36	125.61
C	Siskiyou (NEP)	Annual	2015	378.86	441.26	517.36	653.09	73.55	88.04	101.18	125.82
C	Siskiyou (NEP)	Annual	2016	378.97	440.88	517.10	653.95	73.55	87.27	101.06	126.05
C	Siskiyou (NEP)	Annual	2017	379.02	440.51	516.88	654.72	73.49	86.50	100.90	126.29
C	Siskiyou (NEP)	Annual	2018	379.03	440.25	516.71	655.39	73.41	85.98	100.79	126.52
C	Siskiyou (NEP)	Annual	2019	379.07	440.11	516.58	655.97	73.39	85.68	100.76	126.74
C	Siskiyou (NEP)	Annual	2020	379.14	439.98	516.47	656.46	73.48	85.54	100.80	126.95
C	Siskiyou (NEP)	Annual	2021	379.12	439.88	516.35	656.80	73.52	85.53	100.84	127.11
C	Siskiyou (NEP)	Annual	2022	379.05	439.72	516.23	657.04	73.53	85.50	100.87	127.20
C	Siskiyou (NEP)	Annual	2023	378.90	439.60	516.12	657.19	73.51	85.48	100.89	127.36
C	Siskiyou (NEP)	Annual	2024	378.77	439.53	516.02	657.33	73.48	85.50	100.91	127.52
C	Siskiyou (NEP)	Annual	2025	378.71	439.58	515.95	657.44	73.49	85.56	100.93	127.67
C	Siskiyou (NEP)	Annual	2026	378.72	439.71	515.87	657.62	73.51	85.65	100.95	127.82
C	Siskiyou (NEP)	Annual	2027	378.72	439.84	515.80	657.81	73.52	85.73	100.97	127.97
C	Siskiyou (NEP)	Annual	2028	378.72	439.97	515.74	658.01	73.53	85.81	100.98	128.11
C	Siskiyou (NEP)	Annual	2029	378.70	440.10	515.67	658.20	73.53	85.88	100.98	128.23
C	Siskiyou (NEP)	Annual	2030	378.68	440.21	515.58	658.40	73.54	85.95	100.97	128.36
C	Siskiyou (NEP)	Annual	2031	378.67	440.34	515.53	658.68	73.54	86.01	100.97	128.49
C	Siskiyou (NEP)	Annual	2032	378.67	440.44	515.49	658.96	73.55	86.07	100.98	128.62
C	Siskiyou (NEP)	Annual	2033	378.66	440.54	515.46	659.20	73.55	86.13	100.98	128.73
C	Siskiyou (NEP)	Annual	2034	378.65	440.63	515.42	659.41	73.56	86.18	100.98	128.83
C	Siskiyou (NEP)	Annual	2035	378.64	440.70	515.40	659.60	73.56	86.22	100.99	128.93
C	Siskiyou (NEP)	Summer	2010	393.78	458.70	539.46	673.02	74.19	93.56	102.24	125.12
C	Siskiyou (NEP)	Summer	2011	393.90	458.44	538.93	673.75	74.04	92.11	102.01	125.20
C	Siskiyou (NEP)	Summer	2012	394.02	458.19	538.51	674.72	73.88	90.89	101.82	125.30
C	Siskiyou (NEP)	Summer	2013	394.12	457.97	538.18	675.77	73.68	89.89	101.54	125.46

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Siskiyou (NEP)	Summer	2014	394.26	457.73	537.93	676.82	73.60	88.92	101.36	125.61
C	Siskiyou (NEP)	Summer	2015	394.41	457.52	537.74	677.91	73.55	88.04	101.18	125.82
C	Siskiyou (NEP)	Summer	2016	394.55	457.35	537.58	678.96	73.55	87.27	101.06	126.05
C	Siskiyou (NEP)	Summer	2017	394.62	457.17	537.43	679.91	73.49	86.50	100.90	126.29
C	Siskiyou (NEP)	Summer	2018	394.63	457.04	537.29	680.74	73.41	85.98	100.79	126.52
C	Siskiyou (NEP)	Summer	2019	394.66	457.01	537.18	681.46	73.39	85.68	100.76	126.74
C	Siskiyou (NEP)	Summer	2020	394.72	456.98	537.09	682.06	73.48	85.54	100.80	126.95
C	Siskiyou (NEP)	Summer	2021	394.69	456.95	536.97	682.49	73.52	85.53	100.84	127.11
C	Siskiyou (NEP)	Summer	2022	394.62	456.88	536.86	682.82	73.53	85.50	100.87	127.20
C	Siskiyou (NEP)	Summer	2023	394.48	456.83	536.76	683.03	73.51	85.48	100.89	127.36
C	Siskiyou (NEP)	Summer	2024	394.35	456.84	536.67	683.22	73.48	85.50	100.91	127.52
C	Siskiyou (NEP)	Summer	2025	394.30	456.94	536.61	683.38	73.49	85.56	100.93	127.67
C	Siskiyou (NEP)	Summer	2026	394.32	457.11	536.53	683.57	73.51	85.65	100.95	127.82
C	Siskiyou (NEP)	Summer	2027	394.33	457.28	536.46	683.78	73.52	85.73	100.97	127.97
C	Siskiyou (NEP)	Summer	2028	394.34	457.44	536.40	684.00	73.53	85.81	100.98	128.11
C	Siskiyou (NEP)	Summer	2029	394.33	457.61	536.34	684.23	73.53	85.88	100.98	128.23
C	Siskiyou (NEP)	Summer	2030	394.32	457.77	536.26	684.47	73.54	85.95	100.97	128.36
C	Siskiyou (NEP)	Summer	2031	394.32	457.91	536.23	684.79	73.54	86.01	100.97	128.49
C	Siskiyou (NEP)	Summer	2032	394.32	458.04	536.21	685.10	73.55	86.07	100.98	128.62
C	Siskiyou (NEP)	Summer	2033	394.31	458.15	536.18	685.38	73.55	86.13	100.98	128.73
C	Siskiyou (NEP)	Summer	2034	394.30	458.25	536.16	685.63	73.56	86.18	100.98	128.83
C	Siskiyou (NEP)	Summer	2035	394.29	458.31	536.14	685.85	73.56	86.22	100.99	128.93
C	Siskiyou (NEP)	Winter	2010	373.71	439.47	513.32	640.88	74.19	93.56	102.24	125.12
C	Siskiyou (NEP)	Winter	2011	373.57	438.45	512.48	641.49	74.04	92.11	102.01	125.20
C	Siskiyou (NEP)	Winter	2012	373.50	437.60	511.81	642.25	73.88	90.89	101.82	125.30
C	Siskiyou (NEP)	Winter	2013	373.45	436.91	511.23	643.06	73.68	89.89	101.54	125.46
C	Siskiyou (NEP)	Winter	2014	373.49	436.28	510.79	643.86	73.60	88.92	101.36	125.61
C	Siskiyou (NEP)	Winter	2015	373.58	435.74	510.43	644.66	73.55	88.04	101.18	125.82
C	Siskiyou (NEP)	Winter	2016	373.68	435.28	510.15	645.45	73.55	87.27	101.06	126.05
C	Siskiyou (NEP)	Winter	2017	373.73	434.85	509.90	646.16	73.49	86.50	100.90	126.29
C	Siskiyou (NEP)	Winter	2018	373.74	434.55	509.71	646.78	73.41	85.98	100.79	126.52
C	Siskiyou (NEP)	Winter	2019	373.78	434.37	509.58	647.31	73.39	85.68	100.76	126.74
C	Siskiyou (NEP)	Winter	2020	373.85	434.21	509.47	647.77	73.48	85.54	100.80	126.95
C	Siskiyou (NEP)	Winter	2021	373.83	434.08	509.34	648.08	73.52	85.53	100.84	127.11
C	Siskiyou (NEP)	Winter	2022	373.76	433.89	509.22	648.29	73.53	85.50	100.87	127.20
C	Siskiyou (NEP)	Winter	2023	373.61	433.74	509.10	648.41	73.51	85.48	100.89	127.36
C	Siskiyou (NEP)	Winter	2024	373.47	433.65	509.00	648.53	73.48	85.50	100.91	127.52
C	Siskiyou (NEP)	Winter	2025	373.42	433.68	508.93	648.63	73.49	85.56	100.93	127.67
C	Siskiyou (NEP)	Winter	2026	373.42	433.81	508.85	648.81	73.51	85.65	100.95	127.82
C	Siskiyou (NEP)	Winter	2027	373.42	433.92	508.79	648.99	73.52	85.73	100.97	127.97
C	Siskiyou (NEP)	Winter	2028	373.41	434.03	508.72	649.17	73.53	85.81	100.98	128.11
C	Siskiyou (NEP)	Winter	2029	373.39	434.14	508.65	649.35	73.53	85.88	100.98	128.23
C	Siskiyou (NEP)	Winter	2030	373.36	434.25	508.56	649.55	73.54	85.95	100.97	128.36
C	Siskiyou (NEP)	Winter	2031	373.36	434.37	508.50	649.81	73.54	86.01	100.97	128.49
C	Siskiyou (NEP)	Winter	2032	373.35	434.47	508.45	650.08	73.55	86.07	100.98	128.62
C	Siskiyou (NEP)	Winter	2033	373.34	434.56	508.42	650.30	73.55	86.13	100.98	128.73
C	Siskiyou (NEP)	Winter	2034	373.34	434.64	508.38	650.51	73.56	86.18	100.98	128.83
C	Siskiyou (NEP)	Winter	2035	373.33	434.71	508.36	650.69	73.56	86.22	100.99	128.93
C	Solano (SF)	Annual	2010	341.84	392.72	467.77	590.01	73.22	84.56	99.66	124.82
C	Solano (SF)	Annual	2011	342.07	393.39	467.67	590.47	73.26	84.38	99.73	124.98
C	Solano (SF)	Annual	2012	342.31	394.02	467.59	591.01	73.28	84.33	99.81	125.17
C	Solano (SF)	Annual	2013	342.55	394.58	467.54	591.61	73.32	84.30	99.90	125.38
C	Solano (SF)	Annual	2014	342.76	395.08	467.51	592.23	73.35	84.27	99.99	125.61
C	Solano (SF)	Annual	2015	342.97	395.55	467.49	592.87	73.38	84.28	100.07	125.85

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Solano (SF)	Annual	2016	343.17	395.96	467.48	593.49	73.44	84.27	100.15	126.09
C	Solano (SF)	Annual	2017	343.32	396.33	467.47	594.08	73.48	84.28	100.20	126.34
C	Solano (SF)	Annual	2018	343.45	396.64	467.47	594.62	73.51	84.28	100.28	126.59
C	Solano (SF)	Annual	2019	343.58	396.96	467.47	595.08	73.57	84.39	100.35	126.82
C	Solano (SF)	Annual	2020	343.67	397.24	467.47	595.50	73.66	84.54	100.44	127.04
C	Solano (SF)	Annual	2021	343.75	397.51	467.47	595.82	73.74	84.71	100.53	127.19
C	Solano (SF)	Annual	2022	343.79	397.75	467.46	596.09	73.80	84.87	100.61	127.33
C	Solano (SF)	Annual	2023	343.81	397.93	467.45	596.30	73.84	85.01	100.68	127.49
C	Solano (SF)	Annual	2024	343.81	398.09	467.44	596.45	73.86	85.13	100.74	127.65
C	Solano (SF)	Annual	2025	343.82	398.22	467.44	596.62	73.88	85.24	100.79	127.80
C	Solano (SF)	Annual	2026	343.84	398.37	467.43	596.79	73.91	85.35	100.83	127.95
C	Solano (SF)	Annual	2027	343.85	398.52	467.42	596.95	73.92	85.44	100.86	128.08
C	Solano (SF)	Annual	2028	343.86	398.66	467.41	597.12	73.93	85.53	100.88	128.20
C	Solano (SF)	Annual	2029	343.86	398.80	467.39	597.29	73.94	85.62	100.90	128.31
C	Solano (SF)	Annual	2030	343.86	398.94	467.38	597.46	73.95	85.70	100.91	128.42
C	Solano (SF)	Annual	2031	343.86	399.08	467.38	597.67	73.95	85.78	100.93	128.53
C	Solano (SF)	Annual	2032	343.86	399.22	467.37	597.88	73.96	85.86	100.93	128.64
C	Solano (SF)	Annual	2033	343.86	399.33	467.36	598.08	73.96	85.93	100.94	128.74
C	Solano (SF)	Annual	2034	343.86	399.44	467.35	598.25	73.97	86.00	100.95	128.83
C	Solano (SF)	Annual	2035	343.85	399.53	467.34	598.40	73.97	86.05	100.95	128.92
C	Solano (SF)	Summer	2010	368.80	420.88	503.66	634.87	73.22	84.56	99.66	124.82
C	Solano (SF)	Summer	2011	369.20	422.00	503.59	635.19	73.26	84.38	99.73	124.98
C	Solano (SF)	Summer	2012	369.56	422.99	503.57	635.69	73.28	84.33	99.81	125.17
C	Solano (SF)	Summer	2013	369.90	423.83	503.59	636.34	73.32	84.30	99.90	125.38
C	Solano (SF)	Summer	2014	370.19	424.57	503.65	637.06	73.35	84.27	99.99	125.61
C	Solano (SF)	Summer	2015	370.46	425.22	503.73	637.86	73.38	84.28	100.07	125.85
C	Solano (SF)	Summer	2016	370.71	425.78	503.82	638.66	73.44	84.27	100.15	126.09
C	Solano (SF)	Summer	2017	370.89	426.29	503.89	639.43	73.48	84.28	100.20	126.34
C	Solano (SF)	Summer	2018	371.03	426.70	503.92	640.11	73.51	84.28	100.28	126.59
C	Solano (SF)	Summer	2019	371.15	427.11	503.94	640.69	73.57	84.39	100.35	126.82
C	Solano (SF)	Summer	2020	371.25	427.47	503.95	641.22	73.66	84.54	100.44	127.04
C	Solano (SF)	Summer	2021	371.33	427.82	503.93	641.62	73.74	84.71	100.53	127.19
C	Solano (SF)	Summer	2022	371.37	428.13	503.90	641.96	73.80	84.87	100.61	127.33
C	Solano (SF)	Summer	2023	371.39	428.38	503.88	642.20	73.84	85.01	100.68	127.49
C	Solano (SF)	Summer	2024	371.40	428.59	503.87	642.36	73.86	85.13	100.74	127.65
C	Solano (SF)	Summer	2025	371.41	428.78	503.86	642.52	73.88	85.24	100.79	127.80
C	Solano (SF)	Summer	2026	371.43	428.97	503.85	642.69	73.91	85.35	100.83	127.95
C	Solano (SF)	Summer	2027	371.44	429.16	503.84	642.85	73.92	85.44	100.86	128.08
C	Solano (SF)	Summer	2028	371.46	429.35	503.83	643.02	73.93	85.53	100.88	128.20
C	Solano (SF)	Summer	2029	371.46	429.54	503.82	643.19	73.94	85.62	100.90	128.31
C	Solano (SF)	Summer	2030	371.47	429.73	503.81	643.37	73.95	85.70	100.91	128.42
C	Solano (SF)	Summer	2031	371.47	429.92	503.80	643.63	73.95	85.78	100.93	128.53
C	Solano (SF)	Summer	2032	371.47	430.10	503.78	643.88	73.96	85.86	100.93	128.64
C	Solano (SF)	Summer	2033	371.47	430.24	503.77	644.12	73.96	85.93	100.94	128.74
C	Solano (SF)	Summer	2034	371.47	430.38	503.77	644.34	73.97	86.00	100.95	128.83
C	Solano (SF)	Summer	2035	371.47	430.48	503.76	644.54	73.97	86.05	100.95	128.92
C	Solano (SF)	Winter	2010	336.93	387.60	461.24	581.85	73.22	84.56	99.66	124.82
C	Solano (SF)	Winter	2011	337.14	388.18	461.13	582.33	73.26	84.38	99.73	124.98
C	Solano (SF)	Winter	2012	337.35	388.75	461.05	582.88	73.28	84.33	99.81	125.17
C	Solano (SF)	Winter	2013	337.57	389.26	460.99	583.48	73.32	84.30	99.90	125.38
C	Solano (SF)	Winter	2014	337.77	389.72	460.94	584.07	73.35	84.27	99.99	125.61
C	Solano (SF)	Winter	2015	337.97	390.15	460.90	584.69	73.38	84.28	100.07	125.85
C	Solano (SF)	Winter	2016	338.16	390.53	460.87	585.28	73.44	84.27	100.15	126.09
C	Solano (SF)	Winter	2017	338.31	390.89	460.85	585.84	73.48	84.28	100.20	126.34

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Solano (SF)	Winter	2018	338.44	391.17	460.84	586.34	73.51	84.28	100.28	126.59
C	Solano (SF)	Winter	2019	338.56	391.48	460.84	586.78	73.57	84.39	100.35	126.82
C	Solano (SF)	Winter	2020	338.66	391.75	460.83	587.18	73.66	84.54	100.44	127.04
C	Solano (SF)	Winter	2021	338.74	392.00	460.84	587.49	73.74	84.71	100.53	127.19
C	Solano (SF)	Winter	2022	338.78	392.22	460.83	587.75	73.80	84.87	100.61	127.33
C	Solano (SF)	Winter	2023	338.79	392.40	460.83	587.95	73.84	85.01	100.68	127.49
C	Solano (SF)	Winter	2024	338.79	392.54	460.82	588.10	73.86	85.13	100.74	127.65
C	Solano (SF)	Winter	2025	338.80	392.67	460.81	588.27	73.88	85.24	100.79	127.80
C	Solano (SF)	Winter	2026	338.82	392.81	460.80	588.44	73.91	85.35	100.83	127.95
C	Solano (SF)	Winter	2027	338.84	392.94	460.79	588.61	73.92	85.44	100.86	128.08
C	Solano (SF)	Winter	2028	338.84	393.08	460.78	588.77	73.93	85.53	100.88	128.20
C	Solano (SF)	Winter	2029	338.84	393.21	460.77	588.94	73.94	85.62	100.90	128.31
C	Solano (SF)	Winter	2030	338.84	393.34	460.76	589.11	73.95	85.70	100.91	128.42
C	Solano (SF)	Winter	2031	338.84	393.47	460.75	589.31	73.95	85.78	100.93	128.53
C	Solano (SF)	Winter	2032	338.84	393.60	460.74	589.52	73.96	85.86	100.93	128.64
C	Solano (SF)	Winter	2033	338.84	393.71	460.74	589.70	73.96	85.93	100.94	128.74
C	Solano (SF)	Winter	2034	338.83	393.81	460.73	589.87	73.97	86.00	100.95	128.83
C	Solano (SF)	Winter	2035	338.83	393.90	460.72	590.01	73.97	86.05	100.95	128.92
C	Solano (SV)	Annual	2010	361.72	414.56	494.70	624.60	73.68	84.80	100.13	125.07
C	Solano (SV)	Annual	2011	361.94	415.33	494.60	625.06	73.63	84.64	100.12	125.23
C	Solano (SV)	Annual	2012	362.12	416.01	494.53	625.61	73.53	84.49	100.15	125.40
C	Solano (SV)	Annual	2013	362.32	416.57	494.48	626.21	73.46	84.35	100.21	125.60
C	Solano (SV)	Annual	2014	362.52	417.08	494.45	626.83	73.42	84.23	100.22	125.81
C	Solano (SV)	Annual	2015	362.70	417.55	494.44	627.46	73.39	84.20	100.24	126.04
C	Solano (SV)	Annual	2016	371.75	428.17	506.54	643.44	73.44	84.21	100.30	126.28
C	Solano (SV)	Annual	2017	371.90	428.52	506.54	644.06	73.44	84.13	100.29	126.51
C	Solano (SV)	Annual	2018	372.04	428.84	506.54	644.61	73.47	84.18	100.31	126.74
C	Solano (SV)	Annual	2019	372.18	429.19	506.54	645.09	73.51	84.31	100.36	126.94
C	Solano (SV)	Annual	2020	372.30	429.49	506.54	645.54	73.61	84.45	100.45	127.14
C	Solano (SV)	Annual	2021	372.41	429.77	506.54	645.87	73.70	84.61	100.54	127.29
C	Solano (SV)	Annual	2022	372.46	430.00	506.53	646.17	73.76	84.76	100.62	127.44
C	Solano (SV)	Annual	2023	372.49	430.19	506.52	646.37	73.80	84.88	100.69	127.60
C	Solano (SV)	Annual	2024	372.51	430.37	506.51	646.51	73.83	85.01	100.74	127.74
C	Solano (SV)	Annual	2025	372.53	430.53	506.49	646.67	73.86	85.11	100.79	127.89
C	Solano (SV)	Annual	2026	375.02	433.55	509.84	651.12	73.88	85.22	100.83	128.03
C	Solano (SV)	Annual	2027	375.04	433.71	509.83	651.28	73.90	85.31	100.86	128.15
C	Solano (SV)	Annual	2028	375.06	433.87	509.82	651.44	73.91	85.40	100.88	128.26
C	Solano (SV)	Annual	2029	375.06	434.03	509.81	651.60	73.92	85.48	100.90	128.37
C	Solano (SV)	Annual	2030	375.06	434.19	509.80	651.77	73.92	85.56	100.92	128.47
C	Solano (SV)	Annual	2031	375.06	434.35	509.79	651.99	73.93	85.64	100.93	128.58
C	Solano (SV)	Annual	2032	375.06	434.50	509.79	652.21	73.93	85.71	100.94	128.68
C	Solano (SV)	Annual	2033	375.06	434.63	509.78	652.41	73.94	85.78	100.94	128.78
C	Solano (SV)	Annual	2034	375.06	434.74	509.77	652.59	73.94	85.84	100.95	128.87
C	Solano (SV)	Annual	2035	375.06	434.82	509.76	652.75	73.94	85.90	100.96	128.95
C	Solano (SV)	Summer	2010	396.63	451.00	541.05	682.70	73.68	84.80	100.13	125.07
C	Solano (SV)	Summer	2011	397.01	452.35	540.98	682.98	73.63	84.64	100.12	125.23
C	Solano (SV)	Summer	2012	397.34	453.51	540.96	683.47	73.53	84.49	100.15	125.40
C	Solano (SV)	Summer	2013	397.66	454.46	540.99	684.11	73.46	84.35	100.21	125.60
C	Solano (SV)	Summer	2014	397.96	455.28	541.09	684.86	73.42	84.23	100.22	125.81
C	Solano (SV)	Summer	2015	398.22	455.97	541.22	685.68	73.39	84.20	100.24	126.04
C	Solano (SV)	Summer	2016	408.16	467.64	554.55	703.24	73.44	84.21	100.30	126.28
C	Solano (SV)	Summer	2017	408.35	468.15	554.68	704.08	73.44	84.13	100.29	126.51
C	Solano (SV)	Summer	2018	408.51	468.56	554.75	704.81	73.47	84.18	100.31	126.74
C	Solano (SV)	Summer	2019	408.65	469.03	554.77	705.45	73.51	84.31	100.36	126.94

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Solano (SV)	Summer	2020	408.77	469.44	554.78	706.04	73.61	84.45	100.45	127.14
C	Solano (SV)	Summer	2021	408.88	469.80	554.77	706.47	73.70	84.61	100.54	127.29
C	Solano (SV)	Summer	2022	408.94	470.12	554.74	706.85	73.76	84.76	100.62	127.44
C	Solano (SV)	Summer	2023	408.97	470.39	554.71	707.11	73.80	84.88	100.69	127.60
C	Solano (SV)	Summer	2024	409.00	470.66	554.66	707.27	73.83	85.01	100.74	127.74
C	Solano (SV)	Summer	2025	409.02	470.89	554.62	707.42	73.86	85.11	100.79	127.89
C	Solano (SV)	Summer	2026	411.74	474.21	558.28	712.22	73.88	85.22	100.83	128.03
C	Solano (SV)	Summer	2027	411.77	474.42	558.28	712.36	73.90	85.31	100.86	128.15
C	Solano (SV)	Summer	2028	411.78	474.63	558.28	712.51	73.91	85.40	100.88	128.26
C	Solano (SV)	Summer	2029	411.79	474.86	558.27	712.66	73.92	85.48	100.90	128.37
C	Solano (SV)	Summer	2030	411.80	475.08	558.27	712.84	73.92	85.56	100.92	128.47
C	Solano (SV)	Summer	2031	411.79	475.31	558.26	713.12	73.93	85.64	100.93	128.58
C	Solano (SV)	Summer	2032	411.79	475.50	558.25	713.41	73.93	85.71	100.94	128.68
C	Solano (SV)	Summer	2033	411.79	475.67	558.24	713.67	73.94	85.78	100.94	128.78
C	Solano (SV)	Summer	2034	411.79	475.81	558.23	713.92	73.94	85.84	100.95	128.87
C	Solano (SV)	Summer	2035	411.78	475.92	558.22	714.15	73.94	85.90	100.96	128.95
C	Solano (SV)	Winter	2010	353.45	405.93	483.73	610.84	73.68	84.80	100.13	125.07
C	Solano (SV)	Winter	2011	353.63	406.57	483.61	611.35	73.63	84.64	100.12	125.23
C	Solano (SV)	Winter	2012	353.78	407.13	483.53	611.91	73.53	84.49	100.15	125.40
C	Solano (SV)	Winter	2013	353.95	407.60	483.47	612.50	73.46	84.35	100.21	125.60
C	Solano (SV)	Winter	2014	354.13	408.03	483.41	613.09	73.42	84.23	100.22	125.81
C	Solano (SV)	Winter	2015	354.29	408.45	483.37	613.68	73.39	84.20	100.24	126.04
C	Solano (SV)	Winter	2016	363.12	418.81	495.16	629.27	73.44	84.21	100.30	126.28
C	Solano (SV)	Winter	2017	363.26	419.12	495.13	629.83	73.44	84.13	100.29	126.51
C	Solano (SV)	Winter	2018	363.40	419.42	495.11	630.33	73.47	84.18	100.31	126.74
C	Solano (SV)	Winter	2019	363.53	419.75	495.10	630.78	73.51	84.31	100.36	126.94
C	Solano (SV)	Winter	2020	363.65	420.02	495.10	631.20	73.61	84.45	100.45	127.14
C	Solano (SV)	Winter	2021	363.76	420.27	495.11	631.50	73.70	84.61	100.54	127.29
C	Solano (SV)	Winter	2022	363.81	420.49	495.10	631.78	73.76	84.76	100.62	127.44
C	Solano (SV)	Winter	2023	363.84	420.66	495.10	631.97	73.80	84.88	100.69	127.60
C	Solano (SV)	Winter	2024	363.86	420.82	495.09	632.10	73.83	85.01	100.74	127.74
C	Solano (SV)	Winter	2025	363.88	420.96	495.08	632.26	73.86	85.11	100.79	127.89
C	Solano (SV)	Winter	2026	366.31	423.90	498.35	636.62	73.88	85.22	100.83	128.03
C	Solano (SV)	Winter	2027	366.33	424.05	498.34	636.78	73.90	85.31	100.86	128.15
C	Solano (SV)	Winter	2028	366.34	424.20	498.33	636.95	73.91	85.40	100.88	128.26
C	Solano (SV)	Winter	2029	366.34	424.35	498.31	637.11	73.92	85.48	100.90	128.37
C	Solano (SV)	Winter	2030	366.34	424.49	498.30	637.28	73.92	85.56	100.92	128.47
C	Solano (SV)	Winter	2031	366.35	424.64	498.30	637.49	73.93	85.64	100.93	128.58
C	Solano (SV)	Winter	2032	366.35	424.77	498.29	637.69	73.93	85.71	100.94	128.68
C	Solano (SV)	Winter	2033	366.35	424.89	498.28	637.88	73.94	85.78	100.94	128.78
C	Solano (SV)	Winter	2034	366.35	424.99	498.28	638.04	73.94	85.84	100.95	128.87
C	Solano (SV)	Winter	2035	366.34	425.08	498.27	638.19	73.94	85.90	100.96	128.95
C	Sonoma (NC)	Annual	2010	390.51	449.32	534.32	668.22	73.44	86.67	100.89	124.24
C	Sonoma (NC)	Annual	2011	390.41	449.46	533.78	668.92	73.35	86.07	100.76	124.42
C	Sonoma (NC)	Annual	2012	390.39	449.72	533.36	669.75	73.28	85.75	100.71	124.64
C	Sonoma (NC)	Annual	2013	390.45	449.93	533.03	670.64	73.24	85.48	100.70	124.89
C	Sonoma (NC)	Annual	2014	390.51	450.12	532.77	671.53	73.21	85.23	100.66	125.14
C	Sonoma (NC)	Annual	2015	390.56	450.29	532.56	672.43	73.15	84.99	100.59	125.42
C	Sonoma (NC)	Annual	2016	389.58	449.24	530.90	671.41	73.14	84.86	100.60	125.69
C	Sonoma (NC)	Annual	2017	389.62	449.43	530.76	672.22	73.11	84.74	100.59	125.97
C	Sonoma (NC)	Annual	2018	389.63	449.60	530.64	672.91	73.05	84.67	100.59	126.25
C	Sonoma (NC)	Annual	2019	389.66	449.79	530.55	673.52	73.04	84.68	100.60	126.51
C	Sonoma (NC)	Annual	2020	389.72	449.99	530.48	674.07	73.12	84.77	100.66	126.75
C	Sonoma (NC)	Annual	2021	389.70	450.13	530.40	674.51	73.17	84.88	100.73	126.95

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Sonoma (NC)	Annual	2022	389.64	450.20	530.29	674.87	73.19	84.96	100.77	127.13
C	Sonoma (NC)	Annual	2023	389.45	450.24	530.20	675.12	73.19	85.04	100.81	127.31
C	Sonoma (NC)	Annual	2024	389.28	450.28	530.12	675.30	73.17	85.12	100.85	127.48
C	Sonoma (NC)	Annual	2025	389.20	450.39	530.07	675.47	73.17	85.21	100.89	127.63
C	Sonoma (NC)	Annual	2026	388.38	449.63	528.86	674.20	73.19	85.33	100.92	127.79
C	Sonoma (NC)	Annual	2027	388.39	449.84	528.80	674.40	73.21	85.43	100.94	127.93
C	Sonoma (NC)	Annual	2028	388.39	450.05	528.74	674.61	73.21	85.53	100.95	128.07
C	Sonoma (NC)	Annual	2029	388.37	450.26	528.66	674.83	73.22	85.63	100.96	128.20
C	Sonoma (NC)	Annual	2030	388.34	450.46	528.57	675.05	73.22	85.71	100.96	128.32
C	Sonoma (NC)	Annual	2031	388.34	450.68	528.53	675.33	73.23	85.80	100.96	128.45
C	Sonoma (NC)	Annual	2032	388.33	450.87	528.49	675.61	73.23	85.88	100.97	128.57
C	Sonoma (NC)	Annual	2033	388.32	451.04	528.45	675.87	73.24	85.96	100.97	128.69
C	Sonoma (NC)	Annual	2034	388.31	451.20	528.43	676.10	73.25	86.03	100.98	128.79
C	Sonoma (NC)	Annual	2035	388.30	451.32	528.40	676.31	73.25	86.08	100.98	128.89
C	Sonoma (NC)	Summer	2010	405.40	463.97	554.11	693.02	73.44	86.67	100.89	124.24
C	Sonoma (NC)	Summer	2011	405.46	464.55	553.73	693.76	73.35	86.07	100.76	124.42
C	Sonoma (NC)	Summer	2012	405.58	465.14	553.43	694.67	73.28	85.75	100.71	124.64
C	Sonoma (NC)	Summer	2013	405.73	465.65	553.21	695.68	73.24	85.48	100.70	124.89
C	Sonoma (NC)	Summer	2014	405.87	466.08	553.06	696.69	73.21	85.23	100.66	125.14
C	Sonoma (NC)	Summer	2015	405.97	466.45	552.95	697.74	73.15	84.99	100.59	125.42
C	Sonoma (NC)	Summer	2016	404.98	465.53	551.32	696.79	73.14	84.86	100.60	125.69
C	Sonoma (NC)	Summer	2017	405.05	465.86	551.23	697.73	73.11	84.74	100.59	125.97
C	Sonoma (NC)	Summer	2018	405.05	466.14	551.15	698.52	73.05	84.67	100.59	126.25
C	Sonoma (NC)	Summer	2019	405.08	466.43	551.09	699.22	73.04	84.68	100.60	126.51
C	Sonoma (NC)	Summer	2020	405.14	466.72	551.02	699.85	73.12	84.77	100.66	126.75
C	Sonoma (NC)	Summer	2021	405.12	466.94	550.95	700.35	73.17	84.88	100.73	126.95
C	Sonoma (NC)	Summer	2022	405.06	467.10	550.86	700.77	73.19	84.96	100.77	127.13
C	Sonoma (NC)	Summer	2023	404.88	467.22	550.78	701.06	73.19	85.04	100.81	127.31
C	Sonoma (NC)	Summer	2024	404.72	467.34	550.70	701.27	73.17	85.12	100.85	127.48
C	Sonoma (NC)	Summer	2025	404.64	467.50	550.65	701.46	73.17	85.21	100.89	127.63
C	Sonoma (NC)	Summer	2026	403.80	466.76	549.40	700.14	73.19	85.33	100.92	127.79
C	Sonoma (NC)	Summer	2027	403.82	467.03	549.34	700.34	73.21	85.43	100.94	127.93
C	Sonoma (NC)	Summer	2028	403.82	467.29	549.29	700.56	73.21	85.53	100.95	128.07
C	Sonoma (NC)	Summer	2029	403.81	467.55	549.22	700.79	73.22	85.63	100.96	128.20
C	Sonoma (NC)	Summer	2030	403.80	467.80	549.13	701.03	73.22	85.71	100.96	128.32
C	Sonoma (NC)	Summer	2031	403.80	468.07	549.10	701.35	73.23	85.80	100.96	128.45
C	Sonoma (NC)	Summer	2032	403.79	468.29	549.07	701.67	73.23	85.88	100.97	128.57
C	Sonoma (NC)	Summer	2033	403.79	468.49	549.04	701.96	73.24	85.96	100.97	128.69
C	Sonoma (NC)	Summer	2034	403.78	468.67	549.01	702.23	73.25	86.03	100.98	128.79
C	Sonoma (NC)	Summer	2035	403.77	468.80	548.99	702.46	73.25	86.08	100.98	128.89
C	Sonoma (NC)	Winter	2010	383.18	442.11	524.58	656.01	73.44	86.67	100.89	124.24
C	Sonoma (NC)	Winter	2011	383.00	442.03	523.97	656.70	73.35	86.07	100.76	124.42
C	Sonoma (NC)	Winter	2012	382.92	442.12	523.49	657.49	73.28	85.75	100.71	124.64
C	Sonoma (NC)	Winter	2013	382.92	442.20	523.10	658.32	73.24	85.48	100.70	124.89
C	Sonoma (NC)	Winter	2014	382.95	442.27	522.78	659.14	73.21	85.23	100.66	125.14
C	Sonoma (NC)	Winter	2015	382.97	442.33	522.52	659.97	73.15	84.99	100.59	125.42
C	Sonoma (NC)	Winter	2016	382.00	441.23	520.85	658.92	73.14	84.86	100.60	125.69
C	Sonoma (NC)	Winter	2017	382.03	441.35	520.68	659.67	73.11	84.74	100.59	125.97
C	Sonoma (NC)	Winter	2018	382.04	441.46	520.55	660.31	73.05	84.67	100.59	126.25
C	Sonoma (NC)	Winter	2019	382.06	441.60	520.45	660.88	73.04	84.68	100.60	126.51
C	Sonoma (NC)	Winter	2020	382.13	441.75	520.37	661.39	73.12	84.77	100.66	126.75
C	Sonoma (NC)	Winter	2021	382.11	441.85	520.28	661.79	73.17	84.88	100.73	126.95
C	Sonoma (NC)	Winter	2022	382.05	441.88	520.16	662.13	73.19	84.96	100.77	127.13
C	Sonoma (NC)	Winter	2023	381.86	441.88	520.07	662.35	73.19	85.04	100.81	127.31

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Sonoma (NC)	Winter	2024	381.68	441.89	519.99	662.52	73.17	85.12	100.85	127.48
C	Sonoma (NC)	Winter	2025	381.60	441.97	519.94	662.68	73.17	85.21	100.89	127.63
C	Sonoma (NC)	Winter	2026	380.80	441.20	518.76	661.43	73.19	85.33	100.92	127.79
C	Sonoma (NC)	Winter	2027	380.81	441.38	518.69	661.63	73.21	85.43	100.94	127.93
C	Sonoma (NC)	Winter	2028	380.79	441.56	518.63	661.84	73.21	85.53	100.95	128.07
C	Sonoma (NC)	Winter	2029	380.77	441.75	518.54	662.05	73.22	85.63	100.96	128.20
C	Sonoma (NC)	Winter	2030	380.74	441.93	518.44	662.26	73.22	85.71	100.96	128.32
C	Sonoma (NC)	Winter	2031	380.73	442.12	518.40	662.52	73.23	85.80	100.96	128.45
C	Sonoma (NC)	Winter	2032	380.72	442.30	518.36	662.79	73.23	85.88	100.97	128.57
C	Sonoma (NC)	Winter	2033	380.71	442.46	518.33	663.03	73.24	85.96	100.97	128.69
C	Sonoma (NC)	Winter	2034	380.70	442.60	518.30	663.25	73.25	86.03	100.98	128.79
C	Sonoma (NC)	Winter	2035	380.69	442.72	518.27	663.43	73.25	86.08	100.98	128.89
C	Sonoma (SF)	Annual	2010	337.75	387.87	461.89	580.89	73.29	85.42	99.94	124.71
C	Sonoma (SF)	Annual	2011	337.74	388.23	461.68	581.45	73.21	85.10	99.96	124.87
C	Sonoma (SF)	Annual	2012	337.78	388.61	461.51	582.06	73.15	84.87	100.01	125.06
C	Sonoma (SF)	Annual	2013	337.89	388.97	461.38	582.74	73.14	84.69	100.06	125.28
C	Sonoma (SF)	Annual	2014	337.98	389.31	461.27	583.41	73.12	84.55	100.09	125.51
C	Sonoma (SF)	Annual	2015	338.11	389.63	461.19	584.10	73.14	84.44	100.14	125.76
C	Sonoma (SF)	Annual	2016	338.27	389.97	461.13	584.74	73.20	84.38	100.20	126.01
C	Sonoma (SF)	Annual	2017	338.37	390.26	461.08	585.37	73.22	84.32	100.23	126.26
C	Sonoma (SF)	Annual	2018	338.47	390.53	461.05	585.92	73.25	84.30	100.30	126.51
C	Sonoma (SF)	Annual	2019	338.56	390.82	461.02	586.41	73.29	84.40	100.37	126.74
C	Sonoma (SF)	Annual	2020	338.66	391.09	461.01	586.85	73.39	84.53	100.46	126.96
C	Sonoma (SF)	Annual	2021	338.74	391.37	461.00	587.19	73.47	84.71	100.55	127.13
C	Sonoma (SF)	Annual	2022	338.77	391.60	460.98	587.46	73.53	84.86	100.63	127.25
C	Sonoma (SF)	Annual	2023	338.78	391.79	460.96	587.68	73.57	85.00	100.70	127.43
C	Sonoma (SF)	Annual	2024	338.76	391.93	460.93	587.83	73.60	85.12	100.75	127.59
C	Sonoma (SF)	Annual	2025	338.75	392.07	460.92	588.01	73.62	85.23	100.80	127.74
C	Sonoma (SF)	Annual	2026	338.77	392.22	460.89	588.19	73.64	85.34	100.84	127.90
C	Sonoma (SF)	Annual	2027	338.78	392.38	460.87	588.37	73.66	85.43	100.87	128.03
C	Sonoma (SF)	Annual	2028	338.78	392.54	460.84	588.55	73.67	85.53	100.89	128.16
C	Sonoma (SF)	Annual	2029	338.78	392.70	460.81	588.73	73.68	85.62	100.90	128.28
C	Sonoma (SF)	Annual	2030	338.76	392.87	460.79	588.92	73.68	85.70	100.92	128.40
C	Sonoma (SF)	Annual	2031	338.76	393.04	460.77	589.13	73.69	85.78	100.93	128.51
C	Sonoma (SF)	Annual	2032	338.76	393.20	460.76	589.35	73.69	85.86	100.94	128.62
C	Sonoma (SF)	Annual	2033	338.75	393.34	460.74	589.54	73.70	85.93	100.94	128.73
C	Sonoma (SF)	Annual	2034	338.75	393.47	460.73	589.72	73.70	86.00	100.95	128.82
C	Sonoma (SF)	Annual	2035	338.74	393.58	460.71	589.88	73.71	86.06	100.95	128.91
C	Sonoma (SF)	Summer	2010	362.22	413.09	494.52	621.95	73.29	85.42	99.94	124.71
C	Sonoma (SF)	Summer	2011	362.43	413.89	494.43	622.45	73.21	85.10	99.96	124.87
C	Sonoma (SF)	Summer	2012	362.64	414.65	494.39	623.09	73.15	84.87	100.01	125.06
C	Sonoma (SF)	Summer	2013	362.88	415.33	494.38	623.85	73.14	84.69	100.06	125.28
C	Sonoma (SF)	Summer	2014	363.07	415.93	494.41	624.65	73.12	84.55	100.09	125.51
C	Sonoma (SF)	Summer	2015	363.28	416.48	494.45	625.51	73.14	84.44	100.14	125.76
C	Sonoma (SF)	Summer	2016	363.48	417.01	494.48	626.33	73.20	84.38	100.20	126.01
C	Sonoma (SF)	Summer	2017	363.61	417.48	494.51	627.12	73.22	84.32	100.23	126.26
C	Sonoma (SF)	Summer	2018	363.71	417.89	494.51	627.81	73.25	84.30	100.30	126.51
C	Sonoma (SF)	Summer	2019	363.81	418.29	494.51	628.42	73.29	84.40	100.37	126.74
C	Sonoma (SF)	Summer	2020	363.90	418.65	494.49	628.96	73.39	84.53	100.46	126.96
C	Sonoma (SF)	Summer	2021	363.97	419.02	494.47	629.37	73.47	84.71	100.55	127.13
C	Sonoma (SF)	Summer	2022	364.00	419.34	494.43	629.72	73.53	84.86	100.63	127.25
C	Sonoma (SF)	Summer	2023	364.01	419.60	494.40	629.97	73.57	85.00	100.70	127.43
C	Sonoma (SF)	Summer	2024	364.00	419.81	494.37	630.15	73.60	85.12	100.75	127.59
C	Sonoma (SF)	Summer	2025	364.00	420.01	494.34	630.33	73.62	85.23	100.80	127.74

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Sonoma (SF)	Summer	2026	364.02	420.22	494.32	630.51	73.64	85.34	100.84	127.90
C	Sonoma (SF)	Summer	2027	364.03	420.43	494.30	630.69	73.66	85.43	100.87	128.03
C	Sonoma (SF)	Summer	2028	364.04	420.64	494.29	630.87	73.67	85.53	100.89	128.16
C	Sonoma (SF)	Summer	2029	364.04	420.87	494.27	631.06	73.68	85.62	100.90	128.28
C	Sonoma (SF)	Summer	2030	364.04	421.09	494.25	631.26	73.68	85.70	100.92	128.40
C	Sonoma (SF)	Summer	2031	364.04	421.32	494.23	631.51	73.69	85.78	100.93	128.51
C	Sonoma (SF)	Summer	2032	364.05	421.53	494.22	631.77	73.69	85.86	100.94	128.62
C	Sonoma (SF)	Summer	2033	364.05	421.71	494.21	632.00	73.70	85.93	100.94	128.73
C	Sonoma (SF)	Summer	2034	364.04	421.87	494.20	632.22	73.70	86.00	100.95	128.82
C	Sonoma (SF)	Summer	2035	364.04	421.99	494.18	632.42	73.71	86.06	100.95	128.91
C	Sonoma (SF)	Winter	2010	334.63	384.66	457.75	575.67	73.29	85.42	99.94	124.71
C	Sonoma (SF)	Winter	2011	334.60	384.97	457.51	576.23	73.21	85.10	99.96	124.87
C	Sonoma (SF)	Winter	2012	334.62	385.30	457.33	576.85	73.15	84.87	100.01	125.06
C	Sonoma (SF)	Winter	2013	334.71	385.62	457.18	577.51	73.14	84.69	100.06	125.28
C	Sonoma (SF)	Winter	2014	334.78	385.92	457.05	578.16	73.12	84.55	100.09	125.51
C	Sonoma (SF)	Winter	2015	334.91	386.21	456.96	578.83	73.14	84.44	100.14	125.76
C	Sonoma (SF)	Winter	2016	335.06	386.53	456.89	579.45	73.20	84.38	100.20	126.01
C	Sonoma (SF)	Winter	2017	335.16	386.80	456.83	580.06	73.22	84.32	100.23	126.26
C	Sonoma (SF)	Winter	2018	335.26	387.05	456.79	580.59	73.25	84.30	100.30	126.51
C	Sonoma (SF)	Winter	2019	335.35	387.33	456.77	581.07	73.29	84.40	100.37	126.74
C	Sonoma (SF)	Winter	2020	335.45	387.59	456.75	581.50	73.39	84.53	100.46	126.96
C	Sonoma (SF)	Winter	2021	335.53	387.85	456.74	581.82	73.47	84.71	100.55	127.13
C	Sonoma (SF)	Winter	2022	335.56	388.08	456.72	582.09	73.53	84.86	100.63	127.25
C	Sonoma (SF)	Winter	2023	335.57	388.25	456.70	582.30	73.57	85.00	100.70	127.43
C	Sonoma (SF)	Winter	2024	335.55	388.39	456.68	582.45	73.60	85.12	100.75	127.59
C	Sonoma (SF)	Winter	2025	335.54	388.51	456.67	582.62	73.62	85.23	100.80	127.74
C	Sonoma (SF)	Winter	2026	335.56	388.66	456.64	582.81	73.64	85.34	100.84	127.90
C	Sonoma (SF)	Winter	2027	335.57	388.81	456.62	582.99	73.66	85.43	100.87	128.03
C	Sonoma (SF)	Winter	2028	335.57	388.97	456.59	583.17	73.67	85.53	100.89	128.16
C	Sonoma (SF)	Winter	2029	335.56	389.12	456.56	583.35	73.68	85.62	100.90	128.28
C	Sonoma (SF)	Winter	2030	335.55	389.28	456.53	583.54	73.68	85.70	100.92	128.40
C	Sonoma (SF)	Winter	2031	335.55	389.44	456.52	583.74	73.69	85.78	100.93	128.51
C	Sonoma (SF)	Winter	2032	335.54	389.59	456.50	583.96	73.69	85.86	100.94	128.62
C	Sonoma (SF)	Winter	2033	335.54	389.73	456.49	584.15	73.70	85.93	100.94	128.73
C	Sonoma (SF)	Winter	2034	335.53	389.86	456.47	584.32	73.70	86.00	100.95	128.82
C	Sonoma (SF)	Winter	2035	335.52	389.97	456.45	584.47	73.71	86.06	100.95	128.91
C	Stanislaus (SJV)	Annual	2010	347.54	398.75	476.31	598.46	73.30	85.31	100.21	124.28
C	Stanislaus (SJV)	Annual	2011	347.92	399.76	476.16	599.10	73.30	85.02	100.19	124.50
C	Stanislaus (SJV)	Annual	2012	347.75	399.91	475.41	598.84	73.30	84.79	100.22	124.69
C	Stanislaus (SJV)	Annual	2013	348.56	401.20	475.99	600.52	73.33	84.63	100.26	124.96
C	Stanislaus (SJV)	Annual	2014	348.84	401.83	475.95	601.34	73.34	84.51	100.27	125.24
C	Stanislaus (SJV)	Annual	2015	348.56	401.83	475.18	601.35	73.39	84.46	100.29	125.56
C	Stanislaus (SJV)	Annual	2016	348.81	402.38	475.17	602.26	73.47	84.42	100.33	125.89
C	Stanislaus (SJV)	Annual	2017	348.99	402.83	475.15	603.08	73.51	84.39	100.35	126.22
C	Stanislaus (SJV)	Annual	2018	353.62	408.37	481.26	611.54	73.55	84.40	100.38	126.51
C	Stanislaus (SJV)	Annual	2019	353.73	408.70	481.23	612.13	73.61	84.54	100.42	126.77
C	Stanislaus (SJV)	Annual	2020	353.83	408.99	481.21	612.65	73.71	84.70	100.51	127.02
C	Stanislaus (SJV)	Annual	2021	354.71	410.20	482.31	614.49	73.79	84.86	100.60	127.22
C	Stanislaus (SJV)	Annual	2022	354.74	410.42	482.28	614.83	73.84	85.01	100.68	127.40
C	Stanislaus (SJV)	Annual	2023	354.75	410.60	482.25	615.09	73.88	85.14	100.74	127.59
C	Stanislaus (SJV)	Annual	2024	354.87	410.88	482.39	615.50	73.90	85.25	100.79	127.76
C	Stanislaus (SJV)	Annual	2025	354.87	411.01	482.37	615.70	73.92	85.35	100.83	127.93
C	Stanislaus (SJV)	Annual	2026	355.36	411.70	482.95	616.63	73.94	85.46	100.86	128.08
C	Stanislaus (SJV)	Annual	2027	355.37	411.85	482.93	616.79	73.96	85.55	100.89	128.21

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Stanislaus (SJV)	Annual	2028	355.39	412.00	482.91	616.96	73.97	85.64	100.91	128.34
C	Stanislaus (SJV)	Annual	2029	355.40	412.15	482.89	617.13	73.98	85.72	100.92	128.45
C	Stanislaus (SJV)	Annual	2030	355.40	412.30	482.87	617.31	73.98	85.80	100.93	128.56
C	Stanislaus (SJV)	Annual	2031	355.40	412.44	482.87	617.52	73.99	85.88	100.94	128.67
C	Stanislaus (SJV)	Annual	2032	355.40	412.57	482.87	617.73	73.99	85.95	100.95	128.77
C	Stanislaus (SJV)	Annual	2033	355.40	412.68	482.86	617.92	74.00	86.01	100.95	128.87
C	Stanislaus (SJV)	Annual	2034	355.39	412.77	482.86	618.10	74.00	86.07	100.96	128.95
C	Stanislaus (SJV)	Annual	2035	355.39	412.85	482.85	618.26	74.00	86.12	100.96	129.03
C	Stanislaus (SJV)	Summer	2010	381.95	434.06	521.66	655.34	73.30	85.31	100.21	124.28
C	Stanislaus (SJV)	Summer	2011	382.62	435.93	521.78	655.94	73.30	85.02	100.19	124.50
C	Stanislaus (SJV)	Summer	2012	382.57	436.54	521.11	655.56	73.30	84.79	100.22	124.69
C	Stanislaus (SJV)	Summer	2013	383.60	438.42	521.96	657.48	73.33	84.63	100.26	124.96
C	Stanislaus (SJV)	Summer	2014	384.01	439.46	522.13	658.52	73.34	84.51	100.27	125.24
C	Stanislaus (SJV)	Summer	2015	383.81	439.80	521.54	658.80	73.39	84.46	100.29	125.56
C	Stanislaus (SJV)	Summer	2016	384.15	440.64	521.70	660.06	73.47	84.42	100.33	125.89
C	Stanislaus (SJV)	Summer	2017	384.37	441.33	521.79	661.18	73.51	84.39	100.35	126.22
C	Stanislaus (SJV)	Summer	2018	389.43	447.47	528.51	670.57	73.55	84.40	100.38	126.51
C	Stanislaus (SJV)	Summer	2019	389.52	447.88	528.49	671.33	73.61	84.54	100.42	126.77
C	Stanislaus (SJV)	Summer	2020	389.59	448.25	528.44	671.98	73.71	84.70	100.51	127.02
C	Stanislaus (SJV)	Summer	2021	390.52	449.59	529.58	674.02	73.79	84.86	100.60	127.22
C	Stanislaus (SJV)	Summer	2022	390.53	449.87	529.51	674.42	73.84	85.01	100.68	127.40
C	Stanislaus (SJV)	Summer	2023	390.52	450.11	529.44	674.71	73.88	85.14	100.74	127.59
C	Stanislaus (SJV)	Summer	2024	390.61	450.43	529.53	675.12	73.90	85.25	100.79	127.76
C	Stanislaus (SJV)	Summer	2025	390.61	450.61	529.49	675.31	73.92	85.35	100.83	127.93
C	Stanislaus (SJV)	Summer	2026	391.12	451.38	530.07	676.21	73.94	85.46	100.86	128.08
C	Stanislaus (SJV)	Summer	2027	391.16	451.60	530.04	676.32	73.96	85.55	100.89	128.21
C	Stanislaus (SJV)	Summer	2028	391.19	451.82	530.03	676.46	73.97	85.64	100.91	128.34
C	Stanislaus (SJV)	Summer	2029	391.22	452.04	530.02	676.62	73.98	85.72	100.92	128.45
C	Stanislaus (SJV)	Summer	2030	391.24	452.26	530.01	676.80	73.98	85.80	100.93	128.56
C	Stanislaus (SJV)	Summer	2031	391.23	452.46	530.03	677.05	73.99	85.88	100.94	128.67
C	Stanislaus (SJV)	Summer	2032	391.23	452.64	530.04	677.30	73.99	85.95	100.95	128.77
C	Stanislaus (SJV)	Summer	2033	391.23	452.78	530.05	677.55	74.00	86.01	100.95	128.87
C	Stanislaus (SJV)	Summer	2034	391.23	452.91	530.06	677.79	74.00	86.07	100.96	128.95
C	Stanislaus (SJV)	Summer	2035	391.22	453.00	530.06	678.01	74.00	86.12	100.96	129.03
C	Stanislaus (SJV)	Winter	2010	335.59	386.49	460.56	578.69	73.30	85.31	100.21	124.28
C	Stanislaus (SJV)	Winter	2011	335.86	387.20	460.31	579.35	73.30	85.02	100.19	124.50
C	Stanislaus (SJV)	Winter	2012	335.65	387.18	459.53	579.14	73.30	84.79	100.22	124.69
C	Stanislaus (SJV)	Winter	2013	336.39	388.28	460.03	580.73	73.33	84.63	100.26	124.96
C	Stanislaus (SJV)	Winter	2014	336.63	388.77	459.91	581.48	73.34	84.51	100.27	125.24
C	Stanislaus (SJV)	Winter	2015	336.31	388.64	459.08	581.38	73.39	84.46	100.29	125.56
C	Stanislaus (SJV)	Winter	2016	336.53	389.08	459.00	582.17	73.47	84.42	100.33	125.89
C	Stanislaus (SJV)	Winter	2017	336.70	389.46	458.95	582.89	73.51	84.39	100.35	126.22
C	Stanislaus (SJV)	Winter	2018	341.17	394.78	464.84	591.02	73.55	84.40	100.38	126.51
C	Stanislaus (SJV)	Winter	2019	341.29	395.08	464.81	591.56	73.61	84.54	100.42	126.77
C	Stanislaus (SJV)	Winter	2020	341.40	395.35	464.80	592.04	73.71	84.70	100.51	127.02
C	Stanislaus (SJV)	Winter	2021	342.27	396.52	465.89	593.81	73.79	84.86	100.60	127.22
C	Stanislaus (SJV)	Winter	2022	342.31	396.72	465.88	594.13	73.84	85.01	100.68	127.40
C	Stanislaus (SJV)	Winter	2023	342.33	396.88	465.86	594.38	73.88	85.14	100.74	127.59
C	Stanislaus (SJV)	Winter	2024	342.46	397.16	466.03	594.81	73.90	85.25	100.79	127.76
C	Stanislaus (SJV)	Winter	2025	342.47	397.27	466.01	595.01	73.92	85.35	100.83	127.93
C	Stanislaus (SJV)	Winter	2026	342.95	397.93	466.61	595.97	73.94	85.46	100.86	128.08
C	Stanislaus (SJV)	Winter	2027	342.97	398.06	466.59	596.15	73.96	85.55	100.89	128.21
C	Stanislaus (SJV)	Winter	2028	342.97	398.19	466.57	596.32	73.97	85.64	100.91	128.34
C	Stanislaus (SJV)	Winter	2029	342.97	398.32	466.55	596.50	73.98	85.72	100.92	128.45

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Stanislaus (SJV)	Winter	2030	342.97	398.44	466.53	596.68	73.98	85.80	100.93	128.56
C	Stanislaus (SJV)	Winter	2031	342.97	398.56	466.52	596.87	73.99	85.88	100.94	128.67
C	Stanislaus (SJV)	Winter	2032	342.97	398.67	466.51	597.07	73.99	85.95	100.95	128.77
C	Stanislaus (SJV)	Winter	2033	342.97	398.77	466.50	597.24	74.00	86.01	100.95	128.87
C	Stanislaus (SJV)	Winter	2034	342.97	398.86	466.49	597.40	74.00	86.07	100.96	128.95
C	Stanislaus (SJV)	Winter	2035	342.97	398.93	466.48	597.54	74.00	86.12	100.96	129.03
C	Sutter (SV)	Annual	2010	318.92	373.37	437.75	547.81	73.35	93.29	100.32	124.62
C	Sutter (SV)	Annual	2011	319.09	372.86	437.29	548.53	73.38	91.65	100.31	124.85
C	Sutter (SV)	Annual	2012	319.27	372.51	436.94	549.31	73.42	90.37	100.33	125.11
C	Sutter (SV)	Annual	2013	319.44	372.11	436.67	550.12	73.45	89.10	100.35	125.39
C	Sutter (SV)	Annual	2014	319.59	371.91	436.46	550.89	73.47	88.28	100.38	125.67
C	Sutter (SV)	Annual	2015	319.76	371.61	436.29	551.68	73.54	87.32	100.43	125.96
C	Sutter (SV)	Annual	2016	319.90	371.42	436.15	552.41	73.59	86.63	100.48	126.25
C	Sutter (SV)	Annual	2017	320.00	371.27	436.03	553.09	73.62	86.04	100.51	126.55
C	Sutter (SV)	Annual	2018	320.08	371.06	435.93	553.68	73.65	85.42	100.55	126.82
C	Sutter (SV)	Annual	2019	319.95	370.85	435.58	553.80	73.68	85.29	100.60	127.06
C	Sutter (SV)	Annual	2020	320.03	370.87	435.52	554.22	73.77	85.28	100.67	127.27
C	Sutter (SV)	Annual	2021	320.09	371.00	435.45	554.53	73.84	85.39	100.74	127.43
C	Sutter (SV)	Annual	2022	320.10	371.10	435.39	554.80	73.89	85.49	100.80	127.58
C	Sutter (SV)	Annual	2023	320.09	371.18	435.33	555.01	73.92	85.56	100.84	127.75
C	Sutter (SV)	Annual	2024	320.06	371.22	435.28	555.15	73.94	85.63	100.88	127.90
C	Sutter (SV)	Annual	2025	320.07	371.28	435.23	555.29	73.96	85.70	100.91	128.05
C	Sutter (SV)	Annual	2026	320.08	371.36	435.18	555.44	73.98	85.76	100.93	128.18
C	Sutter (SV)	Annual	2027	320.09	371.42	435.13	555.59	73.99	85.82	100.95	128.31
C	Sutter (SV)	Annual	2028	320.10	371.49	435.09	555.75	74.00	85.87	100.96	128.42
C	Sutter (SV)	Annual	2029	320.10	371.57	435.03	555.90	74.01	85.91	100.96	128.53
C	Sutter (SV)	Annual	2030	320.10	371.64	434.98	556.07	74.01	85.96	100.96	128.63
C	Sutter (SV)	Annual	2031	320.09	371.71	434.96	556.25	74.02	86.00	100.97	128.73
C	Sutter (SV)	Annual	2032	320.09	371.77	434.94	556.44	74.02	86.04	100.97	128.83
C	Sutter (SV)	Annual	2033	320.08	371.83	434.92	556.61	74.03	86.08	100.97	128.92
C	Sutter (SV)	Annual	2034	320.08	371.88	434.90	556.76	74.03	86.11	100.98	129.00
C	Sutter (SV)	Annual	2035	320.07	371.92	434.88	556.90	74.03	86.14	100.98	129.08
C	Sutter (SV)	Summer	2010	354.18	409.96	483.57	606.30	73.35	93.29	100.32	124.62
C	Sutter (SV)	Summer	2011	354.64	410.22	483.65	607.07	73.38	91.65	100.31	124.85
C	Sutter (SV)	Summer	2012	355.05	410.47	483.72	608.00	73.42	90.37	100.33	125.11
C	Sutter (SV)	Summer	2013	355.40	410.65	483.78	609.02	73.45	89.10	100.35	125.39
C	Sutter (SV)	Summer	2014	355.68	410.81	483.83	610.04	73.47	88.28	100.38	125.67
C	Sutter (SV)	Summer	2015	355.95	410.91	483.85	611.10	73.54	87.32	100.43	125.96
C	Sutter (SV)	Summer	2016	356.16	411.00	483.85	612.11	73.59	86.63	100.48	126.25
C	Sutter (SV)	Summer	2017	356.29	411.07	483.81	613.03	73.62	86.04	100.51	126.55
C	Sutter (SV)	Summer	2018	356.37	411.10	483.72	613.81	73.65	85.42	100.55	126.82
C	Sutter (SV)	Summer	2019	356.22	410.93	483.33	614.02	73.68	85.29	100.60	127.06
C	Sutter (SV)	Summer	2020	356.26	410.99	483.23	614.53	73.77	85.28	100.67	127.27
C	Sutter (SV)	Summer	2021	356.29	411.17	483.13	614.91	73.84	85.39	100.74	127.43
C	Sutter (SV)	Summer	2022	356.29	411.33	483.05	615.24	73.89	85.49	100.80	127.58
C	Sutter (SV)	Summer	2023	356.27	411.46	482.98	615.49	73.92	85.56	100.84	127.75
C	Sutter (SV)	Summer	2024	356.26	411.55	482.91	615.61	73.94	85.63	100.88	127.90
C	Sutter (SV)	Summer	2025	356.28	411.64	482.86	615.74	73.96	85.70	100.91	128.05
C	Sutter (SV)	Summer	2026	356.31	411.75	482.80	615.87	73.98	85.76	100.93	128.18
C	Sutter (SV)	Summer	2027	356.33	411.83	482.77	616.01	73.99	85.82	100.95	128.31
C	Sutter (SV)	Summer	2028	356.36	411.94	482.75	616.16	74.00	85.87	100.96	128.42
C	Sutter (SV)	Summer	2029	356.37	412.05	482.71	616.33	74.01	85.91	100.96	128.53
C	Sutter (SV)	Summer	2030	356.38	412.16	482.69	616.52	74.01	85.96	100.96	128.63
C	Sutter (SV)	Summer	2031	356.37	412.24	482.71	616.77	74.02	86.00	100.97	128.73

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Sutter (SV)	Summer	2032	356.36	412.32	482.72	617.01	74.02	86.04	100.97	128.83
C	Sutter (SV)	Summer	2033	356.35	412.39	482.72	617.23	74.03	86.08	100.97	128.92
C	Sutter (SV)	Summer	2034	356.34	412.46	482.72	617.45	74.03	86.11	100.98	129.00
C	Sutter (SV)	Summer	2035	356.34	412.51	482.71	617.63	74.03	86.14	100.98	129.08
C	Sutter (SV)	Winter	2010	308.69	362.76	424.46	530.84	73.35	93.29	100.32	124.62
C	Sutter (SV)	Winter	2011	308.77	362.02	423.84	531.54	73.38	91.65	100.31	124.85
C	Sutter (SV)	Winter	2012	308.88	361.49	423.37	532.28	73.42	90.37	100.33	125.11
C	Sutter (SV)	Winter	2013	309.01	360.92	423.00	533.03	73.45	89.10	100.35	125.39
C	Sutter (SV)	Winter	2014	309.11	360.62	422.71	533.73	73.47	88.28	100.38	125.67
C	Sutter (SV)	Winter	2015	309.25	360.21	422.48	534.44	73.54	87.32	100.43	125.96
C	Sutter (SV)	Winter	2016	309.38	359.94	422.31	535.09	73.59	86.63	100.48	126.25
C	Sutter (SV)	Winter	2017	309.47	359.72	422.17	535.69	73.62	86.04	100.51	126.55
C	Sutter (SV)	Winter	2018	309.55	359.44	422.06	536.23	73.65	85.42	100.55	126.82
C	Sutter (SV)	Winter	2019	309.43	359.22	421.72	536.32	73.68	85.29	100.60	127.06
C	Sutter (SV)	Winter	2020	309.51	359.22	421.66	536.71	73.77	85.28	100.67	127.27
C	Sutter (SV)	Winter	2021	309.58	359.34	421.61	537.00	73.84	85.39	100.74	127.43
C	Sutter (SV)	Winter	2022	309.60	359.42	421.56	537.26	73.89	85.49	100.80	127.58
C	Sutter (SV)	Winter	2023	309.59	359.48	421.50	537.45	73.92	85.56	100.84	127.75
C	Sutter (SV)	Winter	2024	309.55	359.52	421.45	537.60	73.94	85.63	100.88	127.90
C	Sutter (SV)	Winter	2025	309.55	359.57	421.41	537.75	73.96	85.70	100.91	128.05
C	Sutter (SV)	Winter	2026	309.57	359.64	421.35	537.90	73.98	85.76	100.93	128.18
C	Sutter (SV)	Winter	2027	309.57	359.69	421.30	538.05	73.99	85.82	100.95	128.31
C	Sutter (SV)	Winter	2028	309.58	359.75	421.25	538.21	74.00	85.87	100.96	128.42
C	Sutter (SV)	Winter	2029	309.57	359.81	421.19	538.36	74.01	85.91	100.96	128.53
C	Sutter (SV)	Winter	2030	309.56	359.88	421.13	538.52	74.01	85.96	100.96	128.63
C	Sutter (SV)	Winter	2031	309.56	359.94	421.10	538.69	74.02	86.00	100.97	128.73
C	Sutter (SV)	Winter	2032	309.56	360.00	421.07	538.86	74.02	86.04	100.97	128.83
C	Sutter (SV)	Winter	2033	309.56	360.05	421.04	539.01	74.03	86.08	100.97	128.92
C	Sutter (SV)	Winter	2034	309.55	360.10	421.02	539.15	74.03	86.11	100.98	129.00
C	Sutter (SV)	Winter	2035	309.55	360.14	421.00	539.27	74.03	86.14	100.98	129.08
C	Tehama (SV)	Annual	2010	347.71	408.08	478.44	596.20	73.92	97.65	101.75	125.26
C	Tehama (SV)	Annual	2011	347.75	407.21	477.63	596.79	73.75	95.12	101.53	125.31
C	Tehama (SV)	Annual	2012	347.86	406.66	477.01	597.48	73.65	93.32	101.40	125.42
C	Tehama (SV)	Annual	2013	347.97	406.10	476.53	598.29	73.54	91.52	101.28	125.55
C	Tehama (SV)	Annual	2014	348.09	405.68	476.15	599.09	73.46	90.11	101.17	125.71
C	Tehama (SV)	Annual	2015	348.24	405.38	475.85	599.96	73.44	88.97	101.03	125.89
C	Tehama (SV)	Annual	2016	348.39	405.05	475.61	600.78	73.43	87.78	100.95	126.12
C	Tehama (SV)	Annual	2017	348.50	404.72	475.41	601.55	73.42	86.61	100.84	126.35
C	Tehama (SV)	Annual	2018	348.57	404.51	475.24	602.23	73.38	85.79	100.77	126.58
C	Tehama (SV)	Annual	2019	348.67	404.46	475.11	602.83	73.42	85.46	100.74	126.78
C	Tehama (SV)	Annual	2020	348.75	404.42	475.00	603.36	73.52	85.32	100.77	126.99
C	Tehama (SV)	Annual	2021	348.82	404.51	474.91	603.73	73.60	85.40	100.84	127.12
C	Tehama (SV)	Annual	2022	348.84	404.58	474.81	603.99	73.65	85.48	100.88	127.15
C	Tehama (SV)	Annual	2023	348.83	404.65	474.72	604.17	73.68	85.54	100.91	127.32
C	Tehama (SV)	Annual	2024	348.79	404.72	474.64	604.33	73.69	85.61	100.94	127.48
C	Tehama (SV)	Annual	2025	348.78	404.78	474.58	604.54	73.71	85.67	100.96	127.66
C	Tehama (SV)	Annual	2026	348.80	404.87	474.51	604.75	73.74	85.74	100.98	127.82
C	Tehama (SV)	Annual	2027	348.82	404.95	474.43	604.97	73.75	85.80	100.99	127.98
C	Tehama (SV)	Annual	2028	348.82	405.02	474.36	605.19	73.76	85.86	100.99	128.12
C	Tehama (SV)	Annual	2029	348.82	405.11	474.28	605.40	73.77	85.91	100.98	128.26
C	Tehama (SV)	Annual	2030	348.81	405.19	474.20	605.62	73.77	85.96	100.97	128.38
C	Tehama (SV)	Annual	2031	348.81	405.27	474.16	605.87	73.78	86.01	100.97	128.51
C	Tehama (SV)	Annual	2032	348.81	405.34	474.13	606.13	73.78	86.06	100.97	128.63
C	Tehama (SV)	Annual	2033	348.80	405.40	474.10	606.35	73.79	86.10	100.97	128.74

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Tehama (SV)	Annual	2034	348.80	405.45	474.07	606.55	73.79	86.14	100.97	128.85
C	Tehama (SV)	Annual	2035	348.79	405.50	474.05	606.73	73.80	86.17	100.98	128.94
C	Tehama (SV)	Summer	2010	383.41	444.94	524.62	654.31	73.92	97.65	101.75	125.26
C	Tehama (SV)	Summer	2011	383.77	445.00	524.52	654.97	73.75	95.12	101.53	125.31
C	Tehama (SV)	Summer	2012	384.14	445.10	524.43	655.86	73.65	93.32	101.40	125.42
C	Tehama (SV)	Summer	2013	384.45	445.13	524.35	656.99	73.54	91.52	101.28	125.55
C	Tehama (SV)	Summer	2014	384.73	445.13	524.29	658.11	73.46	90.11	101.17	125.71
C	Tehama (SV)	Summer	2015	385.00	445.18	524.25	659.39	73.44	88.97	101.03	125.89
C	Tehama (SV)	Summer	2016	385.23	445.19	524.18	660.60	73.43	87.78	100.95	126.12
C	Tehama (SV)	Summer	2017	385.39	445.19	524.07	661.71	73.42	86.61	100.84	126.35
C	Tehama (SV)	Summer	2018	385.47	445.18	523.93	662.69	73.38	85.79	100.77	126.58
C	Tehama (SV)	Summer	2019	385.58	445.24	523.81	663.55	73.42	85.46	100.74	126.78
C	Tehama (SV)	Summer	2020	385.65	445.32	523.70	664.29	73.52	85.32	100.77	126.99
C	Tehama (SV)	Summer	2021	385.70	445.43	523.58	664.83	73.60	85.40	100.84	127.12
C	Tehama (SV)	Summer	2022	385.72	445.55	523.48	665.26	73.65	85.48	100.88	127.15
C	Tehama (SV)	Summer	2023	385.71	445.67	523.40	665.55	73.68	85.54	100.91	127.32
C	Tehama (SV)	Summer	2024	385.66	445.84	523.33	665.79	73.69	85.61	100.94	127.48
C	Tehama (SV)	Summer	2025	385.66	445.99	523.29	666.03	73.71	85.67	100.96	127.66
C	Tehama (SV)	Summer	2026	385.69	446.14	523.22	666.24	73.74	85.74	100.98	127.82
C	Tehama (SV)	Summer	2027	385.72	446.27	523.16	666.46	73.75	85.80	100.99	127.98
C	Tehama (SV)	Summer	2028	385.74	446.39	523.12	666.69	73.76	85.86	100.99	128.12
C	Tehama (SV)	Summer	2029	385.76	446.52	523.06	666.94	73.77	85.91	100.98	128.26
C	Tehama (SV)	Summer	2030	385.77	446.65	523.02	667.20	73.77	85.96	100.97	128.38
C	Tehama (SV)	Summer	2031	385.77	446.77	523.01	667.51	73.78	86.01	100.97	128.51
C	Tehama (SV)	Summer	2032	385.77	446.86	523.00	667.82	73.78	86.06	100.97	128.63
C	Tehama (SV)	Summer	2033	385.77	446.94	522.99	668.11	73.79	86.10	100.97	128.74
C	Tehama (SV)	Summer	2034	385.77	447.00	522.97	668.39	73.79	86.14	100.97	128.85
C	Tehama (SV)	Summer	2035	385.76	447.05	522.96	668.63	73.80	86.17	100.98	128.94
C	Tehama (SV)	Winter	2010	339.88	399.98	468.30	583.44	73.92	97.65	101.75	125.26
C	Tehama (SV)	Winter	2011	339.84	398.91	467.33	584.01	73.75	95.12	101.53	125.31
C	Tehama (SV)	Winter	2012	339.89	398.22	466.60	584.66	73.65	93.32	101.40	125.42
C	Tehama (SV)	Winter	2013	339.96	397.53	466.03	585.41	73.54	91.52	101.28	125.55
C	Tehama (SV)	Winter	2014	340.05	397.02	465.58	586.13	73.46	90.11	101.17	125.71
C	Tehama (SV)	Winter	2015	340.18	396.64	465.23	586.91	73.44	88.97	101.03	125.89
C	Tehama (SV)	Winter	2016	340.30	396.23	464.95	587.65	73.43	87.78	100.95	126.12
C	Tehama (SV)	Winter	2017	340.40	395.84	464.72	588.34	73.42	86.61	100.84	126.35
C	Tehama (SV)	Winter	2018	340.46	395.57	464.55	588.96	73.38	85.79	100.77	126.58
C	Tehama (SV)	Winter	2019	340.57	395.50	464.42	589.50	73.42	85.46	100.74	126.78
C	Tehama (SV)	Winter	2020	340.65	395.45	464.31	589.99	73.52	85.32	100.77	126.99
C	Tehama (SV)	Winter	2021	340.72	395.53	464.22	590.32	73.60	85.40	100.84	127.12
C	Tehama (SV)	Winter	2022	340.75	395.59	464.13	590.54	73.65	85.48	100.88	127.15
C	Tehama (SV)	Winter	2023	340.74	395.64	464.04	590.70	73.68	85.54	100.91	127.32
C	Tehama (SV)	Winter	2024	340.69	395.69	463.95	590.84	73.69	85.61	100.94	127.48
C	Tehama (SV)	Winter	2025	340.69	395.73	463.89	591.04	73.71	85.67	100.96	127.66
C	Tehama (SV)	Winter	2026	340.71	395.81	463.81	591.25	73.74	85.74	100.98	127.82
C	Tehama (SV)	Winter	2027	340.72	395.87	463.73	591.47	73.75	85.80	100.99	127.98
C	Tehama (SV)	Winter	2028	340.72	395.94	463.66	591.68	73.76	85.86	100.99	128.12
C	Tehama (SV)	Winter	2029	340.71	396.01	463.57	591.89	73.77	85.91	100.98	128.26
C	Tehama (SV)	Winter	2030	340.70	396.08	463.49	592.11	73.77	85.96	100.97	128.38
C	Tehama (SV)	Winter	2031	340.69	396.15	463.44	592.34	73.78	86.01	100.97	128.51
C	Tehama (SV)	Winter	2032	340.69	396.22	463.40	592.58	73.78	86.06	100.97	128.63
C	Tehama (SV)	Winter	2033	340.69	396.28	463.36	592.79	73.79	86.10	100.97	128.74
C	Tehama (SV)	Winter	2034	340.68	396.33	463.33	592.98	73.79	86.14	100.97	128.85
C	Tehama (SV)	Winter	2035	340.68	396.38	463.31	593.14	73.80	86.17	100.98	128.94

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Trinity (NC)	Annual	2010	418.09	487.84	574.09	715.19	74.90	92.99	102.21	125.69
C	Trinity (NC)	Annual	2011	417.85	486.98	572.91	715.90	74.77	91.52	101.90	125.69
C	Trinity (NC)	Annual	2012	417.49	486.30	572.01	716.66	74.38	90.31	101.80	125.77
C	Trinity (NC)	Annual	2013	417.29	485.72	571.27	717.54	74.11	89.30	101.63	125.88
C	Trinity (NC)	Annual	2014	417.30	485.26	570.68	718.45	74.02	88.48	101.43	125.98
C	Trinity (NC)	Annual	2015	417.20	484.84	570.20	719.31	73.81	87.68	101.29	126.15
C	Trinity (NC)	Annual	2016	417.21	484.59	569.80	720.22	73.74	87.14	101.13	126.34
C	Trinity (NC)	Annual	2017	417.18	484.28	569.49	721.03	73.63	86.51	101.07	126.56
C	Trinity (NC)	Annual	2018	417.15	483.99	569.22	721.67	73.54	85.93	100.99	126.78
C	Trinity (NC)	Annual	2019	417.05	483.85	568.99	722.23	73.40	85.63	100.89	126.97
C	Trinity (NC)	Annual	2020	417.08	483.72	568.81	722.69	73.47	85.48	100.93	127.16
C	Trinity (NC)	Annual	2021	417.02	483.56	568.64	722.95	73.51	85.45	100.98	127.20
C	Trinity (NC)	Annual	2022	416.96	483.49	568.47	723.19	73.53	85.47	101.00	127.30
C	Trinity (NC)	Annual	2023	416.81	483.40	568.28	723.33	73.52	85.47	101.00	127.46
C	Trinity (NC)	Annual	2024	416.55	483.36	568.13	723.43	73.46	85.51	101.02	127.61
C	Trinity (NC)	Annual	2025	416.37	483.39	568.02	723.46	73.44	85.56	101.04	127.73
C	Trinity (NC)	Annual	2026	416.37	483.57	567.87	723.62	73.46	85.66	101.04	127.88
C	Trinity (NC)	Annual	2027	416.36	483.73	567.74	723.82	73.47	85.75	101.05	128.02
C	Trinity (NC)	Annual	2028	416.34	483.90	567.63	724.04	73.47	85.83	101.05	128.17
C	Trinity (NC)	Annual	2029	416.30	484.08	567.45	724.24	73.47	85.91	101.03	128.29
C	Trinity (NC)	Annual	2030	416.26	484.24	567.32	724.45	73.47	85.98	101.01	128.41
C	Trinity (NC)	Annual	2031	416.26	484.41	567.24	724.73	73.48	86.05	101.01	128.54
C	Trinity (NC)	Annual	2032	416.25	484.55	567.18	725.01	73.48	86.12	101.01	128.66
C	Trinity (NC)	Annual	2033	416.24	484.67	567.13	725.26	73.49	86.17	101.01	128.78
C	Trinity (NC)	Annual	2034	416.24	484.78	567.09	725.48	73.49	86.23	101.01	128.88
C	Trinity (NC)	Annual	2035	416.23	484.86	567.05	725.68	73.50	86.27	101.01	128.97
C	Trinity (NC)	Summer	2010	427.59	496.70	586.45	730.35	74.90	92.99	102.21	125.69
C	Trinity (NC)	Summer	2011	427.49	496.26	585.45	731.14	74.77	91.52	101.90	125.69
C	Trinity (NC)	Summer	2012	427.24	495.90	584.69	732.01	74.38	90.31	101.80	125.77
C	Trinity (NC)	Summer	2013	427.13	495.58	584.07	733.04	74.11	89.30	101.63	125.88
C	Trinity (NC)	Summer	2014	427.18	495.32	583.59	734.09	74.02	88.48	101.43	125.98
C	Trinity (NC)	Summer	2015	427.12	495.08	583.19	735.09	73.81	87.68	101.29	126.15
C	Trinity (NC)	Summer	2016	427.16	494.97	582.86	736.16	73.74	87.14	101.13	126.34
C	Trinity (NC)	Summer	2017	427.13	494.79	582.58	737.09	73.63	86.51	101.07	126.56
C	Trinity (NC)	Summer	2018	427.09	494.61	582.34	737.83	73.54	85.93	100.99	126.78
C	Trinity (NC)	Summer	2019	426.99	494.56	582.13	738.48	73.40	85.63	100.89	126.97
C	Trinity (NC)	Summer	2020	427.02	494.51	581.96	739.02	73.47	85.48	100.93	127.16
C	Trinity (NC)	Summer	2021	426.96	494.42	581.80	739.36	73.51	85.45	100.98	127.20
C	Trinity (NC)	Summer	2022	426.90	494.41	581.63	739.65	73.53	85.47	101.00	127.30
C	Trinity (NC)	Summer	2023	426.75	494.37	581.45	739.84	73.52	85.47	101.00	127.46
C	Trinity (NC)	Summer	2024	426.50	494.37	581.32	739.98	73.46	85.51	101.02	127.61
C	Trinity (NC)	Summer	2025	426.32	494.44	581.21	740.06	73.44	85.56	101.04	127.73
C	Trinity (NC)	Summer	2026	426.33	494.65	581.06	740.22	73.46	85.66	101.04	127.88
C	Trinity (NC)	Summer	2027	426.33	494.84	580.95	740.44	73.47	85.75	101.05	128.02
C	Trinity (NC)	Summer	2028	426.32	495.05	580.84	740.67	73.47	85.83	101.05	128.17
C	Trinity (NC)	Summer	2029	426.29	495.26	580.68	740.90	73.47	85.91	101.03	128.29
C	Trinity (NC)	Summer	2030	426.26	495.45	580.55	741.12	73.47	85.98	101.01	128.41
C	Trinity (NC)	Summer	2031	426.26	495.65	580.49	741.43	73.48	86.05	101.01	128.54
C	Trinity (NC)	Summer	2032	426.25	495.81	580.43	741.74	73.48	86.12	101.01	128.66
C	Trinity (NC)	Summer	2033	426.25	495.94	580.39	742.01	73.49	86.17	101.01	128.78
C	Trinity (NC)	Summer	2034	426.24	496.05	580.35	742.25	73.49	86.23	101.01	128.88
C	Trinity (NC)	Summer	2035	426.23	496.13	580.31	742.47	73.50	86.27	101.01	128.97
C	Trinity (NC)	Winter	2010	410.15	480.44	563.75	702.52	74.90	92.99	102.21	125.69
C	Trinity (NC)	Winter	2011	409.80	479.23	562.42	703.15	74.77	91.52	101.90	125.69

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Trinity (NC)	Winter	2012	409.34	478.27	561.40	703.82	74.38	90.31	101.80	125.77
C	Trinity (NC)	Winter	2013	409.07	477.47	560.57	704.58	74.11	89.30	101.63	125.88
C	Trinity (NC)	Winter	2014	409.04	476.85	559.89	705.37	74.02	88.48	101.43	125.98
C	Trinity (NC)	Winter	2015	408.90	476.28	559.34	706.11	73.81	87.68	101.29	126.15
C	Trinity (NC)	Winter	2016	408.90	475.91	558.88	706.90	73.74	87.14	101.13	126.34
C	Trinity (NC)	Winter	2017	408.86	475.49	558.54	707.60	73.63	86.51	101.07	126.56
C	Trinity (NC)	Winter	2018	408.83	475.10	558.24	708.16	73.54	85.93	100.99	126.78
C	Trinity (NC)	Winter	2019	408.73	474.90	557.99	708.64	73.40	85.63	100.89	126.97
C	Trinity (NC)	Winter	2020	408.76	474.70	557.81	709.04	73.47	85.48	100.93	127.16
C	Trinity (NC)	Winter	2021	408.71	474.47	557.65	709.23	73.51	85.45	100.98	127.20
C	Trinity (NC)	Winter	2022	408.65	474.36	557.46	709.42	73.53	85.47	101.00	127.30
C	Trinity (NC)	Winter	2023	408.50	474.23	557.26	709.52	73.52	85.47	101.00	127.46
C	Trinity (NC)	Winter	2024	408.24	474.14	557.10	709.59	73.46	85.51	101.02	127.61
C	Trinity (NC)	Winter	2025	408.05	474.15	556.99	709.59	73.44	85.56	101.04	127.73
C	Trinity (NC)	Winter	2026	408.04	474.30	556.83	709.73	73.46	85.66	101.04	127.88
C	Trinity (NC)	Winter	2027	408.03	474.43	556.70	709.93	73.47	85.75	101.05	128.02
C	Trinity (NC)	Winter	2028	407.99	474.58	556.58	710.14	73.47	85.83	101.05	128.17
C	Trinity (NC)	Winter	2029	407.95	474.73	556.39	710.32	73.47	85.91	101.03	128.29
C	Trinity (NC)	Winter	2030	407.90	474.86	556.25	710.50	73.47	85.98	101.01	128.41
C	Trinity (NC)	Winter	2031	407.89	475.01	556.16	710.77	73.48	86.05	101.01	128.54
C	Trinity (NC)	Winter	2032	407.89	475.14	556.09	711.03	73.48	86.12	101.01	128.66
C	Trinity (NC)	Winter	2033	407.88	475.25	556.04	711.25	73.49	86.17	101.01	128.78
C	Trinity (NC)	Winter	2034	407.87	475.35	555.99	711.45	73.49	86.23	101.01	128.88
C	Trinity (NC)	Winter	2035	407.86	475.43	555.96	711.63	73.50	86.27	101.01	128.97
C	Tulare (SJV)	Annual	2010	336.36	385.47	460.79	577.56	73.50	85.81	100.77	124.48
C	Tulare (SJV)	Annual	2011	336.57	386.30	460.48	578.46	73.48	85.49	100.70	124.76
C	Tulare (SJV)	Annual	2012	336.33	386.39	459.69	578.44	73.48	85.24	100.68	125.00
C	Tulare (SJV)	Annual	2013	335.07	385.21	457.53	576.70	73.50	85.03	100.65	125.26
C	Tulare (SJV)	Annual	2014	335.24	385.64	457.39	577.46	73.52	84.88	100.59	125.53
C	Tulare (SJV)	Annual	2015	332.48	382.78	453.30	573.37	73.54	84.80	100.57	125.86
C	Tulare (SJV)	Annual	2016	332.66	383.22	453.22	574.24	73.60	84.76	100.58	126.18
C	Tulare (SJV)	Annual	2017	332.78	383.58	453.15	575.03	73.62	84.70	100.55	126.50
C	Tulare (SJV)	Annual	2018	330.99	381.76	450.54	572.51	73.64	84.68	100.55	126.81
C	Tulare (SJV)	Annual	2019	331.07	382.11	450.49	573.12	73.68	84.78	100.57	127.09
C	Tulare (SJV)	Annual	2020	331.14	382.41	450.44	573.65	73.77	84.92	100.64	127.34
C	Tulare (SJV)	Annual	2021	332.08	383.64	451.61	575.50	73.83	85.06	100.71	127.52
C	Tulare (SJV)	Annual	2022	332.08	383.82	451.55	575.74	73.88	85.19	100.77	127.66
C	Tulare (SJV)	Annual	2023	332.06	383.97	451.49	575.93	73.91	85.30	100.82	127.83
C	Tulare (SJV)	Annual	2024	331.57	383.61	450.80	575.35	73.92	85.42	100.86	128.00
C	Tulare (SJV)	Annual	2025	331.58	383.79	450.78	575.58	73.94	85.52	100.89	128.17
C	Tulare (SJV)	Annual	2026	328.97	380.93	447.18	571.21	73.96	85.62	100.91	128.32
C	Tulare (SJV)	Annual	2027	328.98	381.09	447.14	571.39	73.98	85.71	100.93	128.45
C	Tulare (SJV)	Annual	2028	328.99	381.26	447.12	571.56	73.99	85.79	100.95	128.57
C	Tulare (SJV)	Annual	2029	328.99	381.42	447.08	571.73	73.99	85.87	100.95	128.68
C	Tulare (SJV)	Annual	2030	328.99	381.57	447.05	571.90	73.99	85.94	100.96	128.78
C	Tulare (SJV)	Annual	2031	328.99	381.72	447.04	572.06	74.00	86.01	100.97	128.88
C	Tulare (SJV)	Annual	2032	328.98	381.84	447.02	572.22	74.00	86.07	100.97	128.97
C	Tulare (SJV)	Annual	2033	328.98	381.96	447.00	572.37	74.01	86.12	100.98	129.05
C	Tulare (SJV)	Annual	2034	328.98	382.05	446.99	572.50	74.01	86.17	100.98	129.12
C	Tulare (SJV)	Annual	2035	328.97	382.13	446.97	572.62	74.01	86.21	100.99	129.19
C	Tulare (SJV)	Summer	2010	370.07	419.00	504.64	633.62	73.50	85.81	100.77	124.48
C	Tulare (SJV)	Summer	2011	370.60	420.85	504.80	634.63	73.48	85.49	100.70	124.76
C	Tulare (SJV)	Summer	2012	370.51	421.55	504.22	634.57	73.48	85.24	100.68	125.00
C	Tulare (SJV)	Summer	2013	369.24	420.74	502.10	632.71	73.50	85.03	100.65	125.26

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Tulare (SJV)	Summer	2014	369.50	421.59	502.20	633.64	73.52	84.88	100.59	125.53
C	Tulare (SJV)	Summer	2015	366.59	418.86	497.98	629.41	73.54	84.80	100.57	125.86
C	Tulare (SJV)	Summer	2016	366.85	419.64	498.09	630.59	73.60	84.76	100.58	126.18
C	Tulare (SJV)	Summer	2017	367.01	420.29	498.14	631.63	73.62	84.70	100.55	126.50
C	Tulare (SJV)	Summer	2018	365.07	418.53	495.39	629.07	73.64	84.68	100.55	126.81
C	Tulare (SJV)	Summer	2019	365.18	419.08	495.40	629.88	73.68	84.78	100.57	127.09
C	Tulare (SJV)	Summer	2020	365.26	419.55	495.38	630.57	73.77	84.92	100.64	127.34
C	Tulare (SJV)	Summer	2021	366.23	420.93	496.59	632.55	73.83	85.06	100.71	127.52
C	Tulare (SJV)	Summer	2022	366.18	421.15	496.47	632.78	73.88	85.19	100.77	127.66
C	Tulare (SJV)	Summer	2023	366.13	421.35	496.36	632.94	73.91	85.30	100.82	127.83
C	Tulare (SJV)	Summer	2024	365.61	421.09	495.65	632.36	73.92	85.42	100.86	128.00
C	Tulare (SJV)	Summer	2025	365.65	421.39	495.65	632.65	73.94	85.52	100.89	128.17
C	Tulare (SJV)	Summer	2026	362.79	418.33	491.72	627.85	73.96	85.62	100.91	128.32
C	Tulare (SJV)	Summer	2027	362.81	418.59	491.69	628.03	73.98	85.71	100.93	128.45
C	Tulare (SJV)	Summer	2028	362.84	418.83	491.68	628.22	73.99	85.79	100.95	128.57
C	Tulare (SJV)	Summer	2029	362.86	419.09	491.67	628.41	73.99	85.87	100.95	128.68
C	Tulare (SJV)	Summer	2030	362.87	419.31	491.65	628.60	73.99	85.94	100.96	128.78
C	Tulare (SJV)	Summer	2031	362.87	419.53	491.64	628.76	74.00	86.01	100.97	128.88
C	Tulare (SJV)	Summer	2032	362.86	419.70	491.62	628.93	74.00	86.07	100.97	128.97
C	Tulare (SJV)	Summer	2033	362.85	419.85	491.61	629.09	74.01	86.12	100.98	129.05
C	Tulare (SJV)	Summer	2034	362.85	419.98	491.60	629.26	74.01	86.17	100.98	129.12
C	Tulare (SJV)	Summer	2035	362.84	420.07	491.58	629.40	74.01	86.21	100.99	129.19
C	Tulare (SJV)	Winter	2010	322.59	371.77	442.88	554.67	73.50	85.81	100.77	124.48
C	Tulare (SJV)	Winter	2011	322.67	372.19	442.39	555.52	73.48	85.49	100.70	124.76
C	Tulare (SJV)	Winter	2012	322.38	372.04	441.51	555.52	73.48	85.24	100.68	125.00
C	Tulare (SJV)	Winter	2013	321.12	370.70	439.32	553.83	73.50	85.03	100.65	125.26
C	Tulare (SJV)	Winter	2014	321.25	370.96	439.09	554.52	73.52	84.88	100.59	125.53
C	Tulare (SJV)	Winter	2015	318.55	368.04	435.04	550.47	73.54	84.80	100.57	125.86
C	Tulare (SJV)	Winter	2016	318.70	368.34	434.89	551.22	73.60	84.76	100.58	126.18
C	Tulare (SJV)	Winter	2017	318.79	368.59	434.76	551.90	73.62	84.70	100.55	126.50
C	Tulare (SJV)	Winter	2018	317.06	366.73	432.20	549.39	73.64	84.68	100.55	126.81
C	Tulare (SJV)	Winter	2019	317.13	366.99	432.13	549.92	73.68	84.78	100.57	127.09
C	Tulare (SJV)	Winter	2020	317.20	367.23	432.08	550.39	73.77	84.92	100.64	127.34
C	Tulare (SJV)	Winter	2021	318.13	368.41	433.22	552.19	73.83	85.06	100.71	127.52
C	Tulare (SJV)	Winter	2022	318.15	368.57	433.19	552.43	73.88	85.19	100.77	127.66
C	Tulare (SJV)	Winter	2023	318.14	368.69	433.15	552.63	73.91	85.30	100.82	127.83
C	Tulare (SJV)	Winter	2024	317.65	368.30	432.48	552.05	73.92	85.42	100.86	128.00
C	Tulare (SJV)	Winter	2025	317.66	368.42	432.44	552.26	73.94	85.52	100.89	128.17
C	Tulare (SJV)	Winter	2026	315.14	365.64	428.97	548.06	73.96	85.62	100.91	128.32
C	Tulare (SJV)	Winter	2027	315.15	365.77	428.93	548.23	73.98	85.71	100.93	128.45
C	Tulare (SJV)	Winter	2028	315.15	365.90	428.90	548.40	73.99	85.79	100.95	128.57
C	Tulare (SJV)	Winter	2029	315.14	366.02	428.86	548.56	73.99	85.87	100.95	128.68
C	Tulare (SJV)	Winter	2030	315.14	366.14	428.82	548.72	73.99	85.94	100.96	128.78
C	Tulare (SJV)	Winter	2031	315.14	366.26	428.80	548.88	74.00	86.01	100.97	128.88
C	Tulare (SJV)	Winter	2032	315.14	366.37	428.79	549.04	74.00	86.07	100.97	128.97
C	Tulare (SJV)	Winter	2033	315.13	366.46	428.77	549.17	74.01	86.12	100.98	129.05
C	Tulare (SJV)	Winter	2034	315.13	366.55	428.75	549.30	74.01	86.17	100.98	129.12
C	Tulare (SJV)	Winter	2035	315.13	366.62	428.73	549.40	74.01	86.21	100.99	129.19
C	Tuolumne (MC)	Annual	2010	351.80	409.05	482.29	602.53	74.53	90.23	101.65	124.41
C	Tuolumne (MC)	Annual	2011	351.82	408.95	481.75	603.20	74.32	89.28	101.47	124.55
C	Tuolumne (MC)	Annual	2012	351.88	408.91	481.33	604.01	74.15	88.59	101.37	124.74
C	Tuolumne (MC)	Annual	2013	351.99	408.83	480.99	604.89	74.02	87.89	101.25	124.97
C	Tuolumne (MC)	Annual	2014	352.09	408.75	480.72	605.77	73.90	87.27	101.07	125.20
C	Tuolumne (MC)	Annual	2015	352.23	408.71	480.51	606.66	73.86	86.74	100.95	125.47

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Tuolumne (MC)	Annual	2016	352.33	408.71	480.34	607.53	73.81	86.35	100.89	125.75
C	Tuolumne (MC)	Annual	2017	352.40	408.66	480.19	608.32	73.73	85.87	100.79	126.04
C	Tuolumne (MC)	Annual	2018	352.44	408.65	480.07	609.00	73.66	85.55	100.74	126.32
C	Tuolumne (MC)	Annual	2019	352.50	408.66	479.98	609.60	73.64	85.35	100.71	126.58
C	Tuolumne (MC)	Annual	2020	352.53	408.71	479.91	610.12	73.71	85.33	100.75	126.82
C	Tuolumne (MC)	Annual	2021	352.52	408.72	479.81	610.51	73.75	85.36	100.79	127.02
C	Tuolumne (MC)	Annual	2022	352.49	408.72	479.74	610.83	73.77	85.39	100.83	127.18
C	Tuolumne (MC)	Annual	2023	352.42	408.71	479.67	611.05	73.77	85.42	100.87	127.37
C	Tuolumne (MC)	Annual	2024	352.35	408.71	479.60	611.23	73.76	85.46	100.89	127.55
C	Tuolumne (MC)	Annual	2025	352.30	408.78	479.56	611.41	73.76	85.53	100.93	127.72
C	Tuolumne (MC)	Annual	2026	352.31	408.91	479.51	611.58	73.78	85.63	100.95	127.88
C	Tuolumne (MC)	Annual	2027	352.31	409.03	479.46	611.78	73.79	85.72	100.97	128.03
C	Tuolumne (MC)	Annual	2028	352.31	409.16	479.41	611.96	73.80	85.80	100.98	128.17
C	Tuolumne (MC)	Annual	2029	352.30	409.28	479.35	612.15	73.80	85.87	100.98	128.30
C	Tuolumne (MC)	Annual	2030	352.29	409.39	479.30	612.34	73.81	85.94	100.98	128.42
C	Tuolumne (MC)	Annual	2031	352.28	409.51	479.27	612.58	73.81	86.01	100.98	128.55
C	Tuolumne (MC)	Annual	2032	352.28	409.62	479.24	612.83	73.82	86.08	100.98	128.67
C	Tuolumne (MC)	Annual	2033	352.28	409.71	479.22	613.04	73.82	86.13	100.99	128.78
C	Tuolumne (MC)	Annual	2034	352.28	409.79	479.20	613.24	73.83	86.19	100.99	128.88
C	Tuolumne (MC)	Annual	2035	352.27	409.86	479.19	613.41	73.83	86.23	101.00	128.97
C	Tuolumne (MC)	Summer	2010	379.58	436.17	518.68	647.34	74.53	90.23	101.65	124.41
C	Tuolumne (MC)	Summer	2011	379.89	437.05	518.44	648.13	74.32	89.28	101.47	124.55
C	Tuolumne (MC)	Summer	2012	380.18	437.74	518.26	649.15	74.15	88.59	101.37	124.74
C	Tuolumne (MC)	Summer	2013	380.45	438.26	518.15	650.32	74.02	87.89	101.25	124.97
C	Tuolumne (MC)	Summer	2014	380.68	438.66	518.10	651.50	73.90	87.27	101.07	125.20
C	Tuolumne (MC)	Summer	2015	380.90	439.01	518.08	652.73	73.86	86.74	100.95	125.47
C	Tuolumne (MC)	Summer	2016	381.07	439.30	518.06	653.92	73.81	86.35	100.89	125.75
C	Tuolumne (MC)	Summer	2017	381.16	439.53	518.01	654.99	73.73	85.87	100.79	126.04
C	Tuolumne (MC)	Summer	2018	381.20	439.71	517.96	655.91	73.66	85.55	100.74	126.32
C	Tuolumne (MC)	Summer	2019	381.25	439.89	517.91	656.72	73.64	85.35	100.71	126.58
C	Tuolumne (MC)	Summer	2020	381.27	440.08	517.84	657.42	73.71	85.33	100.75	126.82
C	Tuolumne (MC)	Summer	2021	381.25	440.21	517.77	657.94	73.75	85.36	100.79	127.02
C	Tuolumne (MC)	Summer	2022	381.21	440.34	517.69	658.37	73.77	85.39	100.83	127.18
C	Tuolumne (MC)	Summer	2023	381.14	440.44	517.62	658.69	73.77	85.42	100.87	127.37
C	Tuolumne (MC)	Summer	2024	381.08	440.54	517.57	658.94	73.76	85.46	100.89	127.55
C	Tuolumne (MC)	Summer	2025	381.03	440.66	517.52	659.17	73.76	85.53	100.93	127.72
C	Tuolumne (MC)	Summer	2026	381.05	440.87	517.48	659.35	73.78	85.63	100.95	127.88
C	Tuolumne (MC)	Summer	2027	381.07	441.05	517.44	659.54	73.79	85.72	100.97	128.03
C	Tuolumne (MC)	Summer	2028	381.08	441.24	517.40	659.75	73.80	85.80	100.98	128.17
C	Tuolumne (MC)	Summer	2029	381.09	441.43	517.36	659.96	73.80	85.87	100.98	128.30
C	Tuolumne (MC)	Summer	2030	381.09	441.61	517.32	660.19	73.81	85.94	100.98	128.42
C	Tuolumne (MC)	Summer	2031	381.10	441.78	517.30	660.50	73.81	86.01	100.98	128.55
C	Tuolumne (MC)	Summer	2032	381.10	441.93	517.28	660.80	73.82	86.08	100.98	128.67
C	Tuolumne (MC)	Summer	2033	381.09	442.04	517.26	661.07	73.82	86.13	100.99	128.78
C	Tuolumne (MC)	Summer	2034	381.09	442.15	517.24	661.33	73.83	86.19	100.99	128.88
C	Tuolumne (MC)	Summer	2035	381.08	442.22	517.22	661.55	73.83	86.23	101.00	128.97
C	Tuolumne (MC)	Winter	2010	345.75	403.14	474.37	592.78	74.53	90.23	101.65	124.41
C	Tuolumne (MC)	Winter	2011	345.71	402.84	473.77	593.43	74.32	89.28	101.47	124.55
C	Tuolumne (MC)	Winter	2012	345.72	402.64	473.30	594.19	74.15	88.59	101.37	124.74
C	Tuolumne (MC)	Winter	2013	345.79	402.42	472.91	595.00	74.02	87.89	101.25	124.97
C	Tuolumne (MC)	Winter	2014	345.87	402.24	472.59	595.82	73.90	87.27	101.07	125.20
C	Tuolumne (MC)	Winter	2015	345.99	402.12	472.33	596.64	73.86	86.74	100.95	125.47
C	Tuolumne (MC)	Winter	2016	346.08	402.05	472.13	597.43	73.81	86.35	100.89	125.75
C	Tuolumne (MC)	Winter	2017	346.14	401.95	471.96	598.16	73.73	85.87	100.79	126.04

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Tuolumne (MC)	Winter	2018	346.19	401.89	471.83	598.79	73.66	85.55	100.74	126.32
C	Tuolumne (MC)	Winter	2019	346.24	401.87	471.73	599.34	73.64	85.35	100.71	126.58
C	Tuolumne (MC)	Winter	2020	346.28	401.88	471.65	599.83	73.71	85.33	100.75	126.82
C	Tuolumne (MC)	Winter	2021	346.27	401.86	471.55	600.19	73.75	85.36	100.79	127.02
C	Tuolumne (MC)	Winter	2022	346.24	401.84	471.48	600.48	73.77	85.39	100.83	127.18
C	Tuolumne (MC)	Winter	2023	346.16	401.81	471.41	600.69	73.77	85.42	100.87	127.37
C	Tuolumne (MC)	Winter	2024	346.10	401.78	471.34	600.85	73.76	85.46	100.89	127.55
C	Tuolumne (MC)	Winter	2025	346.04	401.84	471.30	601.01	73.76	85.53	100.93	127.72
C	Tuolumne (MC)	Winter	2026	346.05	401.96	471.25	601.19	73.78	85.63	100.95	127.88
C	Tuolumne (MC)	Winter	2027	346.05	402.06	471.20	601.38	73.79	85.72	100.97	128.03
C	Tuolumne (MC)	Winter	2028	346.04	402.17	471.14	601.56	73.80	85.80	100.98	128.17
C	Tuolumne (MC)	Winter	2029	346.03	402.28	471.08	601.74	73.80	85.87	100.98	128.30
C	Tuolumne (MC)	Winter	2030	346.02	402.38	471.02	601.93	73.81	85.94	100.98	128.42
C	Tuolumne (MC)	Winter	2031	346.01	402.49	470.99	602.16	73.81	86.01	100.98	128.55
C	Tuolumne (MC)	Winter	2032	346.01	402.59	470.97	602.39	73.82	86.08	100.98	128.67
C	Tuolumne (MC)	Winter	2033	346.01	402.67	470.95	602.59	73.82	86.13	100.99	128.78
C	Tuolumne (MC)	Winter	2034	346.01	402.75	470.93	602.77	73.83	86.19	100.99	128.88
C	Tuolumne (MC)	Winter	2035	346.00	402.81	470.91	602.93	73.83	86.23	101.00	128.97
C	Ventura (SCC)	Annual	2010	333.21	383.06	456.23	576.41	73.39	83.96	99.49	125.11
C	Ventura (SCC)	Annual	2011	334.06	384.40	457.06	578.10	73.37	83.90	99.58	125.31
C	Ventura (SCC)	Annual	2012	334.23	384.93	456.97	578.64	73.35	83.91	99.69	125.52
C	Ventura (SCC)	Annual	2013	334.46	385.44	456.97	579.27	73.37	83.94	99.80	125.74
C	Ventura (SCC)	Annual	2014	334.61	385.87	456.92	579.81	73.35	83.96	99.91	125.96
C	Ventura (SCC)	Annual	2015	336.96	388.79	459.88	584.16	73.37	84.01	100.00	126.20
C	Ventura (SCC)	Annual	2016	337.13	389.18	459.85	584.69	73.42	84.08	100.11	126.44
C	Ventura (SCC)	Annual	2017	337.26	389.54	459.83	585.20	73.44	84.15	100.20	126.68
C	Ventura (SCC)	Annual	2018	337.37	389.86	459.82	585.65	73.47	84.25	100.29	126.90
C	Ventura (SCC)	Annual	2019	338.59	391.47	461.34	587.98	73.51	84.41	100.38	127.11
C	Ventura (SCC)	Annual	2020	338.68	391.75	461.34	588.35	73.61	84.58	100.48	127.31
C	Ventura (SCC)	Annual	2021	340.62	394.18	463.90	591.89	73.68	84.75	100.57	127.48
C	Ventura (SCC)	Annual	2022	340.66	394.41	463.89	592.14	73.73	84.90	100.65	127.62
C	Ventura (SCC)	Annual	2023	340.67	394.58	463.88	592.33	73.77	85.03	100.71	127.78
C	Ventura (SCC)	Annual	2024	342.13	396.43	465.87	595.04	73.79	85.15	100.77	127.93
C	Ventura (SCC)	Annual	2025	342.13	396.57	465.87	595.19	73.81	85.26	100.81	128.07
C	Ventura (SCC)	Annual	2026	342.15	396.72	465.85	595.36	73.83	85.37	100.85	128.21
C	Ventura (SCC)	Annual	2027	342.16	396.87	465.84	595.51	73.84	85.46	100.88	128.33
C	Ventura (SCC)	Annual	2028	342.17	397.01	465.82	595.67	73.85	85.55	100.90	128.45
C	Ventura (SCC)	Annual	2029	342.17	397.16	465.80	595.81	73.86	85.64	100.92	128.55
C	Ventura (SCC)	Annual	2030	342.17	397.31	465.79	595.97	73.86	85.72	100.93	128.65
C	Ventura (SCC)	Annual	2031	343.80	399.36	468.01	598.97	73.87	85.80	100.94	128.74
C	Ventura (SCC)	Annual	2032	343.79	399.50	468.00	599.13	73.88	85.87	100.95	128.83
C	Ventura (SCC)	Annual	2033	343.79	399.63	467.99	599.27	73.88	85.94	100.96	128.92
C	Ventura (SCC)	Annual	2034	343.79	399.74	467.98	599.40	73.88	86.00	100.96	128.99
C	Ventura (SCC)	Annual	2035	343.79	399.84	467.97	599.52	73.89	86.06	100.97	129.06
C	Ventura (SCC)	Summer	2010	347.83	398.15	475.58	600.79	73.39	83.96	99.49	125.11
C	Ventura (SCC)	Summer	2011	348.77	399.76	476.48	602.48	73.37	83.90	99.58	125.31
C	Ventura (SCC)	Summer	2012	348.98	400.46	476.42	602.99	73.35	83.91	99.69	125.52
C	Ventura (SCC)	Summer	2013	349.27	401.14	476.48	603.66	73.37	83.94	99.80	125.74
C	Ventura (SCC)	Summer	2014	349.45	401.68	476.48	604.24	73.35	83.96	99.91	125.96
C	Ventura (SCC)	Summer	2015	351.94	404.82	479.63	608.85	73.37	84.01	100.00	126.20
C	Ventura (SCC)	Summer	2016	352.14	405.30	479.65	609.45	73.42	84.08	100.11	126.44
C	Ventura (SCC)	Summer	2017	352.28	405.73	479.66	610.04	73.44	84.15	100.20	126.68
C	Ventura (SCC)	Summer	2018	352.41	406.11	479.66	610.55	73.47	84.25	100.29	126.90
C	Ventura (SCC)	Summer	2019	353.67	407.82	481.25	613.02	73.51	84.41	100.38	127.11

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Ventura (SCC)	Summer	2020	353.77	408.15	481.25	613.43	73.61	84.58	100.48	127.31
C	Ventura (SCC)	Summer	2021	355.80	410.74	483.94	617.18	73.68	84.75	100.57	127.48
C	Ventura (SCC)	Summer	2022	355.84	411.01	483.93	617.47	73.73	84.90	100.65	127.62
C	Ventura (SCC)	Summer	2023	355.85	411.23	483.92	617.68	73.77	85.03	100.71	127.78
C	Ventura (SCC)	Summer	2024	357.40	413.22	486.02	620.55	73.79	85.15	100.77	127.93
C	Ventura (SCC)	Summer	2025	357.40	413.40	486.01	620.72	73.81	85.26	100.81	128.07
C	Ventura (SCC)	Summer	2026	357.42	413.59	486.00	620.90	73.83	85.37	100.85	128.21
C	Ventura (SCC)	Summer	2027	357.43	413.77	485.98	621.06	73.84	85.46	100.88	128.33
C	Ventura (SCC)	Summer	2028	357.44	413.94	485.96	621.21	73.85	85.55	100.90	128.45
C	Ventura (SCC)	Summer	2029	357.45	414.12	485.94	621.36	73.86	85.64	100.92	128.55
C	Ventura (SCC)	Summer	2030	357.45	414.30	485.93	621.52	73.86	85.72	100.93	128.65
C	Ventura (SCC)	Summer	2031	359.14	416.47	488.25	624.65	73.87	85.80	100.94	128.74
C	Ventura (SCC)	Summer	2032	359.14	416.64	488.24	624.81	73.88	85.87	100.95	128.83
C	Ventura (SCC)	Summer	2033	359.14	416.79	488.23	624.96	73.88	85.94	100.96	128.92
C	Ventura (SCC)	Summer	2034	359.13	416.92	488.22	625.10	73.88	86.00	100.96	128.99
C	Ventura (SCC)	Summer	2035	359.13	417.02	488.21	625.23	73.89	86.06	100.97	129.06
C	Ventura (SCC)	Winter	2010	330.44	380.19	452.56	571.78	73.39	83.96	99.49	125.11
C	Ventura (SCC)	Winter	2011	331.27	381.49	453.38	573.48	73.37	83.90	99.58	125.31
C	Ventura (SCC)	Winter	2012	331.43	381.98	453.29	574.02	73.35	83.91	99.69	125.52
C	Ventura (SCC)	Winter	2013	331.65	382.46	453.27	574.64	73.37	83.94	99.80	125.74
C	Ventura (SCC)	Winter	2014	331.80	382.87	453.21	575.18	73.35	83.96	99.91	125.96
C	Ventura (SCC)	Winter	2015	334.12	385.75	456.13	579.48	73.37	84.01	100.00	126.20
C	Ventura (SCC)	Winter	2016	334.29	386.12	456.10	579.99	73.42	84.08	100.11	126.44
C	Ventura (SCC)	Winter	2017	334.41	386.47	456.07	580.49	73.44	84.15	100.20	126.68
C	Ventura (SCC)	Winter	2018	334.52	386.78	456.06	580.93	73.47	84.25	100.29	126.90
C	Ventura (SCC)	Winter	2019	335.73	388.37	457.57	583.24	73.51	84.41	100.38	127.11
C	Ventura (SCC)	Winter	2020	335.82	388.65	457.57	583.59	73.61	84.58	100.48	127.31
C	Ventura (SCC)	Winter	2021	337.74	391.05	460.10	587.10	73.68	84.75	100.57	127.48
C	Ventura (SCC)	Winter	2022	337.78	391.26	460.10	587.34	73.73	84.90	100.65	127.62
C	Ventura (SCC)	Winter	2023	337.80	391.43	460.09	587.53	73.77	85.03	100.71	127.78
C	Ventura (SCC)	Winter	2024	339.24	393.25	462.06	590.20	73.79	85.15	100.77	127.93
C	Ventura (SCC)	Winter	2025	339.24	393.38	462.05	590.36	73.81	85.26	100.81	128.07
C	Ventura (SCC)	Winter	2026	339.26	393.53	462.04	590.52	73.83	85.37	100.85	128.21
C	Ventura (SCC)	Winter	2027	339.27	393.67	462.02	590.68	73.84	85.46	100.88	128.33
C	Ventura (SCC)	Winter	2028	339.28	393.81	462.01	590.83	73.85	85.55	100.90	128.45
C	Ventura (SCC)	Winter	2029	339.28	393.95	461.99	590.98	73.86	85.64	100.92	128.55
C	Ventura (SCC)	Winter	2030	339.28	394.09	461.98	591.13	73.86	85.72	100.93	128.65
C	Ventura (SCC)	Winter	2031	340.89	396.12	464.18	594.11	73.87	85.80	100.94	128.74
C	Ventura (SCC)	Winter	2032	340.89	396.26	464.17	594.27	73.88	85.87	100.95	128.83
C	Ventura (SCC)	Winter	2033	340.89	396.38	464.16	594.41	73.88	85.94	100.96	128.92
C	Ventura (SCC)	Winter	2034	340.89	396.49	464.15	594.54	73.88	86.00	100.96	128.99
C	Ventura (SCC)	Winter	2035	340.88	396.58	464.14	594.65	73.89	86.06	100.97	129.06
C	Yolo (SV)	Annual	2010	336.72	387.12	461.65	581.89	72.73	85.31	99.86	124.93
C	Yolo (SV)	Annual	2011	336.97	387.81	461.52	582.48	72.77	85.00	99.91	125.14
C	Yolo (SV)	Annual	2012	337.24	388.46	461.43	583.14	72.83	84.86	99.98	125.38
C	Yolo (SV)	Annual	2013	337.49	389.01	461.37	583.82	72.90	84.70	100.04	125.63
C	Yolo (SV)	Annual	2014	337.72	389.50	461.33	584.51	72.96	84.61	100.12	125.89
C	Yolo (SV)	Annual	2015	337.96	389.95	461.30	585.20	73.06	84.57	100.16	126.15
C	Yolo (SV)	Annual	2016	338.17	390.35	461.29	585.85	73.15	84.56	100.24	126.41
C	Yolo (SV)	Annual	2017	338.34	390.69	461.27	586.46	73.23	84.51	100.28	126.67
C	Yolo (SV)	Annual	2018	338.49	390.99	461.25	586.98	73.31	84.52	100.34	126.91
C	Yolo (SV)	Annual	2019	337.20	389.64	459.31	584.97	73.38	84.60	100.41	127.12
C	Yolo (SV)	Annual	2020	337.30	389.89	459.30	585.36	73.47	84.72	100.49	127.33
C	Yolo (SV)	Annual	2021	337.38	390.13	459.28	585.66	73.55	84.88	100.58	127.49

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Yolo (SV)	Annual	2022	337.43	390.34	459.26	585.92	73.61	85.01	100.66	127.63
C	Yolo (SV)	Annual	2023	337.45	390.51	459.24	586.13	73.65	85.13	100.72	127.79
C	Yolo (SV)	Annual	2024	337.46	390.65	459.23	586.27	73.67	85.24	100.77	127.93
C	Yolo (SV)	Annual	2025	337.46	390.78	459.21	586.42	73.70	85.33	100.81	128.07
C	Yolo (SV)	Annual	2026	337.48	390.92	459.20	586.59	73.72	85.43	100.85	128.21
C	Yolo (SV)	Annual	2027	337.50	391.06	459.19	586.76	73.73	85.51	100.88	128.33
C	Yolo (SV)	Annual	2028	337.51	391.21	459.18	586.92	73.74	85.59	100.90	128.44
C	Yolo (SV)	Annual	2029	337.51	391.35	459.16	587.08	73.75	85.67	100.92	128.55
C	Yolo (SV)	Annual	2030	337.52	391.49	459.15	587.25	73.75	85.74	100.93	128.65
C	Yolo (SV)	Annual	2031	337.52	391.63	459.14	587.41	73.76	85.81	100.94	128.74
C	Yolo (SV)	Annual	2032	337.52	391.76	459.13	587.58	73.77	85.88	100.95	128.83
C	Yolo (SV)	Annual	2033	337.52	391.88	459.12	587.73	73.77	85.94	100.95	128.92
C	Yolo (SV)	Annual	2034	337.52	391.98	459.11	587.88	73.77	85.99	100.96	129.00
C	Yolo (SV)	Annual	2035	337.52	392.07	459.10	588.00	73.78	86.04	100.96	129.07
C	Yolo (SV)	Summer	2010	372.26	423.83	508.64	641.11	72.73	85.31	99.86	124.93
C	Yolo (SV)	Summer	2011	372.71	425.23	508.71	641.62	72.77	85.00	99.91	125.14
C	Yolo (SV)	Summer	2012	373.13	426.43	508.79	642.30	72.83	84.86	99.98	125.38
C	Yolo (SV)	Summer	2013	373.50	427.43	508.90	643.09	72.90	84.70	100.04	125.63
C	Yolo (SV)	Summer	2014	373.83	428.27	509.03	643.94	72.96	84.61	100.12	125.89
C	Yolo (SV)	Summer	2015	374.13	429.00	509.16	644.86	73.06	84.57	100.16	126.15
C	Yolo (SV)	Summer	2016	374.39	429.62	509.25	645.72	73.15	84.56	100.24	126.41
C	Yolo (SV)	Summer	2017	374.59	430.15	509.32	646.54	73.23	84.51	100.28	126.67
C	Yolo (SV)	Summer	2018	374.75	430.58	509.32	647.21	73.31	84.52	100.34	126.91
C	Yolo (SV)	Summer	2019	373.25	429.11	507.09	644.96	73.38	84.60	100.41	127.12
C	Yolo (SV)	Summer	2020	373.34	429.45	507.05	645.44	73.47	84.72	100.49	127.33
C	Yolo (SV)	Summer	2021	373.41	429.79	506.99	645.81	73.55	84.88	100.58	127.49
C	Yolo (SV)	Summer	2022	373.45	430.08	506.94	646.13	73.61	85.01	100.66	127.63
C	Yolo (SV)	Summer	2023	373.47	430.33	506.89	646.38	73.65	85.13	100.72	127.79
C	Yolo (SV)	Summer	2024	373.48	430.55	506.85	646.54	73.67	85.24	100.77	127.93
C	Yolo (SV)	Summer	2025	373.49	430.75	506.82	646.69	73.70	85.33	100.81	128.07
C	Yolo (SV)	Summer	2026	373.51	430.95	506.82	646.89	73.72	85.43	100.85	128.21
C	Yolo (SV)	Summer	2027	373.52	431.16	506.83	647.07	73.73	85.51	100.88	128.33
C	Yolo (SV)	Summer	2028	373.54	431.36	506.84	647.25	73.74	85.59	100.90	128.44
C	Yolo (SV)	Summer	2029	373.55	431.57	506.84	647.44	73.75	85.67	100.92	128.55
C	Yolo (SV)	Summer	2030	373.55	431.77	506.84	647.62	73.75	85.74	100.93	128.65
C	Yolo (SV)	Summer	2031	373.56	431.98	506.84	647.80	73.76	85.81	100.94	128.74
C	Yolo (SV)	Summer	2032	373.57	432.16	506.83	647.98	73.77	85.88	100.95	128.83
C	Yolo (SV)	Summer	2033	373.58	432.31	506.82	648.16	73.77	85.94	100.95	128.92
C	Yolo (SV)	Summer	2034	373.58	432.44	506.81	648.34	73.77	85.99	100.96	129.00
C	Yolo (SV)	Summer	2035	373.58	432.55	506.80	648.50	73.78	86.04	100.96	129.07
C	Yolo (SV)	Winter	2010	327.05	377.13	448.86	565.78	72.73	85.31	99.86	124.93
C	Yolo (SV)	Winter	2011	327.25	377.62	448.68	566.39	72.77	85.00	99.91	125.14
C	Yolo (SV)	Winter	2012	327.47	378.13	448.54	567.03	72.83	84.86	99.98	125.38
C	Yolo (SV)	Winter	2013	327.69	378.55	448.43	567.69	72.90	84.70	100.04	125.63
C	Yolo (SV)	Winter	2014	327.89	378.94	448.35	568.33	72.96	84.61	100.12	125.89
C	Yolo (SV)	Winter	2015	328.11	379.32	448.28	568.96	73.06	84.57	100.16	126.15
C	Yolo (SV)	Winter	2016	328.31	379.66	448.23	569.55	73.15	84.56	100.24	126.41
C	Yolo (SV)	Winter	2017	328.47	379.95	448.19	570.10	73.23	84.51	100.28	126.67
C	Yolo (SV)	Winter	2018	328.62	380.21	448.17	570.58	73.31	84.52	100.34	126.91
C	Yolo (SV)	Winter	2019	327.41	378.92	446.34	568.68	73.38	84.60	100.41	127.12
C	Yolo (SV)	Winter	2020	327.51	379.14	446.33	569.04	73.47	84.72	100.49	127.33
C	Yolo (SV)	Winter	2021	327.59	379.37	446.32	569.33	73.55	84.88	100.58	127.49
C	Yolo (SV)	Winter	2022	327.64	379.55	446.32	569.57	73.61	85.01	100.66	127.63
C	Yolo (SV)	Winter	2023	327.66	379.69	446.30	569.76	73.65	85.13	100.72	127.79

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Yolo (SV)	Winter	2024	327.67	379.81	446.29	569.90	73.67	85.24	100.77	127.93
C	Yolo (SV)	Winter	2025	327.68	379.92	446.28	570.05	73.70	85.33	100.81	128.07
C	Yolo (SV)	Winter	2026	327.70	380.05	446.27	570.22	73.72	85.43	100.85	128.21
C	Yolo (SV)	Winter	2027	327.72	380.18	446.25	570.38	73.73	85.51	100.88	128.33
C	Yolo (SV)	Winter	2028	327.73	380.30	446.23	570.54	73.74	85.59	100.90	128.44
C	Yolo (SV)	Winter	2029	327.73	380.42	446.21	570.69	73.75	85.67	100.92	128.55
C	Yolo (SV)	Winter	2030	327.73	380.55	446.20	570.85	73.75	85.74	100.93	128.65
C	Yolo (SV)	Winter	2031	327.73	380.67	446.19	571.01	73.76	85.81	100.94	128.74
C	Yolo (SV)	Winter	2032	327.73	380.79	446.18	571.17	73.77	85.88	100.95	128.83
C	Yolo (SV)	Winter	2033	327.73	380.89	446.17	571.32	73.77	85.94	100.95	128.92
C	Yolo (SV)	Winter	2034	327.73	380.99	446.16	571.45	73.77	85.99	100.96	129.00
C	Yolo (SV)	Winter	2035	327.72	381.07	446.15	571.57	73.78	86.04	100.96	129.07
C	Yuba (SV)	Annual	2010	331.71	387.20	455.73	569.14	73.59	94.17	100.78	124.81
C	Yuba (SV)	Annual	2011	331.88	386.92	455.13	569.94	73.55	92.48	100.68	124.98
C	Yuba (SV)	Annual	2012	332.08	386.74	454.68	570.82	73.57	91.09	100.67	125.20
C	Yuba (SV)	Annual	2013	332.28	386.58	454.33	571.76	73.58	89.86	100.67	125.45
C	Yuba (SV)	Annual	2014	332.43	386.50	454.06	572.63	73.55	88.96	100.63	125.71
C	Yuba (SV)	Annual	2015	332.60	386.32	453.85	573.51	73.58	87.83	100.63	125.99
C	Yuba (SV)	Annual	2016	332.76	386.25	453.68	574.33	73.63	87.10	100.62	126.28
C	Yuba (SV)	Annual	2017	332.89	386.13	453.53	575.09	73.67	86.26	100.64	126.56
C	Yuba (SV)	Annual	2018	332.95	386.05	453.40	575.74	73.66	85.67	100.67	126.82
C	Yuba (SV)	Annual	2019	329.78	382.30	448.92	570.68	73.66	85.36	100.69	127.05
C	Yuba (SV)	Annual	2020	329.83	382.32	448.84	571.12	73.74	85.30	100.76	127.28
C	Yuba (SV)	Annual	2021	329.87	382.43	448.77	571.46	73.80	85.40	100.82	127.44
C	Yuba (SV)	Annual	2022	329.88	382.52	448.70	571.71	73.85	85.48	100.87	127.53
C	Yuba (SV)	Annual	2023	329.88	382.59	448.64	571.92	73.88	85.55	100.91	127.71
C	Yuba (SV)	Annual	2024	329.85	382.67	448.59	572.07	73.89	85.63	100.94	127.87
C	Yuba (SV)	Annual	2025	329.83	382.75	448.55	572.24	73.90	85.70	100.96	128.02
C	Yuba (SV)	Annual	2026	329.85	382.83	448.50	572.40	73.92	85.77	100.98	128.17
C	Yuba (SV)	Annual	2027	329.86	382.89	448.45	572.55	73.94	85.83	100.99	128.30
C	Yuba (SV)	Annual	2028	329.87	382.96	448.40	572.72	73.95	85.88	101.00	128.42
C	Yuba (SV)	Annual	2029	329.87	383.04	448.35	572.89	73.95	85.93	101.00	128.53
C	Yuba (SV)	Annual	2030	329.86	383.11	448.30	573.07	73.96	85.98	100.99	128.64
C	Yuba (SV)	Annual	2031	329.86	383.18	448.28	573.23	73.96	86.03	100.99	128.74
C	Yuba (SV)	Annual	2032	329.86	383.24	448.26	573.41	73.96	86.07	101.00	128.84
C	Yuba (SV)	Annual	2033	329.86	383.30	448.24	573.57	73.97	86.11	101.00	128.93
C	Yuba (SV)	Annual	2034	329.86	383.35	448.22	573.72	73.97	86.15	101.00	129.01
C	Yuba (SV)	Annual	2035	329.85	383.39	448.21	573.85	73.98	86.18	101.00	129.08
C	Yuba (SV)	Summer	2010	368.33	425.28	503.39	628.81	73.59	94.17	100.78	124.81
C	Yuba (SV)	Summer	2011	368.82	425.88	503.44	629.79	73.55	92.48	100.68	124.98
C	Yuba (SV)	Summer	2012	369.28	426.40	503.45	630.96	73.57	91.09	100.67	125.20
C	Yuba (SV)	Summer	2013	369.67	426.80	503.45	632.27	73.58	89.86	100.67	125.45
C	Yuba (SV)	Summer	2014	369.96	427.10	503.47	633.51	73.55	88.96	100.63	125.71
C	Yuba (SV)	Summer	2015	370.23	427.34	503.46	634.77	73.58	87.83	100.63	125.99
C	Yuba (SV)	Summer	2016	370.46	427.52	503.42	635.97	73.63	87.10	100.62	126.28
C	Yuba (SV)	Summer	2017	370.61	427.67	503.33	637.05	73.67	86.26	100.64	126.56
C	Yuba (SV)	Summer	2018	370.68	427.77	503.20	637.94	73.66	85.67	100.67	126.82
C	Yuba (SV)	Summer	2019	367.12	423.68	498.20	632.43	73.66	85.36	100.69	127.05
C	Yuba (SV)	Summer	2020	367.15	423.74	498.07	632.99	73.74	85.30	100.76	127.28
C	Yuba (SV)	Summer	2021	367.16	423.89	497.95	633.41	73.80	85.40	100.82	127.44
C	Yuba (SV)	Summer	2022	367.15	424.03	497.86	633.76	73.85	85.48	100.87	127.53
C	Yuba (SV)	Summer	2023	367.14	424.15	497.79	634.02	73.88	85.55	100.91	127.71
C	Yuba (SV)	Summer	2024	367.11	424.30	497.73	634.20	73.89	85.63	100.94	127.87
C	Yuba (SV)	Summer	2025	367.09	424.44	497.70	634.39	73.90	85.70	100.96	128.02

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
C	Yuba (SV)	Summer	2026	367.12	424.53	497.64	634.51	73.92	85.77	100.98	128.17
C	Yuba (SV)	Summer	2027	367.15	424.62	497.59	634.66	73.94	85.83	100.99	128.30
C	Yuba (SV)	Summer	2028	367.18	424.72	497.56	634.82	73.95	85.88	101.00	128.42
C	Yuba (SV)	Summer	2029	367.20	424.83	497.53	635.01	73.95	85.93	101.00	128.53
C	Yuba (SV)	Summer	2030	367.22	424.95	497.51	635.21	73.96	85.98	100.99	128.64
C	Yuba (SV)	Summer	2031	367.22	425.04	497.51	635.38	73.96	86.03	100.99	128.74
C	Yuba (SV)	Summer	2032	367.23	425.12	497.51	635.56	73.96	86.07	101.00	128.84
C	Yuba (SV)	Summer	2033	367.23	425.19	497.51	635.76	73.97	86.11	101.00	128.93
C	Yuba (SV)	Summer	2034	367.23	425.26	497.50	635.95	73.97	86.15	101.00	129.01
C	Yuba (SV)	Summer	2035	367.22	425.31	497.50	636.13	73.98	86.18	101.00	129.08
C	Yuba (SV)	Winter	2010	322.00	377.10	443.10	553.32	73.59	94.17	100.78	124.81
C	Yuba (SV)	Winter	2011	322.08	376.59	442.32	554.07	73.55	92.48	100.68	124.98
C	Yuba (SV)	Winter	2012	322.22	376.23	441.75	554.87	73.57	91.09	100.67	125.20
C	Yuba (SV)	Winter	2013	322.37	375.91	441.30	555.71	73.58	89.86	100.67	125.45
C	Yuba (SV)	Winter	2014	322.48	375.73	440.96	556.49	73.55	88.96	100.63	125.71
C	Yuba (SV)	Winter	2015	322.62	375.45	440.69	557.26	73.58	87.83	100.63	125.99
C	Yuba (SV)	Winter	2016	322.77	375.30	440.49	557.99	73.63	87.10	100.62	126.28
C	Yuba (SV)	Winter	2017	322.88	375.11	440.32	558.67	73.67	86.26	100.64	126.56
C	Yuba (SV)	Winter	2018	322.95	374.99	440.20	559.25	73.66	85.67	100.67	126.82
C	Yuba (SV)	Winter	2019	319.88	371.33	435.86	554.31	73.66	85.36	100.69	127.05
C	Yuba (SV)	Winter	2020	319.94	371.34	435.79	554.72	73.74	85.30	100.76	127.28
C	Yuba (SV)	Winter	2021	319.98	371.44	435.73	555.03	73.80	85.40	100.82	127.44
C	Yuba (SV)	Winter	2022	320.00	371.52	435.67	555.26	73.85	85.48	100.87	127.53
C	Yuba (SV)	Winter	2023	320.00	371.57	435.61	555.46	73.88	85.55	100.91	127.71
C	Yuba (SV)	Winter	2024	319.98	371.63	435.57	555.60	73.89	85.63	100.94	127.87
C	Yuba (SV)	Winter	2025	319.96	371.70	435.52	555.77	73.90	85.70	100.96	128.02
C	Yuba (SV)	Winter	2026	319.97	371.77	435.47	555.93	73.92	85.77	100.98	128.17
C	Yuba (SV)	Winter	2027	319.97	371.83	435.42	556.09	73.94	85.83	100.99	128.30
C	Yuba (SV)	Winter	2028	319.97	371.89	435.37	556.26	73.95	85.88	101.00	128.42
C	Yuba (SV)	Winter	2029	319.97	371.96	435.31	556.42	73.95	85.93	101.00	128.53
C	Yuba (SV)	Winter	2030	319.96	372.02	435.26	556.59	73.96	85.98	100.99	128.64
C	Yuba (SV)	Winter	2031	319.96	372.08	435.22	556.76	73.96	86.03	100.99	128.74
C	Yuba (SV)	Winter	2032	319.96	372.14	435.20	556.93	73.96	86.07	101.00	128.84
C	Yuba (SV)	Winter	2033	319.95	372.19	435.18	557.08	73.97	86.11	101.00	128.93
C	Yuba (SV)	Winter	2034	319.95	372.24	435.15	557.22	73.97	86.15	101.00	129.01
C	Yuba (SV)	Winter	2035	319.95	372.27	435.14	557.34	73.98	86.18	101.00	129.08
S	State	Annual	2010	348.30	399.84	476.00	599.04	73.17	84.92	99.67	124.99
S	State	Annual	2011	348.67	400.62	476.13	599.97	73.18	84.72	99.73	125.19
S	State	Annual	2012	348.78	401.01	475.89	600.42	73.21	84.60	99.83	125.41
S	State	Annual	2013	348.91	401.36	475.66	600.88	73.26	84.51	99.92	125.64
S	State	Annual	2014	349.03	401.70	475.49	601.40	73.30	84.45	100.01	125.88
S	State	Annual	2015	349.34	402.17	475.56	602.18	73.36	84.42	100.10	126.13
S	State	Annual	2016	349.52	402.53	475.51	602.82	73.43	84.42	100.19	126.39
S	State	Annual	2017	349.60	402.79	475.40	603.33	73.48	84.43	100.27	126.64
S	State	Annual	2018	349.73	403.11	475.42	603.91	73.51	84.45	100.34	126.88
S	State	Annual	2019	349.43	402.96	474.90	603.76	73.56	84.57	100.42	127.10
S	State	Annual	2020	349.47	403.17	474.82	604.08	73.66	84.72	100.51	127.31
S	State	Annual	2021	349.92	403.86	475.37	605.14	73.73	84.88	100.60	127.48
S	State	Annual	2022	349.89	404.04	475.31	605.39	73.78	85.02	100.68	127.63
S	State	Annual	2023	349.84	404.17	475.26	605.57	73.81	85.14	100.74	127.79
S	State	Annual	2024	350.69	405.29	476.43	607.26	73.83	85.25	100.79	127.94
S	State	Annual	2025	350.63	405.38	476.38	607.40	73.85	85.35	100.83	128.09
S	State	Annual	2026	350.65	405.61	476.40	607.67	73.86	85.45	100.87	128.23
S	State	Annual	2027	350.61	405.72	476.34	607.80	73.88	85.54	100.89	128.35

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
S	State	Annual	2028	350.56	405.84	476.28	607.92	73.89	85.62	100.91	128.46
S	State	Annual	2029	350.51	405.95	476.21	608.04	73.90	85.70	100.93	128.57
S	State	Annual	2030	350.45	406.07	476.14	608.17	73.90	85.77	100.94	128.66
S	State	Annual	2031	350.80	406.69	476.65	609.06	73.90	85.85	100.95	128.76
S	State	Annual	2032	350.74	406.81	476.61	609.20	73.91	85.92	100.95	128.85
S	State	Annual	2033	350.68	406.91	476.58	609.32	73.91	85.98	100.96	128.93
S	State	Annual	2034	350.62	407.00	476.54	609.43	73.92	86.04	100.97	129.01
S	State	Annual	2035	350.56	407.07	476.50	609.52	73.92	86.09	100.97	129.08
S	State	Summer	2010	371.32	424.00	506.45	638.85	73.17	84.92	99.67	124.99
S	State	Summer	2011	371.88	425.31	506.78	639.81	73.18	84.72	99.73	125.19
S	State	Summer	2012	372.11	426.09	506.67	640.31	73.21	84.60	99.83	125.41
S	State	Summer	2013	372.33	426.77	506.57	640.88	73.26	84.51	99.92	125.64
S	State	Summer	2014	372.54	427.37	506.54	641.54	73.30	84.45	100.01	125.88
S	State	Summer	2015	372.93	428.07	506.76	642.54	73.36	84.42	100.10	126.13
S	State	Summer	2016	373.17	428.62	506.84	643.39	73.43	84.42	100.19	126.39
S	State	Summer	2017	373.29	429.04	506.82	644.08	73.48	84.43	100.27	126.64
S	State	Summer	2018	373.45	429.51	506.92	644.85	73.51	84.45	100.34	126.88
S	State	Summer	2019	373.16	429.45	506.41	644.82	73.56	84.57	100.42	127.10
S	State	Summer	2020	373.22	429.77	506.36	645.28	73.66	84.72	100.51	127.31
S	State	Summer	2021	373.74	430.59	506.97	646.50	73.73	84.88	100.60	127.48
S	State	Summer	2022	373.76	430.86	506.93	646.85	73.78	85.02	100.68	127.63
S	State	Summer	2023	373.74	431.08	506.89	647.10	73.81	85.14	100.74	127.79
S	State	Summer	2024	374.69	432.36	508.16	648.94	73.83	85.25	100.79	127.94
S	State	Summer	2025	374.66	432.54	508.13	649.13	73.85	85.35	100.83	128.09
S	State	Summer	2026	374.72	432.85	508.19	649.44	73.87	85.45	100.87	128.23
S	State	Summer	2027	374.71	433.04	508.16	649.59	73.88	85.54	100.89	128.35
S	State	Summer	2028	374.70	433.23	508.13	649.75	73.89	85.62	100.91	128.46
S	State	Summer	2029	374.69	433.42	508.10	649.90	73.90	85.70	100.93	128.57
S	State	Summer	2030	374.67	433.61	508.07	650.06	73.90	85.77	100.94	128.66
S	State	Summer	2031	375.08	434.34	508.64	651.05	73.90	85.85	100.95	128.76
S	State	Summer	2032	375.06	434.52	508.63	651.23	73.91	85.92	100.95	128.85
S	State	Summer	2033	375.04	434.68	508.63	651.41	73.91	85.98	100.96	128.93
S	State	Summer	2034	375.02	434.82	508.62	651.57	73.92	86.04	100.97	129.01
S	State	Summer	2035	375.00	434.92	508.61	651.72	73.92	86.09	100.97	129.08
S	State	Winter	2010	342.17	393.38	467.85	587.98	73.17	84.92	99.67	124.99
S	State	Winter	2011	342.48	393.99	467.91	588.87	73.18	84.72	99.73	125.19
S	State	Winter	2012	342.55	394.26	467.62	589.31	73.21	84.60	99.83	125.41
S	State	Winter	2013	342.64	394.51	467.33	589.70	73.26	84.51	99.92	125.64
S	State	Winter	2014	342.74	394.76	467.11	590.16	73.30	84.45	100.01	125.88
S	State	Winter	2015	343.01	395.15	467.12	590.86	73.36	84.42	100.10	126.13
S	State	Winter	2016	343.16	395.44	467.02	591.41	73.43	84.42	100.19	126.39
S	State	Winter	2017	343.21	395.64	466.87	591.83	73.48	84.43	100.27	126.64
S	State	Winter	2018	343.32	395.91	466.84	592.33	73.51	84.45	100.34	126.88
S	State	Winter	2019	343.00	395.72	466.30	592.12	73.56	84.57	100.42	127.10
S	State	Winter	2020	343.02	395.88	466.18	592.37	73.66	84.72	100.51	127.31
S	State	Winter	2021	343.45	396.53	466.70	593.35	73.73	84.88	100.60	127.48
S	State	Winter	2022	343.41	396.67	466.63	593.54	73.78	85.02	100.68	127.63
S	State	Winter	2023	343.34	396.76	466.55	593.67	73.81	85.14	100.74	127.79
S	State	Winter	2024	344.14	397.81	467.67	595.27	73.83	85.25	100.79	127.94
S	State	Winter	2025	344.06	397.86	467.59	595.37	73.85	85.35	100.83	128.09
S	State	Winter	2026	344.06	398.05	467.58	595.60	73.87	85.45	100.87	128.23
S	State	Winter	2027	344.00	398.13	467.50	595.70	73.88	85.54	100.89	128.35
S	State	Winter	2028	343.93	398.21	467.41	595.79	73.89	85.62	100.91	128.46
S	State	Winter	2029	343.86	398.30	467.32	595.88	73.90	85.70	100.93	128.57

Table 4.4 Alternative CO2 Emission Factors (Non-Pavley)

	Location			CO2 Running (g/VMT)				CO2 Starting (g/trip)			
		Season	Year	LDA	LDT1	LDT2	MDV	LDA	LDT1	LDT2	MDV
S	State	Winter	2030	343.78	398.37	467.23	595.97	73.90	85.77	100.94	128.66
S	State	Winter	2031	344.10	398.94	467.69	596.80	73.90	85.85	100.95	128.76
S	State	Winter	2032	344.02	399.03	467.63	596.90	73.91	85.92	100.95	128.85
S	State	Winter	2033	343.95	399.11	467.57	596.99	73.91	85.98	100.96	128.93
S	State	Winter	2034	343.87	399.17	467.51	597.06	73.92	86.04	100.97	129.01
S	State	Winter	2035	343.80	399.21	467.44	597.12	73.92	86.09	100.97	129.08

Table 5.1 Hearth Usage

Name	Multi or Single Family Home	Wood Hearth %	Natural Gas %	Propane %	No Hearth %	Wood Mass Fireplace	Hours/day Fireplace	Day/year Fireplace	Wood Stove Conventional %	Wood Stove Catalytic %	WoodStove NonCatalytic %	Wood Stove Pellet %	Wood mass Stove	Hours/day Stove	Hours/year Stove	Days/Year Stove
Alameda	MFH	14	55	0	31	92.4	3.5	4.3	0	0.5	0.5	0	954.8	8.5	92	11
Alameda	SFH	45	55	0	0	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
Alpine	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Alpine	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Amador	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Amador	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Amador County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Amador County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Antelope Valley APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Antelope Valley APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Bay Area AQMD	MFH	14	55	0	1	92.4	3.5	4.3	0	2	2	0	954.8	8.5	22	3
Bay Area AQMD	SFH	50	55	0	7	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
Butte	MFH	39	43	0	18	5158.4	3.7	150.0	0	9	9	0	3019.2	7.3	1100	150
Butte	SFH	39	43	0	18	5158.4	3.7	150.0	0	9	9	0	3019.2	7.3	1100	150
Butte County AQMD	MFH	39	43	0	18	5158.4	3.7	150.0	0	9	9	0	3019.2	7.3	1100	150
Butte County AQMD	SFH	39	43	0	18	5158.4	3.7	150.0	0	9	9	0	3019.2	7.3	1100	150
Calaveras	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Calaveras	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Calaveras County AQMD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Calaveras County AQMD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Colusa	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Colusa	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Colusa County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Colusa County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Contra Costa	MFH	14	55	0	31	92.4	3.5	4.3	0	0.5	0.5	0	954.8	8.5	92	11
Contra Costa	SFH	45	55	0	0	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
Del Norte	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Del Norte	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
El Dorado County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
El Dorado County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
El Dorado-Lake Tahoe	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
El Dorado-Lake Tahoe	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
El Dorado-Mountain County	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
El Dorado-Mountain County	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Feather River AQMD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Feather River AQMD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Fresno	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Fresno	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Glenn	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Glenn	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Glenn County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Glenn County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Great Basin UAPCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Great Basin UAPCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Great Basin Valleys	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Great Basin Valleys	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Humboldt	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Humboldt	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Imperial County APCD	MFH	0	100	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Imperial County APCD	SFH	10	85	0	5	862.4	3.0	82.0	0	2.5	2.5	0	1509.2	3.0	246	82
Imperial	MFH	0	100	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Imperial	SFH	10	85	0	5	862.4	3.0	82.0	0	2.5	2.5	0	1509.2	3.0	246	82
Inyo	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Inyo	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Kern County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Kern County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Kern-Mojave Desert	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82

Table 5.1 Hearth Usage

Name	Multi or Single Family Home	Wood Hearth %	Natural Gas %	Propane %	No Hearth %	Wood Mass Fireplace	Hours/day Fireplace	Day/year Fireplace	Wood Stove Conventional %	Wood Stove Catalytic %	WoodStove NonCatalytic %	Wood Stove Pellet %	Wood mass Stove	Hours/day Stove	Hours/year Stove	Days/Year Stove
Kern-Mojave Desert	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Kern-San Joaquin	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Kern-San Joaquin	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Kings	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Kings	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lake	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lake	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lake County	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lake County	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lake County AQMD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lake County AQMD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lake Tahoe	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lake Tahoe	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lassen	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lassen	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lassen County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Lassen County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Los Angeles-Mojave Desert	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Los Angeles-Mojave Desert	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Los Angeles-South Coast	MFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
Los Angeles-South Coast	SFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
Madera	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Madera	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Marin	MFH	14	55	0	31	92.4	3.5	4.3	0	0.5	0.5	0	954.8	8.5	92	11
Marin	SFH	45	55	0	0	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
Mariposa	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mariposa	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mariposa County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mariposa County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mendocino County AQMD	MFH	5	5	0	90	4992	3.0	116.7	0	20	20	0	4896.0	3.0	350	117
Mendocino County AQMD	SFH	35	30	0	35	4992	3.0	116.7	0	40	40	0	4896.0	3.0	350	117
Mendocino-Coastal	MFH	5	5	0	90	4992	3.0	116.7	0	20	20	0	4896.0	3.0	350	117
Mendocino-Coastal	SFH	35	30	0	35	4992	3.0	116.7	0	40	40	0	4896.0	3.0	350	117
Mendocino-Inland	MFH	5	5	0	90	4992	3.0	116.7	0	20	20	0	4896.0	3.0	350	117
Mendocino-Inland	SFH	35	30	0	35	4992	3.0	116.7	0	40	40	0	4896.0	3.0	350	117
Mendocino-Rural Inland North	MFH	5	5	0	90	4992	3.0	116.7	0	20	20	0	4896.0	3.0	350	117
Mendocino-Rural Inland North	SFH	35	30	0	35	4992	3.0	116.7	0	40	40	0	4896.0	3.0	350	117
Mendocino-Rural Inland South	MFH	5	5	0	90	4992	3.0	116.7	0	20	20	0	4896.0	3.0	350	117
Mendocino-Rural Inland South	SFH	35	30	0	35	4992	3.0	116.7	0	40	40	0	4896.0	3.0	350	117
Merced	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Merced	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Modoc	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Modoc	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Modoc County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Modoc County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mojave Desert	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mojave Desert	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mojave Desert AQMD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mojave Desert AQMD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mono	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mono	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Monterey	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Monterey	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Monterey Bay Unified APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Monterey Bay Unified APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mountain Counties	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Mountain Counties	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82

Table 5.1 Hearth Usage

Name	Multi or Single Family Home	Wood Hearth %	Natural Gas %	Propane %	No Hearth %	Wood Mass Fireplace	Hours/day Fireplace	Day/year Fireplace	Wood Stove Conventional %	Wood Stove Catalytic %	WoodStove NonCatalytic %	Wood Stove Pellet %	Wood mass Stove	Hours/day Stove	Hours/year Stove	Days/Year Stove
Napa	MFH	14	55	0	31	92.4	3.5	4.3	0	2	2	0	954.8	8.5	92	11
Napa	SFH	45	55	0	0	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
Nevada	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Nevada	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
North Central Coast	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
North Central Coast	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
#N/A	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
#N/A	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
North Coast Unified APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
North Coast Unified APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Northeast Plateau	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Northeast Plateau	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Northern Sierra AQMD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Northern Sierra AQMD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Northern Sonoma County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Northern Sonoma County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Orange	MFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
Orange	SFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
Placer County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Placer County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Placer-Lake Tahoe	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Placer-Lake Tahoe	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Placer-Mountain Counties	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Placer-Mountain Counties	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Placer-Sacramento	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Placer-Sacramento	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Plumas	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Plumas	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Riverside-Mojave Desert MDAQMD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Riverside-Mojave Desert MDAQMD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Riverside-Mojave Desert SCAQMD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Riverside-Mojave Desert SCAQMD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Riverside-Salton Sea	MFH	10	80	0	10	457.6	3.0	82.0	0	5	5	0	999.6	3.0	246	82
Riverside-Salton Sea	SFH	10	80	0	10	457.6	3.0	82.0	0	5	5	0	999.6	3.0	246	82
Riverside-South Coast	MFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
Riverside-South Coast	SFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
Sacramento	MFH	0	0	0	100	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Sacramento	SFH	0	0	0	100	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Sacramento Metropolitan AQMD	MFH	0	0	0	100	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Sacramento Metropolitan AQMD	SFH	0	0	0	100	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Sacramento Valley	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Sacramento Valley	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Salton Sea	MFH	0	100	0	0	457.6	3.0	82.0	0	5	5	0	999.6	3.0	246	82
Salton Sea	SFH	10	85	0	5	457.6	3.0	82.0	0	5	5	0	999.6	3.0	246	82
San Benito	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Benito	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Bernardino-Mojave Desert	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Bernardino-Mojave Desert	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Bernardino-South Coast	MFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
San Bernardino-South Coast	SFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
San Diego	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Diego	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Diego	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Diego	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Diego County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Diego County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
#N/A	MFH	14	55	0	31	92.4	3.5	4.3	0	0.5	0.5	0	954.8	8.5	92	11

Table 5.1 Hearth Usage

Name	Multi or Single Family Home	Wood Hearth %	Natural Gas %	Propane %	No Hearth %	Wood Mass Fireplace	Hours/day Fireplace	Day/year Fireplace	Wood Stove Conventional %	Wood Stove Catalytic %	WoodStove NonCatalytic %	Wood Stove Pellet %	Wood mass Stove	Hours/day Stove	Hours/year Stove	Days/Year Stove
#N/A	SFH	45	55	0	0	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
San Francisco Bay Area	MFH	14	55	0	1	92.4	3.5	4.3	0	2	2	0	954.8	8.5	22	3
San Francisco Bay Area	SFH	50	55	0	7	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
San Joaquin	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Joaquin	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Joaquin Valley	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Joaquin Valley	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Joaquin Valley Unified APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
San Joaquin Valley Unified APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
#N/A	MFH	0	0	0	0	0	0.0	0.0	0	0	0	0	2016.5	3.0	180	60
#N/A	SFH	0	0	0	0	0	0.0	0.0	0	0	0	0	2016.5	3.0	180	60
San Luis Obispo County APCD	MFH	0	0	0	0	0	0.0	0.0	0	0	0	0	2016.5	3.0	180	60
San Luis Obispo County APCD	SFH	0	0	0	0	0	0.0	0.0	0	0	0	0	2016.5	3.0	180	60
#N/A	MFH	14	55	0	31	92.4	3.5	4.3	0	0.5	0.5	0	954.8	8.5	92	11
#N/A	SFH	45	55	0	0	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
Santa Barbara County APCD	MFH	0	0	0	100	0	3.0	82.0	0	0	0	0	0.0	3.0	246	82
Santa Barbara County APCD	SFH	0	0	0	100	0	3.0	82.0	0	0	0	0	0.0	3.0	246	82
Santa Barbara-North of Santa Ynez	MFH	0	0	0	100	0	3.0	82.0	0	0	0	0	0.0	3.0	246	82
Santa Barbara-North of Santa Ynez	SFH	0	0	0	100	0	3.0	82.0	0	0	0	0	0.0	3.0	246	82
Santa Barbara-South of Santa Ynez Range	MFH	0	0	0	100	0	3.0	82.0	0	0	0	0	0.0	3.0	246	82
Santa Barbara-South of Santa Ynez Range	SFH	0	0	0	100	0	3.0	82.0	0	0	0	0	0.0	3.0	246	82
Santa Clara	MFH	14	55	0	31	92.4	3.5	4.3	0	0.5	0.5	0	954.8	8.5	92	11
Santa Clara	SFH	45	55	0	0	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
Santa Cruz	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Santa Cruz	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
#N/A	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
#N/A	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Shasta County AQMD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Shasta County AQMD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Sierra	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Sierra	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Siskiyou	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Siskiyou	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Siskiyou County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Siskiyou County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Solano-San Francisco	MFH	14	55	0	31	92.4	3.5	4.3	0	0.5	0.5	0	954.8	8.5	92	11
Solano-San Francisco	SFH	45	55	0	0	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
Solano-San Joaquin	MFH	35	55	0	10	4558.4	3.0	82.0	0	5	5	0	4558.4	3.0	246	82
Solano-San Joaquin	SFH	31		0	69	770	3.0	82.0	0	2.5	2.5	0	4620.0	3.0	246	82
Sonoma-North Coast	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Sonoma-North Coast	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Sonoma-San Francisco	MFH	14	55	0	31	92.4	3.5	4.3	0	0.5	0.5	0	954.8	8.5	92	11
Sonoma-San Francisco	SFH	45	55	0	0	215.6	3.5	6.3	0	3.5	3.5	0	1355.2	8.5	223	26
South Central Coast	MFH	0	0	0	0	3078.4	3.0	82.0	0	0	0	0	3019.2	3.0	246	82
South Central Coast	SFH	0	0	0	0	3078.4	3.0	82.0	0	0	0	0	3019.2	3.0	246	82
South Coast	MFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
South Coast	SFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
South Coast AQMD	MFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
South Coast AQMD	SFH	5	85	0	10	1019.2	3.0	25.0	0	5	5	0	999.6	3.0	75	25
Stanislaus	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Stanislaus	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Statewide	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Statewide	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Sutter	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Sutter	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
#N/A	MFH	20	20	0	60	4558.4	3.0	82.0	0	30	30	0	4558.4	3.0	246	82
#N/A	SFH	20	20	0	60	4558.4	3.0	82.0	0	30	30	0	4558.4	3.0	246	82

Table 5.1 Hearth Usage

Name	Multi or Single Family Home	Wood Hearth %	Natural Gas %	Propane %	No Hearth %	Wood Mass Fireplace	Hours/day Fireplace	Day/year Fireplace	Wood Stove Conventional %	Wood Stove Catalytic %	WoodStove NonCatalytic %	Wood Stove Pellet %	Wood mass Stove	Hours/day Stove	Hours/year Stove	Days/Year Stove
Tehama County APCD	MFH	20	20	0	60	4558.4	3.0	82.0	0	30	30	0	4558.4	3.0	246	82
Tehama County APCD	SFH	20	20	0	60	4558.4	3.0	82.0	0	30	30	0	4558.4	3.0	246	82
Trinity	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Trinity	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
#N/A	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
#N/A	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Tuolumne	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Tuolumne	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Tuolumne County APCD	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Tuolumne County APCD	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Ventura	MFH	0	0	0	100	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Ventura	SFH	0	0	0	100	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Ventura County APCD	MFH	0	0	0	100	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Ventura County APCD	SFH	0	0	0	100	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0
Yolo	MFH	35	55	0	10	4558.4	3.0	82.0	0	5	5	0	4558.4	3.0	246	82
Yolo	SFH	31		0	69	770	3.0	82.0	0	2.5	2.5	0	4620.0	3.0	246	82
Yolo/Solano AQMD	MFH	35	55	0	10	4558.4	3.0	82.0	0	5	5	0	4558.4	3.0	246	82
Yolo/Solano AQMD	SFH	31		0	69	770	3.0	82.0	0	2.5	2.5	0	4620.0	3.0	246	82
Yuba	MFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82
Yuba	SFH	35	55	0	10	3078.4	3.0	82.0	0	5	5	0	3019.2	3.0	246	82

Table 5.2 Hearth Emission Factors

Hearth Type	TOG, lb/ton of dry wood burned	ROG, lb/ton of dry wood burned	CO, lb/ton of dry wood burned	SO2, lb/ton of dry wood burned	NOX, lb/ton of dry wood burned	PM10, lb/ton of dry wood burned	PM2_5, lb/ton of dry wood burned	PB, lb/ton of dry wood burned	CO2_BIO, lb/ton of dry wood burned	CO2_NBIO, lb/ton of dry wood burned	CH4, lb/ton of dry wood burned	N2O, lb/ton of dry wood burned
Woodstoves Conventional	83	53	230.8	0.4	2.8	30.6	30.6	0	2952	0	30	0
Woodstoves Catalytic	26.6	15	104.4	0.4	2	20.4	20.4	0	2952	0	11.6	0
Woodstoves Noncatalytic	28	12	140.8	0.4	2	19.6	19.6	0	2952	0	16	0
Woodstoves Pellet	28	15	39.4	0.4	13.8	4.2	4.2	0	2952	0	16	0
Wood Fireplace	229	229	252.6	0.4	2.6	34.6	34.6	0	3400	0	0	0.3
Natural Gas	0.01078431	0.01078431	0.00058824	0.09215686	4.902E-07	0.00745098	0.00737255	0.03921569	0	117.647059	0.0022549	0.00215686
Propane	0.01092896	0.01092896	0.08196721		0.1420765	0.00765027	0.00765027	0	0	136.612022	0.00218579	0.00983607
No Fireplace	0	0	0	0	0	0	0	0	0	0	0	0

Notes:

1. Values are based on AP-42 emission factors.

itectural Coating Emission Factors

Location Type	Name	CoatingType	Start Date	End Date	ROG, g/L	Rule Name	Amended Date
Air Basin	Great Basin Valleys	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Great Basin Valleys	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Great Basin Valleys	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Great Basin Valleys	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Lake County	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Lake County	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Lake County	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Lake County	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Lake Tahoe	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Lake Tahoe	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Lake Tahoe	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Lake Tahoe	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mojave Desert	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mojave Desert	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mojave Desert	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mojave Desert	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mountain Counties	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mountain Counties	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mountain Counties	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mountain Counties	Residential Interior	1/1/1900	12/31/3000	250	Default	
	North Central Coast	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	North Central Coast	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	North Central Coast	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	North Central Coast	Residential Interior	1/1/1900	12/31/3000	250	Default	
	North Coast	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	North Coast	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	North Coast	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	North Coast	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Northeast Plateau	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Northeast Plateau	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Northeast Plateau	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Northeast Plateau	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Sacramento Valley	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Sacramento Valley	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Sacramento Valley	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Sacramento Valley	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Salton Sea	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Salton Sea	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Salton Sea	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Salton Sea	Residential Interior	1/1/1900	12/31/3000	250	Default	
	San Diego	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	San Diego	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	San Diego	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	San Diego	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	San Diego	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	San Diego	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	San Diego	Residential Interior	1/1/1900	12/31/3000	250	Default	
	San Diego	Residential Interior	1/1/1900	12/31/3000	250	Default	
	San Francisco Bay Area	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	San Francisco Bay Area	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	San Francisco Bay Area	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	San Francisco Bay Area	Residential Interior	1/1/1900	12/31/3000	250	Default	
	San Joaquin Valley	Nonresidential Exterior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	San Joaquin Valley	Nonresidential Exterior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	San Joaquin Valley	Nonresidential Interior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	San Joaquin Valley	Nonresidential Interior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	San Joaquin Valley	Residential Exterior	1/1/1900	12/31/2010	250	R4601	40164
	San Joaquin Valley	Residential Exterior	1/1/2011	12/31/3000	150	R4601	40164
	San Joaquin Valley	Residential Interior	1/1/1900	12/31/2010	250	R4601	40164
	San Joaquin Valley	Residential Interior	1/1/2011	12/31/3000	150	R4601	40164
	South Central Coast	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	South Central Coast	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	South Central Coast	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	South Central Coast	Residential Interior	1/1/1900	12/31/3000	250	Default	
	South Coast	Nonresidential Exterior	1/1/1900	12/31/3000	250	1113	
	South Coast	Nonresidential Interior	1/1/1900	12/31/3000	250	1113	
	South Coast	Residential Exterior	1/1/1900	6/30/2008	250	1113	
	South Coast	Residential Exterior	7/1/2008	12/31/3000	100	1113	
	South Coast	Residential Interior	1/1/1900	6/30/2008	100	1113	
	South Coast	Residential Interior	7/1/2008	12/31/3000	50	1113	
	Amador County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Amador County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Amador County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Amador County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Antelope Valley APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Antelope Valley APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Antelope Valley APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Antelope Valley APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Bay Area AQMD	Nonresidential Exterior	1/1/1900	12/31/2011	250	Default	
	Bay Area AQMD	Nonresidential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Bay Area AQMD	Nonresidential Interior	1/1/1900	12/31/2011	250	Default	
	Bay Area AQMD	Nonresidential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Bay Area AQMD	Residential Exterior	1/1/1900	12/31/2011	250	Default	
	Bay Area AQMD	Residential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Bay Area AQMD	Residential Interior	1/1/1900	12/31/2011	250	Default	
	Bay Area AQMD	Residential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Butte County AQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Butte County AQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Butte County AQMD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Butte County AQMD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Calaveras County AQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Calaveras County AQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Calaveras County AQMD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Calaveras County AQMD	Residential Interior	1/1/1900	12/31/3000	250	Default	

itectural Coating Emission Factors

Location Type	Name	CoatingType	Start Date	End Date	ROG, g/L	Rule Name	Amended Date
Air District	Colusa County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Colusa County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Colusa County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Colusa County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	El Dorado County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	El Dorado County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	El Dorado County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	El Dorado County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Feather River AQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Feather River AQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Feather River AQMD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Feather River AQMD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Glenn County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Glenn County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Glenn County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Glenn County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Great Basin UAPCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Great Basin UAPCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Great Basin UAPCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Great Basin UAPCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Imperial County APCD	Nonresidential Exterior	1/1/1900	12/31/2010	250	Default	
	Imperial County APCD	Nonresidential Exterior	1/1/2011	12/31/2040	150	R424	40232
	Imperial County APCD	Nonresidential Interior	1/1/1900	12/31/2010	250	Default	
	Imperial County APCD	Nonresidential Interior	1/1/2011	12/31/2040	150	R424	40232
	Imperial County APCD	Residential Exterior	1/1/1900	12/31/2010	250	Default	
	Imperial County APCD	Residential Exterior	1/1/2011	12/31/2040	100	R424	40232
	Imperial County APCD	Residential Interior	1/1/1900	12/31/2010	250	Default	
	Imperial County APCD	Residential Interior	1/1/2011	12/31/2040	100	R424	40232
	Kern County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Kern County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Kern County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Kern County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Lake County AQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Lake County AQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Lake County AQMD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Lake County AQMD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Lassen County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Lassen County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Lassen County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Lassen County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mariposa County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mariposa County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mariposa County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mariposa County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino County AQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino County AQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino County AQMD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino County AQMD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Modoc County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Modoc County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Modoc County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Modoc County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mojave Desert AQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mojave Desert AQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mojave Desert AQMD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mojave Desert AQMD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Monterey Bay Unified APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Monterey Bay Unified APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Monterey Bay Unified APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Monterey Bay Unified APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	North Coast Unified APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	North Coast Unified APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	North Coast Unified APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	North Coast Unified APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Northern Sierra AQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Northern Sierra AQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Northern Sierra AQMD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Northern Sierra AQMD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Northern Sonoma County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Northern Sonoma County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Northern Sonoma County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Northern Sonoma County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Placer County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Placer County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Placer County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Placer County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Sacramento Metropolitan AQMD	Nonresidential Exterior	1/1/1900	12/31/2002	250	Default	
	Sacramento Metropolitan AQMD	Nonresidential Exterior	1/1/2003	12/31/2040	150	R442	5/24/2001
	Sacramento Metropolitan AQMD	Nonresidential Interior	1/1/1900	12/31/2002	250	Default	
	Sacramento Metropolitan AQMD	Nonresidential Interior	1/1/2003	12/31/2040	150	R442	5/24/2001
	Sacramento Metropolitan AQMD	Residential Exterior	1/1/1900	12/31/2002	250	Default	
	Sacramento Metropolitan AQMD	Residential Exterior	1/1/2003	12/31/2040	100	R442	5/24/2001
	Sacramento Metropolitan AQMD	Residential Interior	1/1/1900	12/31/2002	250	Default	
	Sacramento Metropolitan AQMD	Residential Interior	1/1/2003	12/31/2040	100	R442	5/24/2001
	San Diego County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	San Diego County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	San Diego County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	San Diego County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	San Joaquin Valley Unified APCD	Nonresidential Exterior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	San Joaquin Valley Unified APCD	Nonresidential Exterior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	San Joaquin Valley Unified APCD	Nonresidential Interior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	San Joaquin Valley Unified APCD	Nonresidential Interior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	San Joaquin Valley Unified APCD	Residential Exterior	1/1/1900	12/31/2010	250	R4601	40164
	San Joaquin Valley Unified APCD	Residential Exterior	1/1/2011	12/31/3000	150	R4601	40164

itectural Coating Emission Factors

Location Type	Name	CoatingType	Start Date	End Date	ROG, g/L	Rule Name	Amended Date
	San Joaquin Valley Unified APCD	Residential Interior	1/1/1900	12/31/2010	250	R4601	40164
	San Joaquin Valley Unified APCD	Residential Interior	1/1/2011	12/31/3000	150	R4601	40164
	San Luis Obispo County APCD	Nonresidential Exterior	1/1/1900	12/31/2040	250	R433	37341
	San Luis Obispo County APCD	Nonresidential Interior	1/1/1900	12/31/2040	250	R433	37341
	San Luis Obispo County APCD	Residential Exterior	1/1/1900	12/31/2040	250	R433	37341
	San Luis Obispo County APCD	Residential Interior	1/1/1900	12/31/2040	250	R433	37341
	Santa Barbara County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Rule 323	37210
	Santa Barbara County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Rule 323	37210
	Santa Barbara County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Rule 323	37210
	Santa Barbara County APCD	Residential Interior	1/1/1900	12/31/3000	250	Rule 323	37210
	Shasta County AQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Shasta County AQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Shasta County AQMD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Shasta County AQMD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Siskiyou County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Siskiyou County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Siskiyou County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Siskiyou County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	South Coast AQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	1113	
	South Coast AQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	1113	
	South Coast AQMD	Residential Exterior	1/1/1900	6/30/2008	250	1113	
	South Coast AQMD	Residential Exterior	7/1/2008	12/31/3000	100	1113	
	South Coast AQMD	Residential Interior	1/1/1900	6/30/2008	100	1113	
	South Coast AQMD	Residential Interior	7/1/2008	12/31/3000	50	1113	
	Tehama County APCD	Nonresidential Exterior	1/1/1900	12/31/2002	250	Default	
	Tehama County APCD	Nonresidential Exterior	1/1/2003	12/31/2040	150	R4.39	37488
	Tehama County APCD	Nonresidential Interior	1/1/1900	12/31/2002	250	Default	
	Tehama County APCD	Nonresidential Interior	1/1/2003	12/31/2040	150	R4.39	37488
	Tehama County APCD	Residential Exterior	1/1/1900	12/31/2002	250	Default	
	Tehama County APCD	Residential Exterior	1/1/2003	12/31/2040	100	R4.39	37488
	Tehama County APCD	Residential Interior	1/1/1900	12/31/2002	250	Default	
	Tehama County APCD	Residential Interior	1/1/2003	12/31/2040	100	R4.39	37488
	Tuolumne County APCD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Tuolumne County APCD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Tuolumne County APCD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Tuolumne County APCD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Ventura County APCD	Nonresidential Exterior	1/1/1900	12/31/2003	250	Default	
	Ventura County APCD	Nonresidential Exterior	1/1/2004	1/11/2010	150	R74.2	40190
	Ventura County APCD	Nonresidential Exterior	1/12/2010	12/31/3000	250	R74.2	40190
	Ventura County APCD	Nonresidential Interior	1/1/1900	12/31/2003	250	Default	
	Ventura County APCD	Nonresidential Interior	1/1/2004	1/11/2010	150	R74.2	40190
	Ventura County APCD	Nonresidential Interior	1/12/2010	12/31/3000	250	R74.2	40190
	Ventura County APCD	Residential Exterior	1/1/1900	12/31/2003	250	Default	
	Ventura County APCD	Residential Exterior	1/1/2004	1/11/2010	100	R74.2	40190
	Ventura County APCD	Residential Exterior	1/12/2010	12/31/3000	100	R74.2	40190
	Ventura County APCD	Residential Interior	1/1/1900	12/31/2003	250	Default	
	Ventura County APCD	Residential Interior	1/1/2004	1/11/2010	100	R74.2	40190
	Ventura County APCD	Residential Interior	1/12/2010	12/31/3000	75	R74.2	40190
	Yolo/Solano AQMD	Nonresidential Exterior	1/1/1900	12/31/2002	250	Default	
	Yolo/Solano AQMD	Nonresidential Exterior	1/1/2003	12/31/2040	150	R2-14	37209
	Yolo/Solano AQMD	Nonresidential Interior	1/1/1900	12/31/2002	250	Default	
	Yolo/Solano AQMD	Nonresidential Interior	1/1/2003	12/31/2040	150	R2-14	37209
	Yolo/Solano AQMD	Residential Exterior	1/1/1900	12/31/2002	250	Default	
	Yolo/Solano AQMD	Residential Exterior	1/1/2003	12/31/2040	100	R2-14	37209
	Yolo/Solano AQMD	Residential Interior	1/1/1900	12/31/2002	250	Default	
	Yolo/Solano AQMD	Residential Interior	1/1/2003	12/31/2040	100	R2-14	37209
	Alameda	Nonresidential Exterior	1/1/1900	12/31/2011	250	Default	
	Alameda	Nonresidential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Alameda	Nonresidential Interior	1/1/1900	12/31/2011	250	Default	
	Alameda	Nonresidential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Alameda	Residential Exterior	1/1/1900	12/31/2011	250	Default	
	Alameda	Residential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Alameda	Residential Interior	1/1/1900	12/31/2011	250	Default	
	Alameda	Residential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Alpine	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Alpine	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Alpine	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Alpine	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Amador	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Amador	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Amador	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Amador	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Butte	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Butte	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Butte	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Butte	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Calaveras	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Calaveras	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Calaveras	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Calaveras	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Colusa	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Colusa	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Colusa	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Colusa	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Contra Costa	Nonresidential Exterior	1/1/1900	12/31/2011	250	Default	
	Contra Costa	Nonresidential Exterior	1/1/2012	12/31/2040	150	REG8.3	7/1/2009
	Contra Costa	Nonresidential Interior	1/1/1900	12/31/2011	250	Default	
	Contra Costa	Nonresidential Interior	1/1/2012	12/31/2040	100	REG8.3	7/1/2009
	Contra Costa	Residential Exterior	1/1/1900	12/31/2011	250	Default	
	Contra Costa	Residential Exterior	1/1/2012	12/31/2040	150	REG8.3	7/1/2009
	Contra Costa	Residential Interior	1/1/1900	12/31/2011	250	Default	
	Contra Costa	Residential Interior	1/1/2012	12/31/2040	100	REG8.3	7/1/2009
	Del Norte	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Del Norte	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	

itectural Coating Emission Factors

Location Type	Name	CoatingType	Start Date	End Date	ROG, g/L	Rule Name	Amended Date
	Del Norte	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Del Norte	Residential Interior	1/1/1900	12/31/3000	250	Default	
	El Dorado-Lake Tahoe	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	El Dorado-Lake Tahoe	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	El Dorado-Lake Tahoe	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	El Dorado-Lake Tahoe	Residential Interior	1/1/1900	12/31/3000	250	Default	
	El Dorado-Mountain County	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	El Dorado-Mountain County	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	El Dorado-Mountain County	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	El Dorado-Mountain County	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Fresno	Nonresidential Exterior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	Fresno	Nonresidential Exterior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	Fresno	Nonresidential Interior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	Fresno	Nonresidential Interior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	Fresno	Residential Exterior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	Fresno	Residential Exterior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	Fresno	Residential Interior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	Fresno	Residential Interior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	Glenn	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Glenn	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Glenn	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Glenn	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Humboldt	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Humboldt	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Humboldt	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Humboldt	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Imperial	Nonresidential Exterior	1/1/1900	12/31/2010	250	Default	
	Imperial	Nonresidential Exterior	1/1/2011	12/31/2040	150	R424	40232
	Imperial	Nonresidential Interior	1/1/1900	12/31/2010	250	Default	
	Imperial	Nonresidential Interior	1/1/2011	12/31/2040	150	R424	40232
	Imperial	Residential Exterior	1/1/1900	12/31/2010	250	Default	
	Imperial	Residential Exterior	1/1/2011	12/31/2040	100	R424	40232
	Imperial	Residential Interior	1/1/1900	12/31/2010	250	Default	
	Imperial	Residential Interior	1/1/2011	12/31/2040	100	R424	40232
	Inyo	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Inyo	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Inyo	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Inyo	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Kern-Mojave Desert	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Kern-Mojave Desert	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Kern-Mojave Desert	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Kern-Mojave Desert	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Kern-San Joaquin	Nonresidential Exterior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	Kern-San Joaquin	Nonresidential Exterior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	Kern-San Joaquin	Nonresidential Interior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	Kern-San Joaquin	Nonresidential Interior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	Kern-San Joaquin	Residential Exterior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	Kern-San Joaquin	Residential Exterior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	Kern-San Joaquin	Residential Interior	1/1/1900	12/31/2010	250	R4601	40164
	Kern-San Joaquin	Residential Interior	1/1/2011	12/31/3000	150	R4601	40164
	Kings	Nonresidential Exterior	1/1/1900	12/31/2010	250	R4601	40164
	Kings	Nonresidential Exterior	1/1/2011	12/31/3000	150	R4601	40164
	Kings	Nonresidential Interior	1/1/1900	12/31/2010	250	R4601	40164
	Kings	Nonresidential Interior	1/1/2011	12/31/3000	150	R4601	40164
	Kings	Residential Exterior	1/1/1900	12/31/2010	250	R4601	40164
	Kings	Residential Exterior	1/1/2011	12/31/3000	150	R4601	40164
	Kings	Residential Interior	1/1/1900	12/31/2010	250	R4601	40164
	Kings	Residential Interior	1/1/2011	12/31/3000	150	R4601	40164
	Lake	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Lake	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Lake	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Lake	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Lassen	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Lassen	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Lassen	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Lassen	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Los Angeles-Mojave Desert	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Los Angeles-Mojave Desert	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Los Angeles-Mojave Desert	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Los Angeles-Mojave Desert	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Los Angeles-South Coast	Nonresidential Exterior	1/1/1900	12/31/3000	250	1113	
	Los Angeles-South Coast	Nonresidential Interior	1/1/1900	12/31/3000	250	1113	
	Los Angeles-South Coast	Residential Exterior	1/1/1900	6/30/2008	250	1113	
	Los Angeles-South Coast	Residential Exterior	7/1/2008	12/31/3000	100	1113	
	Los Angeles-South Coast	Residential Interior	1/1/1900	6/30/2008	100	1113	
	Los Angeles-South Coast	Residential Interior	7/1/2008	12/31/3000	50	1113	
	Madera	Nonresidential Exterior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	Madera	Nonresidential Exterior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	Madera	Nonresidential Interior	1/1/1900	12/31/2010	250	R4601	12/17/2009
	Madera	Nonresidential Interior	1/1/2011	12/31/3000	150	R4601	12/17/2009
	Madera	Residential Exterior	1/1/1900	12/31/2010	250	R4601	40164
	Madera	Residential Exterior	1/1/2011	12/31/3000	150	R4601	40164
	Madera	Residential Interior	1/1/1900	12/31/2010	250	R4601	40164
	Madera	Residential Interior	1/1/2011	12/31/3000	150	R4601	40164
	Marin	Nonresidential Exterior	1/1/1900	12/31/2011	250	Default	
	Marin	Nonresidential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Marin	Nonresidential Interior	1/1/1900	12/31/2011	250	Default	
	Marin	Nonresidential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Marin	Residential Exterior	1/1/1900	12/31/2011	250	Default	
	Marin	Residential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Marin	Residential Interior	1/1/1900	12/31/2011	250	Default	
	Marin	Residential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Mariposa	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mariposa	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	

itectural Coating Emission Factors

Location Type	Name	CoatingType	Start Date	End Date	ROG, g/L	Rule Name	Amended Date
Counties	Mariposa	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mariposa	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Coastal	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Coastal	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Coastal	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Coastal	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Inland	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Inland	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Inland	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Inland	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Rural Inland North	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Rural Inland North	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Rural Inland North	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Rural Inland North	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Rural Inland South	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Rural Inland South	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Rural Inland South	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mendocino-Rural Inland South	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Merced	Nonresidential Exterior	1/1/1900	12/31/2010	250	R4601	40164
	Merced	Nonresidential Exterior	1/1/2011	12/31/3000	150	R4601	40164
	Merced	Nonresidential Interior	1/1/1900	12/31/2010	250	R4601	40164
	Merced	Nonresidential Interior	1/1/2011	12/31/3000	150	R4601	40164
	Merced	Residential Exterior	1/1/1900	12/31/2010	250	R4601	40164
	Merced	Residential Exterior	1/1/2011	12/31/3000	150	R4601	40164
	Merced	Residential Interior	1/1/1900	12/31/2010	250	R4601	40164
	Merced	Residential Interior	1/1/2011	12/31/3000	150	R4601	40164
	Modoc	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Modoc	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Modoc	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Modoc	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Mono	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Mono	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Mono	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Mono	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Monterey	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Monterey	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Monterey	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Monterey	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Napa	Nonresidential Exterior	1/1/1900	12/31/2011	250	Default	
	Napa	Nonresidential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Napa	Nonresidential Interior	1/1/1900	12/31/2011	250	Default	
	Napa	Nonresidential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Napa	Residential Exterior	1/1/1900	12/31/2011	250	Default	
	Napa	Residential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Napa	Residential Interior	1/1/1900	12/31/2011	250	Default	
	Napa	Residential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Nevada	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Nevada	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Nevada	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Nevada	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Orange	Nonresidential Exterior	1/1/1900	12/31/3000	250	1113	
	Orange	Nonresidential Interior	1/1/1900	12/31/3000	250	1113	
	Orange	Residential Exterior	1/1/1900	6/30/2008	250	1113	
	Orange	Residential Exterior	7/1/2008	12/31/3000	100	1113	
	Orange	Residential Interior	1/1/1900	6/30/2008	100	1113	
	Orange	Residential Interior	7/1/2008	12/31/3000	50	1113	
	Placer-Lake Tahoe	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Placer-Lake Tahoe	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Placer-Lake Tahoe	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Placer-Lake Tahoe	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Placer-Mountain Counties	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Placer-Mountain Counties	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Placer-Mountain Counties	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Placer-Mountain Counties	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Placer-Sacramento	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Placer-Sacramento	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Placer-Sacramento	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Placer-Sacramento	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Plumas	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Plumas	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Plumas	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Plumas	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Riverside-Mojave Desert MDAQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Riverside-Mojave Desert MDAQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Riverside-Mojave Desert MDAQMD	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Riverside-Mojave Desert MDAQMD	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Riverside-Mojave Desert SCAQMD	Nonresidential Exterior	1/1/1900	12/31/3000	250	1113	
	Riverside-Mojave Desert SCAQMD	Nonresidential Interior	1/1/1900	12/31/3000	250	1113	
	Riverside-Mojave Desert SCAQMD	Residential Exterior	1/1/1900	6/30/2008	250	1113	
	Riverside-Mojave Desert SCAQMD	Residential Exterior	7/1/2008	12/31/3000	100	1113	
	Riverside-Mojave Desert SCAQMD	Residential Interior	1/1/1900	6/30/2008	100	1113	
	Riverside-Mojave Desert SCAQMD	Residential Interior	7/1/2008	12/31/3000	50	1113	
	Riverside-Salton Sea	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Riverside-Salton Sea	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Riverside-Salton Sea	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Riverside-Salton Sea	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Riverside-South Coast	Nonresidential Exterior	1/1/1900	12/31/3000	250	1113	
	Riverside-South Coast	Nonresidential Interior	1/1/1900	12/31/3000	250	1113	
	Riverside-South Coast	Residential Exterior	1/1/1900	6/30/2008	250	1113	
	Riverside-South Coast	Residential Exterior	7/1/2008	12/31/3000	100	1113	
	Riverside-South Coast	Residential Interior	1/1/1900	6/30/2008	100	1113	
	Riverside-South Coast	Residential Interior	7/1/2008	12/31/3000	50	1113	
	Sacramento	Nonresidential Exterior	1/1/1900	12/31/2002	250	Default	
	Sacramento	Nonresidential Exterior	1/1/2003	12/31/2040	150	R442	5/24/2001

itectural Coating Emission Factors

Location Type	Name	CoatingType	Start Date	End Date	ROG, g/L	Rule Name	Amended Date
	Sacramento	Nonresidential Interior	1/1/1900	12/31/2002	250	Default	
	Sacramento	Nonresidential Interior	1/1/2003	12/31/2040	150	R442	5/24/2001
	Sacramento	Residential Exterior	1/1/1900	12/31/2002	250	Default	
	Sacramento	Residential Exterior	1/1/2003	12/31/2040	100	R442	5/24/2001
	Sacramento	Residential Interior	1/1/1900	12/31/2002	250	Default	
	Sacramento	Residential Interior	1/1/2003	12/31/2040	100	R442	37035
	San Benito	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	San Benito	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	San Benito	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	San Benito	Residential Interior	1/1/1900	12/31/3000	250	Default	
	San Bernardino-Mojave Desert	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	San Bernardino-Mojave Desert	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	San Bernardino-Mojave Desert	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	San Bernardino-Mojave Desert	Residential Interior	1/1/1900	12/31/3000	250	Default	
	San Bernardino-South Coast	Nonresidential Exterior	1/1/1900	12/31/3000	250	1113	
	San Bernardino-South Coast	Nonresidential Interior	1/1/1900	12/31/3000	250	1113	
	San Bernardino-South Coast	Residential Exterior	1/1/1900	6/30/2008	250	1113	
	San Bernardino-South Coast	Residential Exterior	7/1/2008	12/31/3000	100	1113	
	San Bernardino-South Coast	Residential Interior	1/1/1900	6/30/2008	100	1113	
	San Bernardino-South Coast	Residential Interior	7/1/2008	12/31/3000	50	1113	
	San Francisco	Nonresidential Exterior	1/1/1900	12/31/2011	250	Default	
	San Francisco	Nonresidential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	San Francisco	Nonresidential Interior	1/1/1900	12/31/2011	250	Default	
	San Francisco	Nonresidential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	San Francisco	Residential Exterior	1/1/1900	12/31/2011	250	Default	
	San Francisco	Residential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	San Francisco	Residential Interior	1/1/1900	12/31/2011	250	Default	
	San Francisco	Residential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	San Joaquin	Nonresidential Exterior	1/1/1900	12/31/2010	250	R4601	40164
	San Joaquin	Nonresidential Exterior	1/1/2011	12/31/3000	150	R4601	40164
	San Joaquin	Nonresidential Interior	1/1/1900	12/31/2010	250	R4601	40164
	San Joaquin	Nonresidential Interior	1/1/2011	12/31/3000	150	R4601	40164
	San Joaquin	Residential Exterior	1/1/1900	12/31/2010	250	R4601	40164
	San Joaquin	Residential Exterior	1/1/2011	12/31/3000	150	R4601	40164
	San Joaquin	Residential Interior	1/1/1900	12/31/2010	250	R4601	40164
	San Joaquin	Residential Interior	1/1/2011	12/31/3000	150	R4601	40164
	San Luis Obispo	Nonresidential Exterior	1/1/1900	12/31/2040	250	R433	37341
	San Luis Obispo	Nonresidential Interior	1/1/1900	12/31/2040	250	R433	37341
	San Luis Obispo	Residential Exterior	1/1/1900	12/31/2040	250	R433	37341
	San Luis Obispo	Residential Interior	1/1/1900	12/31/2040	250	R433	37341
	San Mateo	Nonresidential Exterior	1/1/1900	12/31/2011	250	Default	
	San Mateo	Nonresidential Exterior	1/1/2012	12/31/2040	150	REG8.3	7/1/2009
	San Mateo	Nonresidential Interior	1/1/1900	12/31/2011	250	Default	
	San Mateo	Nonresidential Interior	1/1/2012	12/31/2040	100	REG8.3	7/1/2009
	San Mateo	Residential Exterior	1/1/1900	12/31/2011	250	Default	
	San Mateo	Residential Exterior	1/1/2012	12/31/2040	150	REG8.3	7/1/2009
	San Mateo	Residential Interior	1/1/1900	12/31/2011	250	Default	
	San Mateo	Residential Interior	1/1/2012	12/31/2040	100	REG8.3	7/1/2009
	Santa Barbara-North of Santa Ynez	Nonresidential Exterior	1/1/1900	12/31/3000	250	Rule 323	37210
	Santa Barbara-North of Santa Ynez	Nonresidential Interior	1/1/1900	12/31/3000	250	Rule 323	37210
	Santa Barbara-North of Santa Ynez	Residential Exterior	1/1/1900	12/31/3000	250	Rule 323	37210
	Santa Barbara-North of Santa Ynez	Residential Interior	1/1/1900	12/31/3000	250	Rule 323	37210
	Santa Barbara-South of Santa Ynez Range	Nonresidential Exterior	1/1/1900	12/31/3000	250	Rule 323	11/15/2001
	Santa Barbara-South of Santa Ynez Range	Nonresidential Interior	1/1/1900	12/31/3000	250	Rule 323	11/15/2001
	Santa Barbara-South of Santa Ynez Range	Residential Exterior	1/1/1900	12/31/3000	250	Rule 323	11/15/2001
	Santa Barbara-South of Santa Ynez Range	Residential Interior	1/1/1900	12/31/3000	250	Rule 323	11/15/2001
	Santa Clara	Nonresidential Exterior	1/1/1900	12/31/2011	250	Default	
	Santa Clara	Nonresidential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Santa Clara	Nonresidential Interior	1/1/1900	12/31/2011	250	Default	
	Santa Clara	Nonresidential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Santa Clara	Residential Exterior	1/1/1900	12/31/2011	250	Default	
	Santa Clara	Residential Exterior	1/1/2012	12/31/2040	150	REG8.3	7/1/2009
	Santa Clara	Residential Interior	1/1/1900	12/31/2011	250	Default	
	Santa Clara	Residential Interior	1/1/2012	12/31/2040	100	REG8.3	7/1/2009
	Santa Cruz	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Santa Cruz	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Santa Cruz	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Santa Cruz	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Shasta	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Shasta	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Shasta	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Shasta	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Sierra	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Sierra	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Sierra	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Sierra	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Siskiyou	Nonresidential Exterior	1/1/1900	12/31/3000	250	Default	
	Siskiyou	Nonresidential Interior	1/1/1900	12/31/3000	250	Default	
	Siskiyou	Residential Exterior	1/1/1900	12/31/3000	250	Default	
	Siskiyou	Residential Interior	1/1/1900	12/31/3000	250	Default	
	Solano-San Francisco	Nonresidential Exterior	1/1/1900	12/31/2011	250	Default	
	Solano-San Francisco	Nonresidential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Solano-San Francisco	Nonresidential Interior	1/1/1900	12/31/2011	250	Default	
	Solano-San Francisco	Nonresidential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Solano-San Francisco	Residential Exterior	1/1/1900	12/31/2011	250	Default	
	Solano-San Francisco	Residential Exterior	1/1/2012	12/31/2040	150	REG8.3	39995
	Solano-San Francisco	Residential Interior	1/1/1900	12/31/2011	250	Default	
	Solano-San Francisco	Residential Interior	1/1/2012	12/31/2040	100	REG8.3	39995
	Solano-San Joaquin	Nonresidential Exterior	1	37621	250	Default	
	Solano-San Joaquin	Nonresidential Exterior	37622	51501	150	R2-14	37209
	Solano-San Joaquin	Nonresidential Interior	1	37621	250	Default	
	Solano-San Joaquin	Nonresidential Interior	37622	51501	150	R2-14	37209
	Solano-San Joaquin	Residential Exterior	1	37621	250	Default	
	Solano-San Joaquin	Residential Exterior	37622	51501	100	R2-14	37209

itectural Coating Emission Factors

Location Type	Name	CoatingType	Start Date	End Date	ROG, g/L	Rule Name	Amended Date
	Solano-San Joaquin	Residential Interior	1	37621	250	Default	
	Solano-San Joaquin	Residential Interior	37622	51501	100	R2-14	37209
	Sonoma-North Coast	Nonresidential Exterior	1	402133	250	Default	
	Sonoma-North Coast	Nonresidential Interior	1	402133	250	Default	
	Sonoma-North Coast	Residential Exterior	1	402133	250	Default	
	Sonoma-North Coast	Residential Interior	1	402133	250	Default	
	Sonoma-San Francisco	Nonresidential Exterior	1	40908	250	Default	
	Sonoma-San Francisco	Nonresidential Exterior	40909	51501	150	REG8.3	39995
	Sonoma-San Francisco	Nonresidential Interior	1	40908	250	Default	
	Sonoma-San Francisco	Nonresidential Interior	40909	51501	100	REG8.3	39995
	Sonoma-San Francisco	Residential Exterior	1	40908	250	Default	
	Sonoma-San Francisco	Residential Exterior	40909	51501	150	REG8.3	39995
	Sonoma-San Francisco	Residential Interior	1	40908	250	Default	
	Sonoma-San Francisco	Residential Interior	40909	51501	100	REG8.3	39995
	Stanislaus	Nonresidential Exterior	1	40543	250	R4601	40164
	Stanislaus	Nonresidential Exterior	40544	402133	150	R4601	40164
	Stanislaus	Nonresidential Interior	1	40543	250	R4601	40164
	Stanislaus	Nonresidential Interior	40544	402133	150	R4601	40164
	Stanislaus	Residential Exterior	1	40543	250	R4601	40164
	Stanislaus	Residential Exterior	40544	402133	150	R4601	40164
	Stanislaus	Residential Interior	1	40543	250	R4601	40164
	Stanislaus	Residential Interior	40544	402133	150	R4601	40164
	Sutter	Nonresidential Exterior	1	402133	250	Default	
	Sutter	Nonresidential Interior	1	402133	250	Default	
	Sutter	Residential Exterior	1	402133	250	Default	
	Sutter	Residential Interior	1	402133	250	Default	
	Tehama	Nonresidential Exterior	1	37621	250	Default	
	Tehama	Nonresidential Exterior	37622	51501	150	R4.39	37488
	Tehama	Nonresidential Interior	1	37621	250	Default	
	Tehama	Nonresidential Interior	37622	51501	150	R4.39	37488
	Tehama	Residential Exterior	1	37621	250	Default	
	Tehama	Residential Exterior	37622	51501	100	R4.39	37488
	Tehama	Residential Interior	1	37621	250	Default	
	Tehama	Residential Interior	37622	51501	100	R4.39	37488
	Trinity	Nonresidential Exterior	1	402133	250	Default	
	Trinity	Nonresidential Interior	1	402133	250	Default	
	Trinity	Residential Exterior	1	402133	250	Default	
	Trinity	Residential Interior	1	402133	250	Default	
	Tulare	Nonresidential Exterior	1	40543	250	R4601	40164
	Tulare	Nonresidential Exterior	40544	402133	150	R4601	40164
	Tulare	Nonresidential Interior	1	40543	250	R4601	40164
	Tulare	Nonresidential Interior	40544	402133	150	R4601	40164
	Tulare	Residential Exterior	1	40543	250	R4601	40164
	Tulare	Residential Exterior	40544	402133	150	R4601	40164
	Tulare	Residential Interior	1	40543	250	R4601	40164
	Tulare	Residential Interior	40544	402133	150	R4601	40164
	Tuolumne	Nonresidential Exterior	1	402133	250	Default	
	Tuolumne	Nonresidential Interior	1	402133	250	Default	
	Tuolumne	Residential Exterior	1	402133	250	Default	
	Tuolumne	Residential Interior	1	402133	250	Default	
	Ventura	Nonresidential Exterior	1	37986	250	Default	
	Ventura	Nonresidential Exterior	37987	40189	150	R74.2	40190
	Ventura	Nonresidential Exterior	40190	402133	250	R74.2	40190
	Ventura	Nonresidential Interior	1	37986	250	Default	
	Ventura	Nonresidential Interior	37987	40189	150	R74.2	40190
	Ventura	Nonresidential Interior	40190	402133	250	R74.2	40190
	Ventura	Residential Exterior	1	37986	250	Default	
	Ventura	Residential Exterior	37987	40189	100	R74.2	40190
	Ventura	Residential Exterior	40190	402133	100	R74.2	40190
	Ventura	Residential Interior	1	37986	250	Default	
	Ventura	Residential Interior	37987	40189	100	R74.2	40190
	Ventura	Residential Interior	40190	402133	75	R74.2	40190
	Yolo	Nonresidential Exterior	1	37621	250	Default	
	Yolo	Nonresidential Exterior	37622	51501	150	R2-14	37209
	Yolo	Nonresidential Interior	1	37621	250	Default	
	Yolo	Nonresidential Interior	37622	51501	150	R2-14	37209
	Yolo	Residential Exterior	1	37621	250	Default	
	Yolo	Residential Exterior	37622	51501	100	R2-14	37209
	Yolo	Residential Interior	1	37621	250	Default	
	Yolo	Residential Interior	37622	51501	100	R2-14	37209
	Yuba	Nonresidential Exterior	1	402133	250	Default	
	Yuba	Nonresidential Interior	1	402133	250	Default	
	Yuba	Residential Exterior	1	402133	250	Default	
	Yuba	Residential Interior	1	402133	250	Default	
Statewide	Statewide	Nonresidential Exterior	1	402133	250	Default	
	Statewide	Nonresidential Interior	1	402133	250	Default	
	Statewide	Residential Exterior	1	402133	250	Default	
	Statewide	Residential Interior	1	402133	250	Default	

Table 7.1 Number of Snow and Summer Days
Default: 0 Snow Days and 180 Summer Days

Location Type	Name	Number Snow Days	Number Summer Days
Air Basin	Great Basin Valleys	0	180
	Lake County	0	180
	Lake Tahoe	0	180
	Mojave Desert	0	180
	Mountain Counties	0	180
	North Central Coast	0	180
	North Coast	0	180
	Northeast Plateau	0	180
	Sacramento Valley	0	180
	Salton Sea	0	180
	San Diego	0	180
	San Francisco Bay Area	0	180
	San Joaquin Valley	0	180
	South Central Coast	0	180
	South Coast	0	365
Air District	Amador County APCD	0	180
	Antelope Valley APCD	0	180
	Bay Area AQMD	0	180
	Butte County AQMD	0	180
	Calaveras County AQMD	0	180
	Colusa County APCD	0	180
	El Dorado County APCD	0	180
	Feather River AQMD	0	180
	Glenn County APCD	0	180
	Great Basin UAPCD	0	180
	Imperial County APCD	0	180
	Kern County APCD	0	180
	Lake County AQMD	0	180
	Lassen County APCD	0	180
	Mariposa County APCD	0	180
	Mendocino County AQMD	0	180
	Modoc County APCD	0	180
	Mojave Desert AQMD	0	180
	Monterey Bay Unified APCD	0	180
	North Coast Unified APCD	0	180
	Northern Sierra AQMD	0	180
	Northern Sonoma County APCD	0	180
	Placer County APCD	0	180
	Sacramento Metropolitan AQMD	0	180
	San Diego County APCD	0	180
	San Joaquin Valley Unified APCD	0	180
	San Luis Obispo County APCD	0	330
	Santa Barbara County APCD	0	180
	Shasta County AQMD	0	180
	Siskiyou County APCD	0	180
	South Coast AQMD	0	365
	Tehama County APCD	0	180
	Tuolumne County APCD	0	180
	Ventura County APCD	0	180
	Yolo/Solano AQMD	0	180
	Alameda	0	180
	Alpine	0	180
	Amador	0	180
	Butte	0	180
	Calaveras	0	180
	Colusa	0	180
	Contra Costa	0	180
	Del Norte	0	180
	El Dorado-Lake Tahoe	0	180
	El Dorado-Mountain County	0	180
	Fresno	0	180
	Glenn	0	180
	Humboldt	0	180
	Imperial	0	180
	Inyo	0	180

Table 7.1 Number of Snow and Summer Days
Default: 0 Snow Days and 180 Summer Days

Location Type	Name	Number Snow Days	Number Summer Days
Counties	Kern-Mojave Desert	0	180
	Kern-San Joaquin	0	180
	Kings	0	180
	Lake	0	180
	Lassen	0	180
	Los Angeles-Mojave Desert	0	180
	Los Angeles-South Coast	0	365
	Madera	0	180
	Marin	0	180
	Mariposa	0	180
	Mendocino-Coastal	0	180
	Mendocino-Inland	0	180
	Mendocino-Rural Inland North	0	180
	Mendocino-Rural Inland South	0	180
	Merced	0	180
	Modoc	0	180
	Mono	0	180
	Monterey	0	180
	Napa	0	180
	Nevada	0	180
	Orange	0	365
	Placer-Lake Tahoe	0	180
	Placer-Mountain Counties	0	180
	Placer-San Joaquin	0	180
	Plumas	0	180
	Riverside-Mojave Desert MDAQMD	0	180
	Riverside-Mojave Desert SCAQMD	0	365
	Riverside-Salton Sea	0	180
	Riverside-South Coast	0	365
	Sacramento	0	180
	San Benito	0	180
	San Bernardino-Mojave Desert	0	180
	San Bernardino-South Coast	0	365
	San Diego	0	180
	San Francisco	0	180
	San Joaquin	0	180
	San Luis Obispo	0	330
	San Mateo	0	180
	Santa Barbara-North of Santa Ynez	0	180
	Santa Barbara-South of Santa Ynez Range	0	180
	Santa Clara	0	180
	Santa Cruz	0	180
	Shasta	0	180
	Sierra	0	180
	Siskiyou	0	180
	Solano-San Francisco	0	180
	Solano-San Joaquin	0	180
	Sonoma-North Coast	0	180
	Sonoma-San Francisco	0	180
	Stanislaus	0	180
	Sutter	0	180
	Tehama	0	180
	Trinity	0	180
	Tulare	0	180
	Tuolumne	0	180
	Ventura	0	180
	Yolo	0	180
	Yuba	0	180
Statewide	Statewide	0	180

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Chainsaws	1990	G2	C	0	2	430.1	1525.141	2.131	0.534	7.415	7.415	884.646	36.68
Chainsaws	1990	G2	C	6	15	1449.037	5141.698	9.226	2.555	35.657	35.657	4229.983	123.578
Chainsaws	1990	G2	R	0	2	430.1	1525.141	2.131	0.534	7.415	7.415	884.646	36.68
Chainsaws	1990	G2	R	6	15	1449.037	5141.698	9.226	2.555	35.657	35.657	4229.983	123.578
Chainsaws	2000	G2	C	0	2	270.428	649.378	3.049	0.051	4.093	4.093	884.645	16.368
Chainsaws	2000	G2	C	6	15	1266.497	2726.472	9.823	0.252	7.183	7.183	4229.982	76.657
Chainsaws	2000	G2	R	0	2	270.428	649.378	3.049	0.051	4.093	4.093	884.645	16.368
Chainsaws	2000	G2	R	6	15	1266.497	2726.472	9.823	0.252	7.183	7.183	4229.982	76.657
Chainsaws	2005	G2	C	0	2	207.911	510.872	2.825	0.036	2.641	2.641	884.646	12.922
Chainsaws	2005	G2	C	6	15	848.205	2184.762	13.204	0.174	5.288	5.288	4229.983	52.72
Chainsaws	2005	G2	R	0	2	207.911	510.872	2.825	0.036	2.641	2.641	884.646	12.922
Chainsaws	2005	G2	R	6	15	848.205	2184.762	13.204	0.174	5.288	5.288	4229.983	52.72
Chainsaws	2010	G2	C	0	2	162.731	408.317	2.858	0.036	1.705	1.705	884.645	10.114
Chainsaws	2010	G2	C	6	15	766.506	1633.987	13.859	0.174	4.103	4.103	4229.983	47.642
Chainsaws	2010	G2	R	0	2	162.731	408.317	2.858	0.036	1.705	1.705	884.645	10.114
Chainsaws	2010	G2	R	6	15	766.506	1633.987	13.859	0.174	4.103	4.103	4229.983	47.642
Chainsaws	2011	G2	C	0	2	155.394	394.431	2.878	0.036	1.522	1.522	884.646	9.658
Chainsaws	2011	G2	C	6	15	759.657	1622.962	13.892	0.174	3.856	3.856	4229.983	47.216
Chainsaws	2011	G2	R	0	2	155.394	394.431	2.878	0.036	1.522	1.522	884.646	9.658
Chainsaws	2011	G2	R	6	15	759.657	1622.962	13.892	0.174	3.856	3.856	4229.983	47.216
Chainsaws	2012	G2	C	0	2	149.004	383.549	2.895	0.036	1.353	1.353	884.646	9.261
Chainsaws	2012	G2	C	6	15	753.368	1613.589	13.92	0.174	3.622	3.622	4229.982	46.825
Chainsaws	2012	G2	R	0	2	149.004	383.549	2.895	0.036	1.353	1.353	884.646	9.261
Chainsaws	2012	G2	R	6	15	753.368	1613.589	13.92	0.174	3.622	3.622	4229.982	46.825
Chainsaws	2013	G2	C	0	2	142.978	373.417	2.911	0.036	1.193	1.193	884.646	8.886
Chainsaws	2013	G2	C	6	15	747.326	1604.617	13.946	0.174	3.399	3.399	4229.981	46.449
Chainsaws	2013	G2	R	0	2	142.978	373.417	2.911	0.036	1.193	1.193	884.646	8.886
Chainsaws	2013	G2	R	6	15	747.326	1604.617	13.946	0.174	3.399	3.399	4229.981	46.449
Chainsaws	2014	G2	C	0	2	137.47	364.196	2.923	0.036	1.045	1.045	884.646	8.544
Chainsaws	2014	G2	C	6	15	741.798	1596.381	13.968	0.174	3.192	3.192	4229.983	46.106
Chainsaws	2014	G2	R	0	2	137.47	364.196	2.923	0.036	1.045	1.045	884.646	8.544
Chainsaws	2014	G2	R	6	15	741.798	1596.381	13.968	0.174	3.192	3.192	4229.983	46.106
Chainsaws	2015	G2	C	0	2	132.537	355.824	2.932	0.036	0.913	0.913	884.646	8.237
Chainsaws	2015	G2	C	6	15	736.856	1588.938	13.984	0.174	3.007	3.007	4229.983	45.799
Chainsaws	2015	G2	R	0	2	132.537	355.824	2.932	0.036	0.913	0.913	884.646	8.237
Chainsaws	2015	G2	R	6	15	736.856	1588.938	13.984	0.174	3.007	3.007	4229.983	45.799
Chainsaws	2016	G2	C	0	2	129.473	350.338	2.924	0.036	0.836	0.836	884.646	8.047
Chainsaws	2016	G2	C	6	15	733.89	1584.315	13.978	0.174	2.902	2.902	4229.984	45.614
Chainsaws	2016	G2	R	0	2	129.473	350.338	2.924	0.036	0.836	0.836	884.646	8.047
Chainsaws	2016	G2	R	6	15	733.89	1584.315	13.978	0.174	2.902	2.902	4229.984	45.614
Chainsaws	2017	G2	C	0	2	127.281	346.187	2.909	0.036	0.785	0.785	884.646	7.911
Chainsaws	2017	G2	C	6	15	731.828	1580.963	13.963	0.174	2.834	2.834	4229.982	45.486
Chainsaws	2017	G2	R	0	2	127.281	346.187	2.909	0.036	0.785	0.785	884.646	7.911
Chainsaws	2017	G2	R	6	15	731.828	1580.963	13.963	0.174	2.834	2.834	4229.982	45.486
Chainsaws	2018	G2	C	0	2	125.383	342.558	2.894	0.036	0.741	0.741	884.646	7.793
Chainsaws	2018	G2	C	6	15	730.055	1578.05	13.946	0.174	2.775	2.775	4229.982	45.376
Chainsaws	2018	G2	R	0	2	125.383	342.558	2.894	0.036	0.741	0.741	884.646	7.793
Chainsaws	2018	G2	R	6	15	730.055	1578.05	13.946	0.174	2.775	2.775	4229.982	45.376
Chainsaws	2019	G2	C	0	2	123.704	339.377	2.879	0.036	0.702	0.702	884.646	7.688
Chainsaws	2019	G2	C	6	15	728.478	1575.487	13.93	0.174	2.723	2.723	4229.983	45.278
Chainsaws	2019	G2	R	0	2	123.704	339.377	2.879	0.036	0.702	0.702	884.646	7.688
Chainsaws	2019	G2	R	6	15	728.478	1575.487	13.93	0.174	2.723	2.723	4229.983	45.278
Chainsaws	2020	G2	C	0	2	122.245	336.69	2.866	0.036	0.667	0.667	884.645	7.598
Chainsaws	2020	G2	C	6	15	727.09	1573.283	13.915	0.174	2.675	2.675	4229.983	45.192
Chainsaws	2020	G2	R	0	2	122.245	336.69	2.866	0.036	0.667	0.667	884.645	7.598
Chainsaws	2020	G2	R	6	15	727.09	1573.283	13.915	0.174	2.675	2.675	4229.983	45.192
Chainsaws	2021	G2	C	0	2	121.003	334.39	2.861	0.036	0.636	0.636	884.646	7.52
Chainsaws	2021	G2	C	6	15	725.905	1571.385	13.911	0.174	2.633	2.633	4229.982	45.118
Chainsaws	2021	G2	R	0	2	121.003	334.39	2.861	0.036	0.636	0.636	884.646	7.52
Chainsaws	2021	G2	R	6	15	725.905	1571.385	13.911	0.174	2.633	2.633	4229.982	45.118
Chainsaws	2022	G2	C	0	2	120.084	332.625	2.86	0.036	0.61	0.61	884.646	7.463
Chainsaws	2022	G2	C	6	15	725.029	1569.887	13.911	0.174	2.597	2.597	4229.982	45.064
Chainsaws	2022	G2	R	0	2	120.084	332.625	2.86	0.036	0.61	0.61	884.646	7.463
Chainsaws	2022	G2	R	6	15	725.029	1569.887	13.911	0.174	2.597	2.597	4229.982	45.064
Chainsaws	2023	G2	C	0	2	119.275	331.06	2.859	0.036	0.587	0.587	884.645	7.413
Chainsaws	2023	G2	C	6	15	724.255	1568.544	13.911	0.174	2.566	2.566	4229.982	45.015
Chainsaws	2023	G2	R	0	2	119.275	331.06	2.859	0.036	0.587	0.587	884.645	7.413
Chainsaws	2023	G2	R	6	15	724.255	1568.544	13.911	0.174	2.566	2.566	4229.982	45.015
Chainsaws	2024	G2	C	0	2	118.594	329.785	2.858	0.036	0.567	0.567	884.646	7.371
Chainsaws	2024	G2	C	6	15	723.595	1567.432	13.91	0.174	2.538	2.538	4229.983	44.974
Chainsaws	2024	G2	R	0	2	118.594	329.785	2.858	0.036	0.567	0.567	884.646	7.371
Chainsaws	2024	G2	R	6	15	723.595	1567.432	13.91	0.174	2.538	2.538	4229.983	44.974
Chainsaws	2025	G2	C	0	2	118.058	328.877	2.857	0.036	0.551	0.551	884.646	7.337
Chainsaws	2025	G2	C	6	15	723.056	1566.61	13.909	0.174	2.515	2.515	4229.983	44.941
Chainsaws	2025	G2	R	0	2	118.058	328.877	2.857	0.036	0.551	0.551	884.646	7.337
Chainsaws	2025	G2	R	6	15	723.056	1566.61	13.909	0.174	2.515	2.515	4229.983	44.941
Chainsaws	2030	G2	C	0	2	116.821	327.327	2.847	0.036	0.515	0.515	884.646	7.261

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Chainsaws	2030	G2	C	6	15	721.699	1565.005	13.9	0.174	2.463	2.463	4229.983	44.857
Chainsaws	2030	G2	R	0	2	116.821	327.327	2.847	0.036	0.515	0.515	884.646	7.261
Chainsaws	2030	G2	R	6	15	721.699	1565.005	13.9	0.174	2.463	2.463	4229.983	44.857
Chainsaws	2035	G2	C	0	2	116.745	327.292	2.841	0.036	0.514	0.514	884.646	7.256
Chainsaws	2035	G2	C	6	15	721.61	1564.967	13.892	0.174	2.462	2.462	4229.983	44.851
Chainsaws	2035	G2	R	0	2	116.745	327.292	2.841	0.036	0.514	0.514	884.646	7.256
Chainsaws	2035	G2	R	6	15	721.61	1564.967	13.892	0.174	2.462	2.462	4229.983	44.851
Chainsaws	2040	G2	C	0	2	116.734	327.292	2.841	0.036	0.514	0.514	884.646	7.255
Chainsaws	2040	G2	C	6	15	721.596	1564.968	13.892	0.174	2.462	2.462	4229.983	44.85
Chainsaws	2040	G2	R	0	2	116.734	327.292	2.841	0.036	0.514	0.514	884.646	7.255
Chainsaws	2040	G2	R	6	15	721.596	1564.968	13.892	0.174	2.462	2.462	4229.983	44.85
Chainsaws Preempt	1990	G2	C	6	15	366.304	1299.779	2.281	0.645	9.013	9.013	1069.305	31.239
Chainsaws Preempt	1990	G2	R	6	15	366.304	1299.779	2.281	0.645	9.013	9.013	1069.305	31.239
Chainsaws Preempt	2000	G2	C	6	15	338.395	831.071	2.059	0.061	3.653	3.653	1069.305	20.482
Chainsaws Preempt	2000	G2	R	6	15	338.395	831.071	2.059	0.061	3.653	3.653	1069.305	20.482
Chainsaws Preempt	2005	G2	C	6	15	254.318	635.617	2.838	0.044	2.464	2.464	1069.305	15.807
Chainsaws Preempt	2005	G2	R	6	15	254.318	635.617	2.838	0.044	2.464	2.464	1069.305	15.807
Chainsaws Preempt	2010	G2	C	6	15	209.644	529.056	3.069	0.044	1.449	1.449	1069.305	13.03
Chainsaws Preempt	2010	G2	R	6	15	209.644	529.056	3.069	0.044	1.449	1.449	1069.305	13.03
Chainsaws Preempt	2011	G2	C	6	15	201.143	511.177	3.112	0.044	1.257	1.257	1069.305	12.502
Chainsaws Preempt	2011	G2	R	6	15	201.143	511.177	3.112	0.044	1.257	1.257	1069.305	12.502
Chainsaws Preempt	2012	G2	C	6	15	193.093	493.759	3.149	0.044	1.096	1.096	1069.305	12.001
Chainsaws Preempt	2012	G2	R	6	15	193.093	493.759	3.149	0.044	1.096	1.096	1069.305	12.001
Chainsaws Preempt	2013	G2	C	6	15	185.768	480.558	3.186	0.044	1.004	1.004	1069.305	11.546
Chainsaws Preempt	2013	G2	R	6	15	185.768	480.558	3.186	0.044	1.004	1.004	1069.305	11.546
Chainsaws Preempt	2014	G2	C	6	15	178.982	469.597	3.222	0.044	0.944	0.944	1069.305	11.124
Chainsaws Preempt	2014	G2	R	6	15	178.982	469.597	3.222	0.044	0.944	0.944	1069.305	11.124
Chainsaws Preempt	2015	G2	C	6	15	172.536	459.286	3.257	0.044	0.892	0.892	1069.305	10.723
Chainsaws Preempt	2015	G2	R	6	15	172.536	459.286	3.257	0.044	0.892	0.892	1069.305	10.723
Chainsaws Preempt	2016	G2	C	6	15	166.528	449.661	3.289	0.044	0.846	0.846	1069.305	10.35
Chainsaws Preempt	2016	G2	R	6	15	166.528	449.661	3.289	0.044	0.846	0.846	1069.305	10.35
Chainsaws Preempt	2017	G2	C	6	15	161.095	440.508	3.319	0.044	0.805	0.805	1069.305	10.012
Chainsaws Preempt	2017	G2	R	6	15	161.095	440.508	3.319	0.044	0.805	0.805	1069.305	10.012
Chainsaws Preempt	2018	G2	C	6	15	156.8	432.052	3.343	0.044	0.77	0.77	1069.305	9.745
Chainsaws Preempt	2018	G2	R	6	15	156.8	432.052	3.343	0.044	0.77	0.77	1069.305	9.745
Chainsaws Preempt	2019	G2	C	6	15	153.482	424.251	3.361	0.044	0.739	0.739	1069.305	9.539
Chainsaws Preempt	2019	G2	R	6	15	153.482	424.251	3.361	0.044	0.739	0.739	1069.305	9.539
Chainsaws Preempt	2020	G2	C	6	15	150.987	417.321	3.376	0.044	0.711	0.711	1069.305	9.384
Chainsaws Preempt	2020	G2	R	6	15	150.987	417.321	3.376	0.044	0.711	0.711	1069.305	9.384
Chainsaws Preempt	2021	G2	C	6	15	149.069	412.763	3.386	0.044	0.687	0.687	1069.305	9.265
Chainsaws Preempt	2021	G2	R	6	15	149.069	412.763	3.386	0.044	0.687	0.687	1069.305	9.265
Chainsaws Preempt	2022	G2	C	6	15	147.64	409.646	3.395	0.044	0.669	0.669	1069.305	9.176
Chainsaws Preempt	2022	G2	R	6	15	147.64	409.646	3.395	0.044	0.669	0.669	1069.305	9.176
Chainsaws Preempt	2023	G2	C	6	15	146.402	406.95	3.402	0.044	0.654	0.654	1069.305	9.099
Chainsaws Preempt	2023	G2	R	6	15	146.402	406.95	3.402	0.044	0.654	0.654	1069.305	9.099
Chainsaws Preempt	2024	G2	C	6	15	145.326	404.662	3.408	0.044	0.642	0.642	1069.305	9.032
Chainsaws Preempt	2024	G2	R	6	15	145.326	404.662	3.408	0.044	0.642	0.642	1069.305	9.032
Chainsaws Preempt	2025	G2	C	6	15	144.382	402.632	3.414	0.044	0.633	0.633	1069.305	8.974
Chainsaws Preempt	2025	G2	R	6	15	144.382	402.632	3.414	0.044	0.633	0.633	1069.305	8.974
Chainsaws Preempt	2030	G2	C	6	15	141.634	397.139	3.43	0.044	0.622	0.622	1069.305	8.803
Chainsaws Preempt	2030	G2	R	6	15	141.634	397.139	3.43	0.044	0.622	0.622	1069.305	8.803
Chainsaws Preempt	2035	G2	C	6	15	141.117	395.646	3.434	0.044	0.622	0.622	1069.305	8.771
Chainsaws Preempt	2035	G2	R	6	15	141.117	395.646	3.434	0.044	0.622	0.622	1069.305	8.771
Chainsaws Preempt	2040	G2	C	6	15	141.101	395.611	3.434	0.044	0.622	0.622	1069.305	8.77
Chainsaws Preempt	2040	G2	R	6	15	141.101	395.611	3.434	0.044	0.622	0.622	1069.305	8.77
Chippers/Stump Grinders	1990	G4	C	6	15	26.78	933.58	8.955	0.359	0.28	0.28	858.879	3.132
Chippers/Stump Grinders	1990	G4	C	16	25	24.322	928.906	8.774	0.319	0.279	0.279	858.879	2.845
Chippers/Stump Grinders	1990	G4	R	6	15	26.78	933.58	8.955	0.359	0.28	0.28	858.879	3.132
Chippers/Stump Grinders	1990	G4	R	16	25	24.322	928.906	8.774	0.319	0.279	0.279	858.879	2.845
Chippers/Stump Grinders	2000	G4	C	6	15	26.135	723.135	6.901	0.034	4.7	4.7	858.879	1.413
Chippers/Stump Grinders	2000	G4	C	16	25	23.07	704.371	6.107	0.03	4.7	4.7	858.879	1.248
Chippers/Stump Grinders	2000	G4	R	6	15	26.135	723.135	6.901	0.034	4.7	4.7	858.879	1.413
Chippers/Stump Grinders	2000	G4	R	16	25	23.07	704.371	6.107	0.03	4.7	4.7	858.879	1.248
Chippers/Stump Grinders	2005	G4	C	6	15	15.976	594.637	8.627	0.024	5.68	5.68	858.879	0.89
Chippers/Stump Grinders	2005	G4	C	16	25	15.751	614.099	7.946	0.021	5.68	5.68	858.879	0.877
Chippers/Stump Grinders	2005	G4	R	6	15	15.976	594.637	8.627	0.024	5.68	5.68	858.879	0.89
Chippers/Stump Grinders	2005	G4	R	16	25	15.751	614.099	7.946	0.021	5.68	5.68	858.879	0.877
Chippers/Stump Grinders	2010	G4	C	6	15	14.871	564.601	8.667	0.024	6.518	6.518	858.879	0.829
Chippers/Stump Grinders	2010	G4	C	16	25	14.869	587.924	7.952	0.021	6.518	6.518	858.879	0.828
Chippers/Stump Grinders	2010	G4	R	6	15	14.871	564.601	8.667	0.024	6.518	6.518	858.879	0.829
Chippers/Stump Grinders	2010	G4	R	16	25	14.869	587.924	7.952	0.021	6.518	6.518	858.879	0.828
Chippers/Stump Grinders	2011	G4	C	6	15	14.631	558.807	8.673	0.024	6.676	6.676	858.879	0.815
Chippers/Stump Grinders	2011	G4	C	16	25	14.678	582.832	7.951	0.021	6.676	6.676	858.879	0.817
Chippers/Stump Grinders	2011	G4	R	6	15	14.631	558.807	8.673	0.024	6.676	6.676	858.879	0.815
Chippers/Stump Grinders	2011	G4	R	16	25	14.678	582.832	7.951	0.021	6.676	6.676	858.879	0.817
Chippers/Stump Grinders	2012	G4	C	6	15	14.382	552.474	8.678	0.024	6.808	6.808	858.879	0.801
Chippers/Stump Grinders	2012	G4	C	16	25	14.48	577.17	7.952	0.021	6.808	6.808	858.879	0.806

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Chippers/Stump Grinders	2012	G4	R	6	15	14.382	552.474	8.678	0.024	6.808	6.808	858.879	0.801
Chippers/Stump Grinders	2012	G4	R	16	25	14.48	577.17	7.952	0.021	6.808	6.808	858.879	0.806
Chippers/Stump Grinders	2013	G4	C	6	15	14.151	547.979	8.7	0.024	6.884	6.884	858.879	0.788
Chippers/Stump Grinders	2013	G4	C	16	25	14.308	573.422	7.978	0.021	6.884	6.884	858.879	0.797
Chippers/Stump Grinders	2013	G4	R	6	15	14.151	547.979	8.7	0.024	6.884	6.884	858.879	0.788
Chippers/Stump Grinders	2013	G4	R	16	25	14.308	573.422	7.978	0.021	6.884	6.884	858.879	0.797
Chippers/Stump Grinders	2014	G4	C	6	15	13.931	543.899	8.73	0.024	6.934	6.934	858.879	0.776
Chippers/Stump Grinders	2014	G4	C	16	25	14.149	570.105	8.014	0.021	6.934	6.934	858.879	0.788
Chippers/Stump Grinders	2014	G4	R	6	15	13.931	543.899	8.73	0.024	6.934	6.934	858.879	0.776
Chippers/Stump Grinders	2014	G4	R	16	25	14.149	570.105	8.014	0.021	6.934	6.934	858.879	0.788
Chippers/Stump Grinders	2015	G4	C	6	15	13.705	539.742	8.763	0.024	6.977	6.977	858.879	0.763
Chippers/Stump Grinders	2015	G4	C	16	25	13.986	566.728	8.054	0.021	6.977	6.977	858.879	0.779
Chippers/Stump Grinders	2015	G4	R	6	15	13.705	539.742	8.763	0.024	6.977	6.977	858.879	0.763
Chippers/Stump Grinders	2015	G4	R	16	25	13.986	566.728	8.054	0.021	6.977	6.977	858.879	0.779
Chippers/Stump Grinders	2016	G4	C	6	15	13.477	535.731	8.798	0.024	7.015	7.015	858.879	0.751
Chippers/Stump Grinders	2016	G4	C	16	25	13.824	563.501	8.096	0.021	7.015	7.015	858.879	0.77
Chippers/Stump Grinders	2016	G4	R	6	15	13.477	535.731	8.798	0.024	7.015	7.015	858.879	0.751
Chippers/Stump Grinders	2016	G4	R	16	25	13.824	563.501	8.096	0.021	7.015	7.015	858.879	0.77
Chippers/Stump Grinders	2017	G4	C	6	15	13.257	531.934	8.832	0.024	7.049	7.049	858.88	0.738
Chippers/Stump Grinders	2017	G4	C	16	25	13.666	560.455	8.137	0.021	7.049	7.049	858.879	0.761
Chippers/Stump Grinders	2017	G4	R	6	15	13.257	531.934	8.832	0.024	7.049	7.049	858.88	0.738
Chippers/Stump Grinders	2017	G4	R	16	25	13.666	560.455	8.137	0.021	7.049	7.049	858.879	0.761
Chippers/Stump Grinders	2018	G4	C	6	15	13.054	528.594	8.866	0.024	7.078	7.078	858.879	0.727
Chippers/Stump Grinders	2018	G4	C	16	25	13.521	557.812	8.176	0.021	7.078	7.078	858.879	0.753
Chippers/Stump Grinders	2018	G4	R	6	15	13.054	528.594	8.866	0.024	7.078	7.078	858.879	0.727
Chippers/Stump Grinders	2018	G4	R	16	25	13.521	557.812	8.176	0.021	7.078	7.078	858.879	0.753
Chippers/Stump Grinders	2019	G4	C	6	15	12.927	526.488	8.885	0.024	7.103	7.103	858.879	0.72
Chippers/Stump Grinders	2019	G4	C	16	25	13.43	556.111	8.197	0.021	7.103	7.103	858.879	0.748
Chippers/Stump Grinders	2019	G4	R	6	15	12.927	526.488	8.885	0.024	7.103	7.103	858.879	0.72
Chippers/Stump Grinders	2019	G4	R	16	25	13.43	556.111	8.197	0.021	7.103	7.103	858.879	0.748
Chippers/Stump Grinders	2020	G4	C	6	15	12.837	524.97	8.898	0.024	7.126	7.126	858.879	0.715
Chippers/Stump Grinders	2020	G4	C	16	25	13.364	554.86	8.21	0.021	7.126	7.126	858.879	0.744
Chippers/Stump Grinders	2020	G4	R	6	15	12.837	524.97	8.898	0.024	7.126	7.126	858.879	0.715
Chippers/Stump Grinders	2020	G4	R	16	25	13.364	554.86	8.21	0.021	7.126	7.126	858.879	0.744
Chippers/Stump Grinders	2021	G4	C	6	15	12.749	523.609	8.907	0.024	7.146	7.146	858.879	0.71
Chippers/Stump Grinders	2021	G4	C	16	25	13.299	553.749	8.22	0.021	7.146	7.146	858.879	0.741
Chippers/Stump Grinders	2021	G4	R	6	15	12.749	523.609	8.907	0.024	7.146	7.146	858.879	0.71
Chippers/Stump Grinders	2021	G4	R	16	25	13.299	553.749	8.22	0.021	7.146	7.146	858.879	0.741
Chippers/Stump Grinders	2022	G4	C	6	15	12.676	522.437	8.918	0.024	7.161	7.161	858.879	0.706
Chippers/Stump Grinders	2022	G4	C	16	25	13.245	552.799	8.232	0.021	7.161	7.161	858.88	0.738
Chippers/Stump Grinders	2022	G4	R	6	15	12.676	522.437	8.918	0.024	7.161	7.161	858.879	0.706
Chippers/Stump Grinders	2022	G4	R	16	25	13.245	552.799	8.232	0.021	7.161	7.161	858.88	0.738
Chippers/Stump Grinders	2023	G4	C	6	15	12.604	521.328	8.93	0.024	7.173	7.173	858.879	0.702
Chippers/Stump Grinders	2023	G4	C	16	25	13.193	551.905	8.244	0.021	7.173	7.173	858.879	0.735
Chippers/Stump Grinders	2023	G4	R	6	15	12.604	521.328	8.93	0.024	7.173	7.173	858.879	0.702
Chippers/Stump Grinders	2023	G4	R	16	25	13.193	551.905	8.244	0.021	7.173	7.173	858.879	0.735
Chippers/Stump Grinders	2024	G4	C	6	15	12.541	520.397	8.94	0.024	7.183	7.183	858.879	0.699
Chippers/Stump Grinders	2024	G4	C	16	25	13.147	551.168	8.255	0.021	7.183	7.183	858.879	0.733
Chippers/Stump Grinders	2024	G4	R	6	15	12.541	520.397	8.94	0.024	7.183	7.183	858.879	0.699
Chippers/Stump Grinders	2024	G4	R	16	25	13.147	551.168	8.255	0.021	7.183	7.183	858.879	0.733
Chippers/Stump Grinders	2025	G4	C	6	15	12.482	519.536	8.949	0.024	7.191	7.191	858.879	0.696
Chippers/Stump Grinders	2025	G4	C	16	25	13.104	550.485	8.265	0.021	7.191	7.191	858.879	0.73
Chippers/Stump Grinders	2025	G4	R	6	15	12.482	519.536	8.949	0.024	7.191	7.191	858.879	0.696
Chippers/Stump Grinders	2025	G4	R	16	25	13.104	550.485	8.265	0.021	7.191	7.191	858.879	0.73
Chippers/Stump Grinders	2030	G4	C	6	15	12.282	516.861	8.977	0.024	7.199	7.199	858.879	0.685
Chippers/Stump Grinders	2030	G4	C	16	25	12.957	548.436	8.297	0.021	7.199	7.199	858.879	0.722
Chippers/Stump Grinders	2030	G4	R	6	15	12.282	516.861	8.977	0.024	7.199	7.199	858.879	0.685
Chippers/Stump Grinders	2030	G4	R	16	25	12.957	548.436	8.297	0.021	7.199	7.199	858.879	0.722
Chippers/Stump Grinders	2035	G4	C	6	15	12.235	516.011	8.982	0.024	7.199	7.199	858.879	0.683
Chippers/Stump Grinders	2035	G4	C	16	25	12.921	547.707	8.303	0.021	7.199	7.199	858.879	0.721
Chippers/Stump Grinders	2035	G4	R	6	15	12.235	516.011	8.982	0.024	7.199	7.199	858.879	0.683
Chippers/Stump Grinders	2035	G4	R	16	25	12.921	547.707	8.303	0.021	7.199	7.199	858.879	0.721
Chippers/Stump Grinders	2040	G4	C	6	15	12.225	515.57	8.979	0.024	7.199	7.199	858.879	0.682
Chippers/Stump Grinders	2040	G4	C	16	25	12.912	547.24	8.3	0.021	7.199	7.199	858.879	0.721
Chippers/Stump Grinders	2040	G4	R	6	15	12.225	515.57	8.979	0.024	7.199	7.199	858.879	0.682
Chippers/Stump Grinders	2040	G4	R	16	25	12.912	547.24	8.3	0.021	7.199	7.199	858.879	0.721
Commercial Turf Equipment	1990	G2	C	6	15	191.758	485.999	0.312	0.259	7.699	7.699	429.44	16.353
Commercial Turf Equipment	1990	G2	C	16	25	191.758	485.999	0.312	0.259	7.699	7.699	429.439	16.353
Commercial Turf Equipment	1990	G4	C	6	15	16.379	472.617	4.731	0.179	0.239	0.239	429.439	1.921
Commercial Turf Equipment	1990	G4	C	16	25	14.527	469.101	4.594	0.159	0.24	0.24	429.439	1.704
Commercial Turf Equipment	2000	G2	C	6	15	14.782	299.417	2.985	0.024	0.377	0.377	429.439	0.894
Commercial Turf Equipment	2000	G2	C	16	25	13.439	293.136	2.439	0.024	0.377	0.377	429.44	0.813
Commercial Turf Equipment	2000	G4	C	6	15	16.668	363.292	3.251	0.017	0.239	0.239	429.439	0.904
Commercial Turf Equipment	2000	G4	C	16	25	14.233	343.703	2.671	0.015	0.239	0.239	429.439	0.772
Commercial Turf Equipment	2005	G2	C	6	15	6.003	233.321	4.02	0.017	0.199	0.199	429.439	0.373
Commercial Turf Equipment	2005	G2	C	16	25	6.112	244.809	3.679	0.017	0.199	0.199	429.439	0.379
Commercial Turf Equipment	2005	G4	C	6	15	8.16	270.992	4.937	0.012	0.239	0.239	429.439	0.455

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Commercial Turf Equipment	2005	G4	C	16	25	8.228	282.77	4.525	0.01	0.239	0.239	429.439	0.458
Commercial Turf Equipment	2010	G2	C	6	15	4.216	224.659	3.203	0.017	0.2	0.2	429.439	0.262
Commercial Turf Equipment	2010	G2	C	16	25	4.288	238.459	3.13	0.017	0.199	0.199	429.439	0.266
Commercial Turf Equipment	2010	G4	C	6	15	5.626	258.52	4.031	0.012	0.239	0.239	429.439	0.313
Commercial Turf Equipment	2010	G4	C	16	25	5.642	274.4	4.03	0.01	0.239	0.239	429.439	0.314
Commercial Turf Equipment	2011	G2	C	6	15	3.91	224.659	2.951	0.017	0.199	0.199	429.439	0.243
Commercial Turf Equipment	2011	G2	C	16	25	3.921	238.46	2.943	0.017	0.2	0.2	429.44	0.243
Commercial Turf Equipment	2011	G4	C	6	15	5.25	258.5	3.73	0.012	0.24	0.24	429.439	0.293
Commercial Turf Equipment	2011	G4	C	16	25	5.166	274.379	3.833	0.01	0.239	0.239	429.439	0.288
Commercial Turf Equipment	2012	G2	C	6	15	3.813	224.659	2.872	0.017	0.199	0.199	429.439	0.237
Commercial Turf Equipment	2012	G2	C	16	25	3.806	238.459	2.884	0.017	0.199	0.199	429.439	0.236
Commercial Turf Equipment	2012	G4	C	6	15	5.132	258.463	3.636	0.012	0.239	0.239	429.439	0.286
Commercial Turf Equipment	2012	G4	C	16	25	5.016	274.34	3.771	0.01	0.24	0.24	429.439	0.279
Commercial Turf Equipment	2013	G2	C	6	15	3.755	224.659	2.824	0.017	0.199	0.199	429.439	0.233
Commercial Turf Equipment	2013	G2	C	16	25	3.736	238.459	2.848	0.017	0.199	0.199	429.439	0.232
Commercial Turf Equipment	2013	G4	C	6	15	5.06	258.427	3.579	0.012	0.239	0.239	429.439	0.282
Commercial Turf Equipment	2013	G4	C	16	25	4.926	274.302	3.733	0.01	0.239	0.239	429.439	0.274
Commercial Turf Equipment	2014	G2	C	6	15	3.726	224.659	2.8	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2014	G2	C	16	25	3.701	238.46	2.83	0.017	0.199	0.199	429.439	0.23
Commercial Turf Equipment	2014	G4	C	6	15	5.024	258.392	3.55	0.012	0.239	0.239	429.439	0.28
Commercial Turf Equipment	2014	G4	C	16	25	4.88	274.264	3.714	0.01	0.24	0.24	429.439	0.272
Commercial Turf Equipment	2015	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2015	G2	C	16	25	3.692	238.459	2.825	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2015	G4	C	6	15	5.014	258.358	3.542	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2015	G4	C	16	25	4.867	274.228	3.709	0.01	0.239	0.239	429.439	0.271
Commercial Turf Equipment	2016	G2	C	6	15	3.718	224.659	2.794	0.017	0.2	0.2	429.439	0.231
Commercial Turf Equipment	2016	G2	C	16	25	3.692	238.459	2.825	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2016	G4	C	6	15	5.013	258.32	3.542	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2016	G4	C	16	25	4.867	274.187	3.709	0.01	0.239	0.239	429.439	0.271
Commercial Turf Equipment	2017	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2017	G2	C	16	25	3.692	238.459	2.825	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2017	G4	C	6	15	5.013	258.283	3.541	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2017	G4	C	16	25	4.866	274.148	3.709	0.01	0.239	0.239	429.439	0.271
Commercial Turf Equipment	2018	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2018	G2	C	16	25	3.692	238.459	2.825	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2018	G4	C	6	15	5.012	258.247	3.541	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2018	G4	C	16	25	4.866	274.11	3.708	0.01	0.24	0.24	429.439	0.271
Commercial Turf Equipment	2019	G2	C	6	15	3.718	224.659	2.794	0.017	0.2	0.2	429.439	0.231
Commercial Turf Equipment	2019	G2	C	16	25	3.692	238.46	2.825	0.017	0.2	0.2	429.44	0.229
Commercial Turf Equipment	2019	G4	C	6	15	5.012	258.211	3.541	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2019	G4	C	16	25	4.865	274.072	3.708	0.01	0.24	0.24	429.44	0.271
Commercial Turf Equipment	2020	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2020	G2	C	16	25	3.692	238.459	2.825	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2020	G4	C	6	15	5.011	258.176	3.541	0.012	0.24	0.24	429.44	0.279
Commercial Turf Equipment	2020	G4	C	16	25	4.865	274.034	3.708	0.01	0.239	0.239	429.439	0.271
Commercial Turf Equipment	2021	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2021	G2	C	16	25	3.692	238.46	2.825	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2021	G4	C	6	15	5.011	258.15	3.541	0.012	0.24	0.24	429.439	0.279
Commercial Turf Equipment	2021	G4	C	16	25	4.864	274.007	3.708	0.01	0.24	0.24	429.44	0.271
Commercial Turf Equipment	2022	G2	C	6	15	3.718	224.659	2.794	0.017	0.2	0.2	429.439	0.231
Commercial Turf Equipment	2022	G2	C	16	25	3.692	238.46	2.825	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2022	G4	C	6	15	5.01	258.115	3.54	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2022	G4	C	16	25	4.864	273.97	3.707	0.01	0.239	0.239	429.439	0.271
Commercial Turf Equipment	2023	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2023	G2	C	16	25	3.692	238.46	2.825	0.017	0.199	0.199	429.44	0.229
Commercial Turf Equipment	2023	G4	C	6	15	5.01	258.08	3.54	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2023	G4	C	16	25	4.863	273.933	3.707	0.01	0.239	0.239	429.44	0.271
Commercial Turf Equipment	2024	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2024	G2	C	16	25	3.692	238.46	2.825	0.017	0.2	0.2	429.439	0.229
Commercial Turf Equipment	2024	G4	C	6	15	5.009	258.043	3.54	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2024	G4	C	16	25	4.863	273.893	3.707	0.01	0.239	0.239	429.439	0.271
Commercial Turf Equipment	2025	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2025	G2	C	16	25	3.692	238.459	2.825	0.017	0.2	0.2	429.439	0.229
Commercial Turf Equipment	2025	G4	C	6	15	5.008	258.005	3.54	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2025	G4	C	16	25	4.862	273.854	3.707	0.01	0.239	0.239	429.439	0.271
Commercial Turf Equipment	2030	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2030	G2	C	16	25	3.692	238.459	2.825	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2030	G4	C	6	15	5.005	257.808	3.539	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2030	G4	C	16	25	4.859	273.644	3.706	0.01	0.239	0.239	429.439	0.271
Commercial Turf Equipment	2035	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2035	G2	C	16	25	3.692	238.459	2.826	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2035	G4	C	6	15	5.002	257.605	3.537	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2035	G4	C	16	25	4.856	273.429	3.704	0.01	0.24	0.24	429.44	0.271
Commercial Turf Equipment	2040	G2	C	6	15	3.718	224.659	2.794	0.017	0.199	0.199	429.439	0.231
Commercial Turf Equipment	2040	G2	C	16	25	3.692	238.459	2.826	0.017	0.199	0.199	429.439	0.229
Commercial Turf Equipment	2040	G4	C	6	15	4.999	257.385	3.536	0.012	0.239	0.239	429.439	0.279
Commercial Turf Equipment	2040	G4	C	16	25	4.853	273.195	3.703	0.01	0.239	0.239	429.439	0.271

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Front Mowers	1990	G4	C	6	15	22.909	915.938	8.6	0.359	0.371	0.371	858.879	2.705
Front Mowers	1990	G4	C	16	25	21.231	912.759	8.476	0.319	0.371	0.371	858.879	2.507
Front Mowers	1990	G4	R	6	15	22.909	915.938	8.6	0.359	0.371	0.371	858.879	2.705
Front Mowers	1990	G4	R	16	25	21.231	912.759	8.476	0.319	0.371	0.371	858.879	2.507
Front Mowers	2000	G4	C	6	15	20.645	670.814	6.649	0.034	0.37	0.37	858.879	1.128
Front Mowers	2000	G4	C	16	25	18.437	666.497	5.668	0.03	0.37	0.37	858.879	1.007
Front Mowers	2000	G4	R	6	15	20.645	670.814	6.649	0.034	0.37	0.37	858.879	1.128
Front Mowers	2000	G4	R	16	25	18.437	666.497	5.668	0.03	0.37	0.37	858.879	1.007
Front Mowers	2005	G4	C	6	15	13.656	554.614	7.702	0.024	0.37	0.37	858.879	0.766
Front Mowers	2005	G4	C	16	25	13.498	576.678	6.968	0.021	0.37	0.37	858.879	0.758
Front Mowers	2005	G4	R	6	15	13.656	554.614	7.702	0.024	0.37	0.37	858.879	0.766
Front Mowers	2005	G4	R	16	25	13.498	576.678	6.968	0.021	0.37	0.37	858.879	0.758
Front Mowers	2010	G4	C	6	15	9.521	522.282	6.198	0.024	0.37	0.37	858.879	0.534
Front Mowers	2010	G4	C	16	25	9.505	550.919	5.959	0.021	0.37	0.37	858.879	0.534
Front Mowers	2010	G4	R	6	15	9.521	522.282	6.198	0.024	0.37	0.37	858.879	0.534
Front Mowers	2010	G4	R	16	25	9.505	550.919	5.959	0.021	0.37	0.37	858.879	0.534
Front Mowers	2011	G4	C	6	15	9.168	519.756	6.099	0.024	0.37	0.37	858.879	0.515
Front Mowers	2011	G4	C	16	25	9.185	549.03	5.885	0.021	0.37	0.37	858.879	0.516
Front Mowers	2011	G4	R	6	15	9.168	519.756	6.099	0.024	0.37	0.37	858.879	0.515
Front Mowers	2011	G4	R	16	25	9.185	549.03	5.885	0.021	0.37	0.37	858.879	0.516
Front Mowers	2012	G4	C	6	15	8.85	517.872	5.992	0.024	0.37	0.37	858.879	0.497
Front Mowers	2012	G4	C	16	25	8.887	547.664	5.805	0.021	0.37	0.37	858.879	0.499
Front Mowers	2012	G4	R	6	15	8.85	517.872	5.992	0.024	0.37	0.37	858.879	0.497
Front Mowers	2012	G4	R	16	25	8.887	547.664	5.805	0.021	0.37	0.37	858.879	0.499
Front Mowers	2013	G4	C	6	15	8.562	516.232	5.892	0.024	0.37	0.37	858.879	0.481
Front Mowers	2013	G4	C	16	25	8.612	546.487	5.732	0.021	0.37	0.37	858.879	0.484
Front Mowers	2013	G4	R	6	15	8.562	516.232	5.892	0.024	0.37	0.37	858.879	0.481
Front Mowers	2013	G4	R	16	25	8.612	546.487	5.732	0.021	0.37	0.37	858.879	0.484
Front Mowers	2014	G4	C	6	15	8.303	514.847	5.793	0.024	0.37	0.37	858.879	0.466
Front Mowers	2014	G4	C	16	25	8.36	545.482	5.66	0.021	0.37	0.37	858.879	0.469
Front Mowers	2014	G4	R	6	15	8.303	514.847	5.793	0.024	0.37	0.37	858.879	0.466
Front Mowers	2014	G4	R	16	25	8.36	545.482	5.66	0.021	0.37	0.37	858.879	0.469
Front Mowers	2015	G4	C	6	15	8.07	513.744	5.696	0.024	0.37	0.37	858.879	0.453
Front Mowers	2015	G4	C	16	25	8.128	544.687	5.589	0.021	0.37	0.37	858.879	0.456
Front Mowers	2015	G4	R	6	15	8.07	513.744	5.696	0.024	0.37	0.37	858.879	0.453
Front Mowers	2015	G4	R	16	25	8.128	544.687	5.589	0.021	0.37	0.37	858.879	0.456
Front Mowers	2016	G4	C	6	15	7.873	512.921	5.604	0.024	0.37	0.37	858.879	0.442
Front Mowers	2016	G4	C	16	25	7.924	544.091	5.523	0.021	0.37	0.37	858.879	0.445
Front Mowers	2016	G4	R	6	15	7.873	512.921	5.604	0.024	0.37	0.37	858.879	0.442
Front Mowers	2016	G4	R	16	25	7.924	544.091	5.523	0.021	0.37	0.37	858.879	0.445
Front Mowers	2017	G4	C	6	15	7.773	512.361	5.568	0.024	0.37	0.37	858.879	0.437
Front Mowers	2017	G4	C	16	25	7.826	543.68	5.499	0.021	0.37	0.37	858.879	0.44
Front Mowers	2017	G4	R	6	15	7.773	512.361	5.568	0.024	0.37	0.37	858.879	0.437
Front Mowers	2017	G4	R	16	25	7.826	543.68	5.499	0.021	0.37	0.37	858.879	0.44
Front Mowers	2018	G4	C	6	15	7.704	511.993	5.54	0.024	0.37	0.37	858.879	0.433
Front Mowers	2018	G4	C	16	25	7.756	543.404	5.48	0.021	0.37	0.37	858.88	0.436
Front Mowers	2018	G4	R	6	15	7.704	511.993	5.54	0.024	0.37	0.37	858.879	0.433
Front Mowers	2018	G4	R	16	25	7.756	543.404	5.48	0.021	0.37	0.37	858.88	0.436
Front Mowers	2019	G4	C	6	15	7.66	511.821	5.514	0.024	0.37	0.37	858.879	0.43
Front Mowers	2019	G4	C	16	25	7.707	543.26	5.463	0.021	0.37	0.37	858.879	0.433
Front Mowers	2019	G4	R	6	15	7.66	511.821	5.514	0.024	0.37	0.37	858.879	0.43
Front Mowers	2019	G4	R	16	25	7.707	543.26	5.463	0.021	0.37	0.37	858.879	0.433
Front Mowers	2020	G4	C	6	15	7.631	511.749	5.492	0.024	0.37	0.37	858.88	0.429
Front Mowers	2020	G4	C	16	25	7.672	543.183	5.446	0.021	0.37	0.37	858.879	0.431
Front Mowers	2020	G4	R	6	15	7.631	511.749	5.492	0.024	0.37	0.37	858.88	0.429
Front Mowers	2020	G4	R	16	25	7.672	543.183	5.446	0.021	0.37	0.37	858.879	0.431
Front Mowers	2021	G4	C	6	15	7.604	511.699	5.471	0.024	0.37	0.37	858.879	0.427
Front Mowers	2021	G4	C	16	25	7.641	543.13	5.43	0.021	0.37	0.37	858.879	0.429
Front Mowers	2021	G4	R	6	15	7.604	511.699	5.471	0.024	0.37	0.37	858.879	0.427
Front Mowers	2021	G4	R	16	25	7.641	543.13	5.43	0.021	0.37	0.37	858.879	0.429
Front Mowers	2022	G4	C	6	15	7.589	511.628	5.459	0.024	0.37	0.37	858.879	0.426
Front Mowers	2022	G4	C	16	25	7.622	543.055	5.422	0.021	0.37	0.37	858.879	0.428
Front Mowers	2022	G4	R	6	15	7.589	511.628	5.459	0.024	0.37	0.37	858.879	0.426
Front Mowers	2022	G4	R	16	25	7.622	543.055	5.422	0.021	0.37	0.37	858.879	0.428
Front Mowers	2023	G4	C	6	15	7.579	511.555	5.452	0.024	0.37	0.37	858.879	0.426
Front Mowers	2023	G4	C	16	25	7.609	542.977	5.417	0.021	0.37	0.37	858.879	0.428
Front Mowers	2023	G4	R	6	15	7.579	511.555	5.452	0.024	0.37	0.37	858.879	0.426
Front Mowers	2023	G4	R	16	25	7.609	542.977	5.417	0.021	0.37	0.37	858.879	0.428
Front Mowers	2024	G4	C	6	15	7.573	511.479	5.447	0.024	0.37	0.37	858.879	0.426
Front Mowers	2024	G4	C	16	25	7.602	542.897	5.414	0.021	0.37	0.37	858.879	0.427
Front Mowers	2024	G4	R	6	15	7.573	511.479	5.447	0.024	0.37	0.37	858.879	0.426
Front Mowers	2024	G4	R	16	25	7.602	542.897	5.414	0.021	0.37	0.37	858.879	0.427
Front Mowers	2025	G4	C	6	15	7.571	511.402	5.445	0.024	0.37	0.37	858.879	0.426
Front Mowers	2025	G4	C	16	25	7.599	542.815	5.413	0.021	0.37	0.37	858.879	0.427
Front Mowers	2025	G4	R	6	15	7.571	511.402	5.445	0.024	0.37	0.37	858.879	0.426
Front Mowers	2025	G4	R	16	25	7.599	542.815	5.413	0.021	0.37	0.37	858.879	0.427
Front Mowers	2030	G4	C	6	15	7.565	510.995	5.443	0.024	0.37	0.37	858.879	0.426

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Front Mowers	2030	G4	C	16	25	7.593	542.383	5.411	0.021	0.37	0.37	858.879	0.427
Front Mowers	2030	G4	R	6	15	7.565	510.995	5.443	0.024	0.37	0.37	858.879	0.426
Front Mowers	2030	G4	R	16	25	7.593	542.383	5.411	0.021	0.37	0.37	858.879	0.427
Front Mowers	2035	G4	C	6	15	7.56	510.58	5.441	0.024	0.37	0.37	858.879	0.426
Front Mowers	2035	G4	C	16	25	7.588	541.943	5.409	0.021	0.37	0.37	858.879	0.427
Front Mowers	2035	G4	R	6	15	7.56	510.58	5.441	0.024	0.37	0.37	858.879	0.426
Front Mowers	2035	G4	R	16	25	7.588	541.943	5.409	0.021	0.37	0.37	858.879	0.427
Front Mowers	2040	G4	C	6	15	7.554	510.128	5.438	0.024	0.37	0.37	858.879	0.425
Front Mowers	2040	G4	C	16	25	7.582	541.463	5.406	0.021	0.37	0.37	858.879	0.427
Front Mowers	2040	G4	R	6	15	7.554	510.128	5.438	0.024	0.37	0.37	858.879	0.425
Front Mowers	2040	G4	R	16	25	7.582	541.463	5.406	0.021	0.37	0.37	858.879	0.427
Lawn & Garden Tractors	1990	G4	C	6	15	18.822	906.929	8.251	0.359	0.325	0.325	858.879	2.223
Lawn & Garden Tractors	1990	G4	C	16	25	17.993	905.359	8.189	0.319	0.325	0.325	858.88	2.125
Lawn & Garden Tractors	1990	G4	R	6	15	18.822	906.929	8.251	0.359	0.325	0.325	858.879	2.223
Lawn & Garden Tractors	1990	G4	R	16	25	17.993	905.359	8.189	0.319	0.325	0.325	858.88	2.125
Lawn & Garden Tractors	2000	G4	C	6	15	15.672	650.815	6.587	0.034	0.324	0.324	858.879	0.856
Lawn & Garden Tractors	2000	G4	C	16	25	14.456	658.129	5.618	0.03	0.324	0.324	858.879	0.79
Lawn & Garden Tractors	2000	G4	R	6	15	15.672	650.815	6.587	0.034	0.324	0.324	858.879	0.856
Lawn & Garden Tractors	2000	G4	R	16	25	14.456	658.129	5.618	0.03	0.324	0.324	858.879	0.79
Lawn & Garden Tractors	2005	G4	C	6	15	11.473	549.36	7.036	0.024	0.324	0.324	858.879	0.644
Lawn & Garden Tractors	2005	G4	C	16	25	11.524	574.455	6.354	0.021	0.324	0.324	858.879	0.647
Lawn & Garden Tractors	2005	G4	R	6	15	11.473	549.36	7.036	0.024	0.324	0.324	858.879	0.644
Lawn & Garden Tractors	2005	G4	R	16	25	11.524	574.455	6.354	0.021	0.324	0.324	858.879	0.647
Lawn & Garden Tractors	2010	G4	C	6	15	8.137	520.395	5.536	0.024	0.324	0.324	858.879	0.457
Lawn & Garden Tractors	2010	G4	C	16	25	8.287	550.131	5.203	0.021	0.324	0.324	858.879	0.465
Lawn & Garden Tractors	2010	G4	R	6	15	8.137	520.395	5.536	0.024	0.324	0.324	858.879	0.457
Lawn & Garden Tractors	2010	G4	R	16	25	8.287	550.131	5.203	0.021	0.324	0.324	858.879	0.465
Lawn & Garden Tractors	2011	G4	C	6	15	7.862	518.247	5.427	0.024	0.324	0.324	858.879	0.441
Lawn & Garden Tractors	2011	G4	C	16	25	8.029	548.398	5.114	0.021	0.324	0.324	858.879	0.451
Lawn & Garden Tractors	2011	G4	R	6	15	7.862	518.247	5.427	0.024	0.324	0.324	858.879	0.441
Lawn & Garden Tractors	2011	G4	R	16	25	8.029	548.398	5.114	0.021	0.324	0.324	858.879	0.451
Lawn & Garden Tractors	2012	G4	C	6	15	7.611	516.686	5.314	0.024	0.324	0.324	858.879	0.427
Lawn & Garden Tractors	2012	G4	C	16	25	7.787	547.16	5.023	0.021	0.324	0.324	858.879	0.437
Lawn & Garden Tractors	2012	G4	R	6	15	7.611	516.686	5.314	0.024	0.324	0.324	858.879	0.427
Lawn & Garden Tractors	2012	G4	R	16	25	7.787	547.16	5.023	0.021	0.324	0.324	858.879	0.437
Lawn & Garden Tractors	2013	G4	C	6	15	7.383	515.349	5.21	0.024	0.324	0.324	858.879	0.414
Lawn & Garden Tractors	2013	G4	C	16	25	7.566	546.1	4.939	0.021	0.324	0.324	858.879	0.425
Lawn & Garden Tractors	2013	G4	R	6	15	7.383	515.349	5.21	0.024	0.324	0.324	858.879	0.414
Lawn & Garden Tractors	2013	G4	R	16	25	7.566	546.1	4.939	0.021	0.324	0.324	858.879	0.425
Lawn & Garden Tractors	2014	G4	C	6	15	7.177	514.218	5.11	0.024	0.324	0.324	858.879	0.403
Lawn & Garden Tractors	2014	G4	C	16	25	7.361	545.193	4.858	0.021	0.324	0.324	858.879	0.413
Lawn & Garden Tractors	2014	G4	R	6	15	7.177	514.218	5.11	0.024	0.324	0.324	858.879	0.403
Lawn & Garden Tractors	2014	G4	R	16	25	7.361	545.193	4.858	0.021	0.324	0.324	858.879	0.413
Lawn & Garden Tractors	2015	G4	C	6	15	6.989	513.324	5.013	0.024	0.324	0.324	858.879	0.392
Lawn & Garden Tractors	2015	G4	C	16	25	7.172	544.478	4.78	0.021	0.324	0.324	858.879	0.403
Lawn & Garden Tractors	2015	G4	R	6	15	6.989	513.324	5.013	0.024	0.324	0.324	858.879	0.392
Lawn & Garden Tractors	2015	G4	R	16	25	7.172	544.478	4.78	0.021	0.324	0.324	858.879	0.403
Lawn & Garden Tractors	2016	G4	C	6	15	6.827	512.658	4.923	0.024	0.324	0.324	858.88	0.383
Lawn & Garden Tractors	2016	G4	C	16	25	7.005	543.942	4.708	0.021	0.324	0.324	858.879	0.393
Lawn & Garden Tractors	2016	G4	R	6	15	6.827	512.658	4.923	0.024	0.324	0.324	858.88	0.383
Lawn & Garden Tractors	2016	G4	R	16	25	7.005	543.942	4.708	0.021	0.324	0.324	858.879	0.393
Lawn & Garden Tractors	2017	G4	C	6	15	6.75	512.203	4.887	0.024	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2017	G4	C	16	25	6.928	543.572	4.68	0.021	0.324	0.324	858.879	0.389
Lawn & Garden Tractors	2017	G4	R	6	15	6.75	512.203	4.887	0.024	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2017	G4	R	16	25	6.928	543.572	4.68	0.021	0.324	0.324	858.879	0.389
Lawn & Garden Tractors	2018	G4	C	6	15	6.696	511.901	4.86	0.024	0.324	0.324	858.879	0.376
Lawn & Garden Tractors	2018	G4	C	16	25	6.872	543.321	4.659	0.021	0.324	0.324	858.879	0.386
Lawn & Garden Tractors	2018	G4	R	6	15	6.696	511.901	4.86	0.024	0.324	0.324	858.879	0.376
Lawn & Garden Tractors	2018	G4	R	16	25	6.872	543.321	4.659	0.021	0.324	0.324	858.879	0.386
Lawn & Garden Tractors	2019	G4	C	6	15	6.658	511.751	4.836	0.024	0.324	0.324	858.88	0.374
Lawn & Garden Tractors	2019	G4	C	16	25	6.831	543.186	4.64	0.021	0.324	0.324	858.879	0.384
Lawn & Garden Tractors	2019	G4	R	6	15	6.658	511.751	4.836	0.024	0.324	0.324	858.88	0.374
Lawn & Garden Tractors	2019	G4	R	16	25	6.831	543.186	4.64	0.021	0.324	0.324	858.879	0.384
Lawn & Garden Tractors	2020	G4	C	6	15	6.632	511.679	4.816	0.024	0.324	0.324	858.879	0.373
Lawn & Garden Tractors	2020	G4	C	16	25	6.801	543.109	4.624	0.021	0.324	0.324	858.88	0.382
Lawn & Garden Tractors	2020	G4	R	6	15	6.632	511.679	4.816	0.024	0.324	0.324	858.879	0.373
Lawn & Garden Tractors	2020	G4	R	16	25	6.801	543.109	4.624	0.021	0.324	0.324	858.88	0.382
Lawn & Garden Tractors	2021	G4	C	6	15	6.609	511.629	4.799	0.024	0.324	0.324	858.879	0.371
Lawn & Garden Tractors	2021	G4	C	16	25	6.775	543.056	4.609	0.021	0.324	0.324	858.879	0.381
Lawn & Garden Tractors	2021	G4	R	6	15	6.609	511.629	4.799	0.024	0.324	0.324	858.879	0.371
Lawn & Garden Tractors	2021	G4	R	16	25	6.775	543.056	4.609	0.021	0.324	0.324	858.879	0.381
Lawn & Garden Tractors	2022	G4	C	6	15	6.595	511.558	4.788	0.024	0.324	0.324	858.88	0.371
Lawn & Garden Tractors	2022	G4	C	16	25	6.759	542.981	4.601	0.021	0.324	0.324	858.879	0.38
Lawn & Garden Tractors	2022	G4	R	6	15	6.595	511.558	4.788	0.024	0.324	0.324	858.88	0.371
Lawn & Garden Tractors	2022	G4	R	16	25	6.759	542.981	4.601	0.021	0.324	0.324	858.879	0.38
Lawn & Garden Tractors	2023	G4	C	6	15	6.586	511.485	4.781	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2023	G4	C	16	25	6.748	542.904	4.596	0.021	0.324	0.324	858.879	0.379

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Lawn & Garden Tractors	2023	G4	R	6	15	6.586	511.485	4.781	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2023	G4	R	16	25	6.748	542.904	4.596	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2024	G4	C	6	15	6.58	511.409	4.777	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2024	G4	C	16	25	6.742	542.823	4.593	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2024	G4	R	6	15	6.58	511.409	4.777	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2024	G4	R	16	25	6.742	542.823	4.593	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2025	G4	C	6	15	6.578	511.332	4.776	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2025	G4	C	16	25	6.739	542.741	4.592	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2025	G4	R	6	15	6.578	511.332	4.776	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2025	G4	R	16	25	6.739	542.741	4.592	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2030	G4	C	6	15	6.573	510.925	4.774	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2030	G4	C	16	25	6.734	542.309	4.59	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2030	G4	R	6	15	6.573	510.925	4.774	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2030	G4	R	16	25	6.734	542.309	4.59	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2035	G4	C	6	15	6.569	510.509	4.772	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2035	G4	C	16	25	6.73	541.868	4.588	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2035	G4	R	6	15	6.569	510.509	4.772	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2035	G4	R	16	25	6.73	541.868	4.588	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2040	G4	C	6	15	6.564	510.057	4.77	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2040	G4	C	16	25	6.725	541.388	4.586	0.021	0.324	0.324	858.879	0.379
Lawn & Garden Tractors	2040	G4	R	6	15	6.564	510.057	4.77	0.024	0.324	0.324	858.879	0.37
Lawn & Garden Tractors	2040	G4	R	16	25	6.725	541.388	4.586	0.021	0.324	0.324	858.879	0.379
Lawn Mowers	1990	G2	C	6	15	383.517	971.999	0.625	0.518	15.399	15.399	858.879	32.707
Lawn Mowers	1990	G2	R	6	15	383.517	971.999	0.625	0.518	15.399	15.399	858.879	32.707
Lawn Mowers	1990	G4	C	3	5	86.165	1366.863	4.921	0.434	2.4	2.4	858.879	10.153
Lawn Mowers	1990	G4	R	3	5	86.165	1366.863	4.921	0.434	2.4	2.4	858.879	10.153
Lawn Mowers	2000	G2	C	6	15	130.787	652.886	4.523	0.049	6.279	6.279	858.879	7.916
Lawn Mowers	2000	G2	R	6	15	130.787	652.886	4.523	0.049	6.279	6.279	858.879	7.916
Lawn Mowers	2000	G4	C	3	5	48.547	784.748	5.953	0.041	2.374	2.374	858.879	2.647
Lawn Mowers	2000	G4	R	3	5	48.547	784.748	5.953	0.041	2.374	2.374	858.879	2.647
Lawn Mowers	2005	G2	C	6	15	75.706	444.858	6.544	0.035	4.545	4.545	858.879	4.705
Lawn Mowers	2005	G2	R	6	15	75.706	444.858	6.544	0.035	4.545	4.545	858.879	4.705
Lawn Mowers	2005	G4	C	3	5	28.282	507.847	7.674	0.029	2.383	2.383	858.879	1.584
Lawn Mowers	2005	G4	R	3	5	28.282	507.847	7.674	0.029	2.383	2.383	858.879	1.584
Lawn Mowers	2010	G2	C	6	15	37.533	394.484	4.563	0.035	3.166	3.166	858.879	2.332
Lawn Mowers	2010	G2	R	6	15	37.533	394.484	4.563	0.035	3.166	3.166	858.879	2.332
Lawn Mowers	2010	G4	C	3	5	20.231	435.249	4.987	0.029	2.381	2.381	858.879	1.133
Lawn Mowers	2010	G4	R	3	5	20.231	435.249	4.987	0.029	2.381	2.381	858.879	1.133
Lawn Mowers	2011	G2	C	6	15	33.131	386.729	4.556	0.035	3.01	3.01	858.879	2.059
Lawn Mowers	2011	G2	R	6	15	33.131	386.729	4.556	0.035	3.01	3.01	858.879	2.059
Lawn Mowers	2011	G4	C	3	5	19.247	423.873	4.891	0.029	2.38	2.38	858.879	1.078
Lawn Mowers	2011	G4	R	3	5	19.247	423.873	4.891	0.029	2.38	2.38	858.879	1.078
Lawn Mowers	2012	G2	C	6	15	30.298	379.152	4.527	0.035	2.919	2.919	858.879	1.883
Lawn Mowers	2012	G2	R	6	15	30.298	379.152	4.527	0.035	2.919	2.919	858.879	1.883
Lawn Mowers	2012	G4	C	3	5	18.305	412.931	4.798	0.029	2.381	2.381	858.879	1.025
Lawn Mowers	2012	G4	R	3	5	18.305	412.931	4.798	0.029	2.381	2.381	858.879	1.025
Lawn Mowers	2013	G2	C	6	15	27.835	371.274	4.494	0.035	2.844	2.844	858.88	1.73
Lawn Mowers	2013	G2	R	6	15	27.835	371.274	4.494	0.035	2.844	2.844	858.88	1.73
Lawn Mowers	2013	G4	C	3	5	17.668	406.495	4.682	0.029	2.381	2.381	858.879	0.99
Lawn Mowers	2013	G4	R	3	5	17.668	406.495	4.682	0.029	2.381	2.381	858.879	0.99
Lawn Mowers	2014	G2	C	6	15	25.61	363.536	4.459	0.035	2.778	2.778	858.88	1.591
Lawn Mowers	2014	G2	R	6	15	25.61	363.536	4.459	0.035	2.778	2.778	858.88	1.591
Lawn Mowers	2014	G4	C	3	5	17.182	401.969	4.559	0.029	2.382	2.382	858.879	0.963
Lawn Mowers	2014	G4	R	3	5	17.182	401.969	4.559	0.029	2.382	2.382	858.879	0.963
Lawn Mowers	2015	G2	C	6	15	23.509	356.086	4.423	0.035	2.717	2.717	858.879	1.461
Lawn Mowers	2015	G2	R	6	15	23.509	356.086	4.423	0.035	2.717	2.717	858.879	1.461
Lawn Mowers	2015	G4	C	3	5	16.757	398.042	4.439	0.029	2.382	2.382	858.879	0.939
Lawn Mowers	2015	G4	R	3	5	16.757	398.042	4.439	0.029	2.382	2.382	858.879	0.939
Lawn Mowers	2016	G2	C	6	15	21.721	349.443	4.379	0.035	2.667	2.667	858.88	1.35
Lawn Mowers	2016	G2	R	6	15	21.721	349.443	4.379	0.035	2.667	2.667	858.88	1.35
Lawn Mowers	2016	G4	C	3	5	16.373	394.716	4.316	0.029	2.382	2.382	858.879	0.918
Lawn Mowers	2016	G4	R	3	5	16.373	394.716	4.316	0.029	2.382	2.382	858.879	0.918
Lawn Mowers	2017	G2	C	6	15	20.274	345.234	4.317	0.035	2.623	2.623	858.879	1.26
Lawn Mowers	2017	G2	R	6	15	20.274	345.234	4.317	0.035	2.623	2.623	858.879	1.26
Lawn Mowers	2017	G4	C	3	5	16.064	392.295	4.195	0.029	2.382	2.382	858.879	0.9
Lawn Mowers	2017	G4	R	3	5	16.064	392.295	4.195	0.029	2.382	2.382	858.879	0.9
Lawn Mowers	2018	G2	C	6	15	19.036	342.185	4.25	0.035	2.585	2.585	858.879	1.183
Lawn Mowers	2018	G2	R	6	15	19.036	342.185	4.25	0.035	2.585	2.585	858.879	1.183
Lawn Mowers	2018	G4	C	3	5	15.797	390.553	4.072	0.029	2.381	2.381	858.879	0.886
Lawn Mowers	2018	G4	R	3	5	15.797	390.553	4.072	0.029	2.381	2.381	858.879	0.886
Lawn Mowers	2019	G2	C	6	15	17.952	339.506	4.179	0.035	2.552	2.552	858.879	1.115
Lawn Mowers	2019	G2	R	6	15	17.952	339.506	4.179	0.035	2.552	2.552	858.879	1.115
Lawn Mowers	2019	G4	C	3	5	15.63	389.143	4.016	0.029	2.38	2.38	858.879	0.876
Lawn Mowers	2019	G4	R	3	5	15.63	389.143	4.016	0.029	2.38	2.38	858.879	0.876
Lawn Mowers	2020	G2	C	6	15	17.063	337.156	4.108	0.035	2.525	2.525	858.88	1.06
Lawn Mowers	2020	G2	R	6	15	17.063	337.156	4.108	0.035	2.525	2.525	858.88	1.06
Lawn Mowers	2020	G4	C	3	5	15.516	387.971	3.981	0.029	2.381	2.381	858.879	0.87

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Lawn Mowers	2020	G4	R	3	5	15.516	387.971	3.981	0.029	2.381	2.381	858.879	0.87
Lawn Mowers	2021	G2	C	6	15	16.284	335.258	4.034	0.035	2.501	2.501	858.879	1.012
Lawn Mowers	2021	G2	R	6	15	16.284	335.258	4.034	0.035	2.501	2.501	858.879	1.012
Lawn Mowers	2021	G4	C	3	5	15.42	387.332	3.946	0.029	2.379	2.379	858.879	0.865
Lawn Mowers	2021	G4	R	3	5	15.42	387.332	3.946	0.029	2.379	2.379	858.879	0.865
Lawn Mowers	2022	G2	C	6	15	15.732	333.499	3.97	0.035	2.487	2.487	858.879	0.977
Lawn Mowers	2022	G2	R	6	15	15.732	333.499	3.97	0.035	2.487	2.487	858.879	0.977
Lawn Mowers	2022	G4	C	3	5	15.359	386.662	3.917	0.029	2.38	2.38	858.879	0.861
Lawn Mowers	2022	G4	R	3	5	15.359	386.662	3.917	0.029	2.38	2.38	858.879	0.861
Lawn Mowers	2023	G2	C	6	15	15.272	331.902	3.938	0.035	2.474	2.474	858.879	0.949
Lawn Mowers	2023	G2	R	6	15	15.272	331.902	3.938	0.035	2.474	2.474	858.879	0.949
Lawn Mowers	2023	G4	C	3	5	15.32	386.308	3.893	0.029	2.38	2.38	858.879	0.859
Lawn Mowers	2023	G4	R	3	5	15.32	386.308	3.893	0.029	2.38	2.38	858.879	0.859
Lawn Mowers	2024	G2	C	6	15	14.912	330.523	3.919	0.035	2.465	2.465	858.879	0.926
Lawn Mowers	2024	G2	R	6	15	14.912	330.523	3.919	0.035	2.465	2.465	858.879	0.926
Lawn Mowers	2024	G4	C	3	5	15.299	386.129	3.871	0.029	2.38	2.38	858.879	0.858
Lawn Mowers	2024	G4	R	3	5	15.299	386.129	3.871	0.029	2.38	2.38	858.879	0.858
Lawn Mowers	2025	G2	C	6	15	14.672	329.458	3.9	0.035	2.459	2.459	858.879	0.911
Lawn Mowers	2025	G2	R	6	15	14.672	329.458	3.9	0.035	2.459	2.459	858.879	0.911
Lawn Mowers	2025	G4	C	3	5	15.289	386.029	3.852	0.029	2.38	2.38	858.879	0.858
Lawn Mowers	2025	G4	R	3	5	15.289	386.029	3.852	0.029	2.38	2.38	858.879	0.858
Lawn Mowers	2030	G2	C	6	15	14.354	327.334	3.814	0.035	2.455	2.455	858.879	0.892
Lawn Mowers	2030	G2	R	6	15	14.354	327.334	3.814	0.035	2.455	2.455	858.879	0.892
Lawn Mowers	2030	G4	C	3	5	15.26	385.707	3.815	0.029	2.38	2.38	858.879	0.857
Lawn Mowers	2030	G4	R	3	5	15.26	385.707	3.815	0.029	2.38	2.38	858.879	0.857
Lawn Mowers	2035	G2	C	6	15	14.32	327.145	3.775	0.035	2.455	2.455	858.879	0.89
Lawn Mowers	2035	G2	R	6	15	14.32	327.145	3.775	0.035	2.455	2.455	858.879	0.89
Lawn Mowers	2035	G4	C	3	5	15.244	385.494	3.812	0.029	2.38	2.38	858.879	0.856
Lawn Mowers	2035	G4	R	3	5	15.244	385.494	3.812	0.029	2.38	2.38	858.879	0.856
Lawn Mowers	2040	G2	C	6	15	14.316	327.185	3.769	0.035	2.454	2.454	858.879	0.889
Lawn Mowers	2040	G2	R	6	15	14.316	327.185	3.769	0.035	2.454	2.454	858.879	0.889
Lawn Mowers	2040	G4	C	3	5	15.234	385.112	3.811	0.029	2.38	2.38	858.879	0.857
Lawn Mowers	2040	G4	R	3	5	15.234	385.112	3.811	0.029	2.38	2.38	858.879	0.857
Leaf Blowers/Vacuums	1990	G2	C	0	2	417.573	1480.719	2.069	0.518	7.199	7.199	858.879	35.612
Leaf Blowers/Vacuums	1990	G2	R	0	2	417.573	1480.719	2.069	0.518	7.199	7.199	858.879	35.612
Leaf Blowers/Vacuums	1990	G4	C	3	5	66.617	1240.719	4.859	0.434	1.867	1.867	858.879	7.869
Leaf Blowers/Vacuums	1990	G4	R	3	5	66.617	1240.719	4.859	0.434	1.867	1.867	858.879	7.869
Leaf Blowers/Vacuums	2000	G2	C	0	2	241.563	630.464	2.96	0.049	3.973	3.973	858.879	14.621
Leaf Blowers/Vacuums	2000	G2	R	0	2	241.563	630.464	2.96	0.049	3.973	3.973	858.879	14.621
Leaf Blowers/Vacuums	2000	G4	C	3	5	36.418	783.667	5.349	0.041	1.858	1.858	858.879	1.99
Leaf Blowers/Vacuums	2000	G4	R	3	5	36.418	783.667	5.349	0.041	1.858	1.858	858.879	1.99
Leaf Blowers/Vacuums	2005	G2	C	0	2	180.783	495.991	2.743	0.035	2.565	2.565	858.879	11.236
Leaf Blowers/Vacuums	2005	G2	R	0	2	180.783	495.991	2.743	0.035	2.565	2.565	858.879	11.236
Leaf Blowers/Vacuums	2005	G4	C	3	5	24.991	596.754	6.325	0.029	1.861	1.861	858.879	1.403
Leaf Blowers/Vacuums	2005	G4	R	3	5	24.991	596.754	6.325	0.029	1.861	1.861	858.879	1.403
Leaf Blowers/Vacuums	2010	G2	C	0	2	136.866	396.425	2.775	0.035	1.656	1.656	858.879	8.506
Leaf Blowers/Vacuums	2010	G2	R	0	2	136.866	396.425	2.775	0.035	1.656	1.656	858.879	8.506
Leaf Blowers/Vacuums	2010	G4	C	3	5	17.271	539.377	3.881	0.029	1.863	1.863	858.879	0.97
Leaf Blowers/Vacuums	2010	G4	R	3	5	17.271	539.377	3.881	0.029	1.863	1.863	858.879	0.97
Leaf Blowers/Vacuums	2011	G2	C	0	2	129.72	382.943	2.794	0.035	1.478	1.478	858.879	8.062
Leaf Blowers/Vacuums	2011	G2	R	0	2	129.72	382.943	2.794	0.035	1.478	1.478	858.879	8.062
Leaf Blowers/Vacuums	2011	G4	C	3	5	16.444	531.587	3.798	0.029	1.862	1.862	858.879	0.923
Leaf Blowers/Vacuums	2011	G4	R	3	5	16.444	531.587	3.798	0.029	1.862	1.862	858.879	0.923
Leaf Blowers/Vacuums	2012	G2	C	0	2	123.505	372.378	2.811	0.035	1.314	1.314	858.88	7.676
Leaf Blowers/Vacuums	2012	G2	R	0	2	123.505	372.378	2.811	0.035	1.314	1.314	858.88	7.676
Leaf Blowers/Vacuums	2012	G4	C	3	5	15.817	524.344	3.715	0.029	1.862	1.862	858.879	0.888
Leaf Blowers/Vacuums	2012	G4	R	3	5	15.817	524.344	3.715	0.029	1.862	1.862	858.879	0.888
Leaf Blowers/Vacuums	2013	G2	C	0	2	117.639	362.541	2.826	0.035	1.158	1.158	858.879	7.311
Leaf Blowers/Vacuums	2013	G2	R	0	2	117.639	362.541	2.826	0.035	1.158	1.158	858.879	7.311
Leaf Blowers/Vacuums	2013	G4	C	3	5	15.23	517.066	3.632	0.029	1.862	1.862	858.879	0.855
Leaf Blowers/Vacuums	2013	G4	R	3	5	15.23	517.066	3.632	0.029	1.862	1.862	858.879	0.855
Leaf Blowers/Vacuums	2014	G2	C	0	2	112.276	353.588	2.838	0.035	1.015	1.015	858.879	6.978
Leaf Blowers/Vacuums	2014	G2	R	0	2	112.276	353.588	2.838	0.035	1.015	1.015	858.879	6.978
Leaf Blowers/Vacuums	2014	G4	C	3	5	14.675	509.992	3.552	0.029	1.862	1.862	858.879	0.824
Leaf Blowers/Vacuums	2014	G4	R	3	5	14.675	509.992	3.552	0.029	1.862	1.862	858.879	0.824
Leaf Blowers/Vacuums	2015	G2	C	0	2	107.472	345.461	2.846	0.035	0.886	0.886	858.879	6.679
Leaf Blowers/Vacuums	2015	G2	R	0	2	107.472	345.461	2.846	0.035	0.886	0.886	858.879	6.679
Leaf Blowers/Vacuums	2015	G4	C	3	5	14.134	503.126	3.474	0.029	1.862	1.862	858.879	0.794
Leaf Blowers/Vacuums	2015	G4	R	3	5	14.134	503.126	3.474	0.029	1.862	1.862	858.879	0.794
Leaf Blowers/Vacuums	2016	G2	C	0	2	104.485	340.134	2.839	0.035	0.812	0.812	858.879	6.494
Leaf Blowers/Vacuums	2016	G2	R	0	2	104.485	340.134	2.839	0.035	0.812	0.812	858.879	6.494
Leaf Blowers/Vacuums	2016	G4	C	3	5	13.639	496.909	3.395	0.029	1.862	1.862	858.879	0.766
Leaf Blowers/Vacuums	2016	G4	R	3	5	13.639	496.909	3.395	0.029	1.862	1.862	858.879	0.766
Leaf Blowers/Vacuums	2017	G2	C	0	2	102.351	336.104	2.824	0.035	0.762	0.762	858.879	6.361
Leaf Blowers/Vacuums	2017	G2	R	0	2	102.351	336.104	2.824	0.035	0.762	0.762	858.879	6.361
Leaf Blowers/Vacuums	2017	G4	C	3	5	13.189	491.294	3.319	0.029	1.862	1.862	858.879	0.741
Leaf Blowers/Vacuums	2017	G4	R	3	5	13.189	491.294	3.319	0.029	1.862	1.862	858.879	0.741

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Leaf Blowers/Vacuums	2018	G2	C	0	2	100.502	332.58	2.809	0.035	0.72	0.72	858.879	6.246
Leaf Blowers/Vacuums	2018	G2	R	0	2	100.502	332.58	2.809	0.035	0.72	0.72	858.879	6.246
Leaf Blowers/Vacuums	2018	G4	C	3	5	12.834	487.616	3.236	0.029	1.862	1.862	858.879	0.721
Leaf Blowers/Vacuums	2018	G4	R	3	5	12.834	487.616	3.236	0.029	1.862	1.862	858.879	0.721
Leaf Blowers/Vacuums	2019	G2	C	0	2	98.866	329.492	2.795	0.035	0.682	0.682	858.879	6.145
Leaf Blowers/Vacuums	2019	G2	R	0	2	98.866	329.492	2.795	0.035	0.682	0.682	858.879	6.145
Leaf Blowers/Vacuums	2019	G4	C	3	5	12.534	484.905	3.151	0.029	1.862	1.862	858.879	0.704
Leaf Blowers/Vacuums	2019	G4	R	3	5	12.534	484.905	3.151	0.029	1.862	1.862	858.879	0.704
Leaf Blowers/Vacuums	2020	G2	C	0	2	97.445	326.883	2.783	0.035	0.647	0.647	858.879	6.056
Leaf Blowers/Vacuums	2020	G2	R	0	2	97.445	326.883	2.783	0.035	0.647	0.647	858.879	6.056
Leaf Blowers/Vacuums	2020	G4	C	3	5	12.271	482.619	3.068	0.029	1.862	1.862	858.879	0.69
Leaf Blowers/Vacuums	2020	G4	R	3	5	12.271	482.619	3.068	0.029	1.862	1.862	858.879	0.69
Leaf Blowers/Vacuums	2021	G2	C	0	2	96.221	324.651	2.778	0.035	0.618	0.618	858.879	5.98
Leaf Blowers/Vacuums	2021	G2	R	0	2	96.221	324.651	2.778	0.035	0.618	0.618	858.879	5.98
Leaf Blowers/Vacuums	2021	G4	C	3	5	12.022	480.736	2.987	0.029	1.861	1.861	858.88	0.676
Leaf Blowers/Vacuums	2021	G4	R	3	5	12.022	480.736	2.987	0.029	1.861	1.861	858.88	0.676
Leaf Blowers/Vacuums	2022	G2	C	0	2	95.338	322.937	2.777	0.035	0.593	0.593	858.879	5.925
Leaf Blowers/Vacuums	2022	G2	R	0	2	95.338	322.937	2.777	0.035	0.593	0.593	858.879	5.925
Leaf Blowers/Vacuums	2022	G4	C	3	5	11.831	478.893	2.919	0.029	1.862	1.862	858.879	0.665
Leaf Blowers/Vacuums	2022	G4	R	3	5	11.831	478.893	2.919	0.029	1.862	1.862	858.879	0.665
Leaf Blowers/Vacuums	2023	G2	C	0	2	94.546	321.418	2.776	0.035	0.57	0.57	858.879	5.876
Leaf Blowers/Vacuums	2023	G2	R	0	2	94.546	321.418	2.776	0.035	0.57	0.57	858.879	5.876
Leaf Blowers/Vacuums	2023	G4	C	3	5	11.68	477.385	2.88	0.029	1.862	1.862	858.879	0.657
Leaf Blowers/Vacuums	2023	G4	R	3	5	11.68	477.385	2.88	0.029	1.862	1.862	858.879	0.657
Leaf Blowers/Vacuums	2024	G2	C	0	2	93.882	320.179	2.775	0.035	0.551	0.551	858.879	5.835
Leaf Blowers/Vacuums	2024	G2	R	0	2	93.882	320.179	2.775	0.035	0.551	0.551	858.879	5.835
Leaf Blowers/Vacuums	2024	G4	C	3	5	11.564	476.014	2.857	0.029	1.862	1.862	858.879	0.65
Leaf Blowers/Vacuums	2024	G4	R	3	5	11.564	476.014	2.857	0.029	1.862	1.862	858.879	0.65
Leaf Blowers/Vacuums	2025	G2	C	0	2	93.358	319.298	2.773	0.035	0.535	0.535	858.879	5.802
Leaf Blowers/Vacuums	2025	G2	R	0	2	93.358	319.298	2.773	0.035	0.535	0.535	858.879	5.802
Leaf Blowers/Vacuums	2025	G4	C	3	5	11.468	474.959	2.835	0.029	1.862	1.862	858.879	0.645
Leaf Blowers/Vacuums	2025	G4	R	3	5	11.468	474.959	2.835	0.029	1.862	1.862	858.879	0.645
Leaf Blowers/Vacuums	2030	G2	C	0	2	92.149	317.793	2.764	0.035	0.5	0.5	858.879	5.727
Leaf Blowers/Vacuums	2030	G2	R	0	2	92.149	317.793	2.764	0.035	0.5	0.5	858.879	5.727
Leaf Blowers/Vacuums	2030	G4	C	3	5	11.222	472.216	2.754	0.029	1.861	1.861	858.879	0.632
Leaf Blowers/Vacuums	2030	G4	R	3	5	11.222	472.216	2.754	0.029	1.861	1.861	858.879	0.632
Leaf Blowers/Vacuums	2035	G2	C	0	2	92.074	317.76	2.758	0.035	0.499	0.499	858.879	5.722
Leaf Blowers/Vacuums	2035	G2	R	0	2	92.074	317.76	2.758	0.035	0.499	0.499	858.879	5.722
Leaf Blowers/Vacuums	2035	G4	C	3	5	11.16	471.482	2.717	0.029	1.861	1.861	858.879	0.628
Leaf Blowers/Vacuums	2035	G4	R	3	5	11.16	471.482	2.717	0.029	1.861	1.861	858.879	0.628
Leaf Blowers/Vacuums	2040	G2	C	0	2	92.063	317.759	2.758	0.035	0.499	0.499	858.879	5.722
Leaf Blowers/Vacuums	2040	G2	R	0	2	92.063	317.759	2.758	0.035	0.499	0.499	858.879	5.722
Leaf Blowers/Vacuums	2040	G4	C	3	5	11.147	471.083	2.711	0.029	1.861	1.861	858.879	0.628
Leaf Blowers/Vacuums	2040	G4	R	3	5	11.147	471.083	2.711	0.029	1.861	1.861	858.879	0.628
Other Lawn & Garden Equipment	1990	G2	C	0	2	417.573	1480.719	2.069	0.518	7.199	7.199	858.879	35.612
Other Lawn & Garden Equipment	1990	G2	C	6	15	294.22	1043.999	1.832	0.518	7.239	7.239	858.879	25.092
Other Lawn & Garden Equipment	1990	G2	R	0	2	417.573	1480.719	2.069	0.518	7.199	7.199	858.879	35.612
Other Lawn & Garden Equipment	1990	G2	R	6	15	294.22	1043.999	1.832	0.518	7.239	7.239	858.879	25.092
Other Lawn & Garden Equipment	1990	G4	C	3	5	70.524	1265.341	4.87	0.434	1.974	1.974	858.879	8.331
Other Lawn & Garden Equipment	1990	G4	C	6	15	18.248	905.68	8.202	0.359	0.318	0.318	858.879	2.155
Other Lawn & Garden Equipment	1990	G4	C	16	25	17.539	904.336	8.149	0.319	0.318	0.318	858.879	2.071
Other Lawn & Garden Equipment	1990	G4	R	3	5	70.524	1265.341	4.87	0.434	1.974	1.974	858.879	8.331
Other Lawn & Garden Equipment	1990	G4	R	6	15	18.248	905.68	8.202	0.359	0.318	0.318	858.879	2.155
Other Lawn & Garden Equipment	1990	G4	R	16	25	17.539	904.336	8.149	0.319	0.318	0.318	858.879	2.071
Other Lawn & Garden Equipment	2000	G2	C	0	2	255.682	687.225	2.511	0.049	5.341	5.341	858.879	15.475
Other Lawn & Garden Equipment	2000	G2	C	6	15	213.998	571.185	2.331	0.049	5.941	5.941	858.879	12.952
Other Lawn & Garden Equipment	2000	G2	R	0	2	255.682	687.225	2.511	0.049	5.341	5.341	858.879	15.475
Other Lawn & Garden Equipment	2000	G2	R	6	15	213.998	571.185	2.331	0.049	5.941	5.941	858.879	12.952
Other Lawn & Garden Equipment	2000	G4	C	3	5	38.922	777.377	5.505	0.041	1.967	1.967	858.879	2.127
Other Lawn & Garden Equipment	2000	G4	C	6	15	15.49	660.87	6.637	0.034	0.317	0.317	858.88	0.846
Other Lawn & Garden Equipment	2000	G4	C	16	25	14.439	666.768	5.802	0.03	0.317	0.317	858.879	0.789
Other Lawn & Garden Equipment	2000	G4	R	3	5	38.922	777.377	5.505	0.041	1.967	1.967	858.879	2.127
Other Lawn & Garden Equipment	2000	G4	R	6	15	15.49	660.87	6.637	0.034	0.317	0.317	858.88	0.846
Other Lawn & Garden Equipment	2000	G4	R	16	25	14.439	666.768	5.802	0.03	0.317	0.317	858.879	0.789
Other Lawn & Garden Equipment	2005	G2	C	0	2	159.33	495.992	3.006	0.035	2.565	2.565	858.879	9.903
Other Lawn & Garden Equipment	2005	G2	C	6	15	137.825	434.477	2.933	0.035	2.769	2.769	858.879	8.566
Other Lawn & Garden Equipment	2005	G2	R	0	2	159.33	495.992	3.006	0.035	2.565	2.565	858.879	9.903
Other Lawn & Garden Equipment	2005	G2	R	6	15	137.825	434.477	2.933	0.035	2.769	2.769	858.879	8.566
Other Lawn & Garden Equipment	2005	G4	C	3	5	26.099	584.277	6.584	0.029	1.97	1.97	858.879	1.465
Other Lawn & Garden Equipment	2005	G4	C	6	15	11.731	569.53	7.02	0.024	0.318	0.318	858.879	0.658
Other Lawn & Garden Equipment	2005	G4	C	16	25	11.785	591.718	6.419	0.021	0.318	0.318	858.879	0.661
Other Lawn & Garden Equipment	2005	G4	R	3	5	26.099	584.277	6.584	0.029	1.97	1.97	858.879	1.465
Other Lawn & Garden Equipment	2005	G4	R	6	15	11.731	569.53	7.02	0.024	0.318	0.318	858.879	0.658
Other Lawn & Garden Equipment	2005	G4	R	16	25	11.785	591.718	6.419	0.021	0.318	0.318	858.879	0.661
Other Lawn & Garden Equipment	2010	G2	C	0	2	112.488	396.425	2.775	0.035	1.656	1.656	858.879	6.991
Other Lawn & Garden Equipment	2010	G2	C	6	15	103.891	373.197	2.732	0.035	1.818	1.818	858.879	6.457
Other Lawn & Garden Equipment	2010	G2	R	0	2	112.488	396.425	2.775	0.035	1.656	1.656	858.879	6.991

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Other Lawn & Garden Equipment	2010	G2	R	6	15	103.891	373.197	2.732	0.035	1.818	1.818	858.879	6.457
Other Lawn & Garden Equipment	2010	G4	C	3	5	18.025	518.999	4.238	0.029	1.972	1.972	858.879	1.012
Other Lawn & Garden Equipment	2010	G4	C	6	15	8.92	540.914	5.705	0.024	0.318	0.318	858.879	0.501
Other Lawn & Garden Equipment	2010	G4	C	16	25	8.966	567.825	5.282	0.021	0.318	0.318	858.879	0.503
Other Lawn & Garden Equipment	2010	G4	R	3	5	18.025	518.999	4.238	0.029	1.972	1.972	858.879	1.012
Other Lawn & Garden Equipment	2010	G4	R	6	15	8.92	540.914	5.705	0.024	0.318	0.318	858.879	0.501
Other Lawn & Garden Equipment	2010	G4	R	16	25	8.966	567.825	5.282	0.021	0.318	0.318	858.879	0.503
Other Lawn & Garden Equipment	2011	G2	C	0	2	105.244	382.943	2.794	0.035	1.478	1.478	858.879	6.541
Other Lawn & Garden Equipment	2011	G2	C	6	15	98.289	364.342	2.758	0.035	1.619	1.619	858.879	6.109
Other Lawn & Garden Equipment	2011	G2	R	0	2	105.244	382.943	2.794	0.035	1.478	1.478	858.879	6.541
Other Lawn & Garden Equipment	2011	G2	R	6	15	98.289	364.342	2.758	0.035	1.619	1.619	858.879	6.109
Other Lawn & Garden Equipment	2011	G4	C	3	5	17.166	511.452	4.062	0.029	1.971	1.971	858.879	0.964
Other Lawn & Garden Equipment	2011	G4	C	6	15	8.57	538.09	5.532	0.024	0.318	0.318	858.879	0.481
Other Lawn & Garden Equipment	2011	G4	C	16	25	8.612	565.627	5.144	0.021	0.318	0.318	858.879	0.483
Other Lawn & Garden Equipment	2011	G4	R	3	5	17.166	511.452	4.062	0.029	1.971	1.971	858.879	0.964
Other Lawn & Garden Equipment	2011	G4	R	6	15	8.57	538.09	5.532	0.024	0.318	0.318	858.879	0.481
Other Lawn & Garden Equipment	2011	G4	R	16	25	8.612	565.627	5.144	0.021	0.318	0.318	858.879	0.483
Other Lawn & Garden Equipment	2012	G2	C	0	2	98.97	372.378	2.811	0.035	1.314	1.314	858.879	6.151
Other Lawn & Garden Equipment	2012	G2	C	6	15	93.154	356.813	2.781	0.035	1.431	1.431	858.879	5.79
Other Lawn & Garden Equipment	2012	G2	R	0	2	98.97	372.378	2.811	0.035	1.314	1.314	858.879	6.151
Other Lawn & Garden Equipment	2012	G2	R	6	15	93.154	356.813	2.781	0.035	1.431	1.431	858.879	5.79
Other Lawn & Garden Equipment	2012	G4	C	3	5	16.541	504.415	3.953	0.029	1.971	1.971	858.879	0.929
Other Lawn & Garden Equipment	2012	G4	C	6	15	8.305	534.997	5.415	0.024	0.318	0.318	858.879	0.466
Other Lawn & Garden Equipment	2012	G4	C	16	25	8.354	563.036	5.056	0.021	0.318	0.318	858.879	0.469
Other Lawn & Garden Equipment	2012	G4	R	3	5	16.541	504.415	3.953	0.029	1.971	1.971	858.879	0.929
Other Lawn & Garden Equipment	2012	G4	R	6	15	8.305	534.997	5.415	0.024	0.318	0.318	858.879	0.466
Other Lawn & Garden Equipment	2012	G4	R	16	25	8.354	563.036	5.056	0.021	0.318	0.318	858.879	0.469
Other Lawn & Garden Equipment	2013	G2	C	0	2	93.015	362.541	2.826	0.035	1.158	1.158	858.879	5.781
Other Lawn & Garden Equipment	2013	G2	C	6	15	88.205	349.607	2.801	0.035	1.252	1.252	858.879	5.482
Other Lawn & Garden Equipment	2013	G2	R	0	2	93.015	362.541	2.826	0.035	1.158	1.158	858.879	5.781
Other Lawn & Garden Equipment	2013	G2	R	6	15	88.205	349.607	2.801	0.035	1.252	1.252	858.879	5.482
Other Lawn & Garden Equipment	2013	G4	C	3	5	15.973	497.231	3.87	0.029	1.972	1.972	858.879	0.897
Other Lawn & Garden Equipment	2013	G4	C	6	15	8.091	531.613	5.338	0.024	0.318	0.318	858.879	0.454
Other Lawn & Garden Equipment	2013	G4	C	16	25	8.158	560.112	4.999	0.021	0.318	0.318	858.879	0.458
Other Lawn & Garden Equipment	2013	G4	R	3	5	15.973	497.231	3.87	0.029	1.972	1.972	858.879	0.897
Other Lawn & Garden Equipment	2013	G4	R	6	15	8.091	531.613	5.338	0.024	0.318	0.318	858.879	0.454
Other Lawn & Garden Equipment	2013	G4	R	16	25	8.158	560.112	4.999	0.021	0.318	0.318	858.879	0.458
Other Lawn & Garden Equipment	2014	G2	C	0	2	87.581	353.588	2.838	0.035	1.015	1.015	858.879	5.443
Other Lawn & Garden Equipment	2014	G2	C	6	15	83.672	342.992	2.819	0.035	1.086	1.086	858.879	5.2
Other Lawn & Garden Equipment	2014	G2	R	0	2	87.581	353.588	2.838	0.035	1.015	1.015	858.879	5.443
Other Lawn & Garden Equipment	2014	G2	R	6	15	83.672	342.992	2.819	0.035	1.086	1.086	858.879	5.2
Other Lawn & Garden Equipment	2014	G4	C	3	5	15.432	490.368	3.788	0.029	1.971	1.971	858.879	0.867
Other Lawn & Garden Equipment	2014	G4	C	6	15	7.898	528.312	5.278	0.024	0.318	0.318	858.879	0.443
Other Lawn & Garden Equipment	2014	G4	C	16	25	7.988	557.256	4.954	0.021	0.318	0.318	858.879	0.449
Other Lawn & Garden Equipment	2014	G4	R	3	5	15.432	490.368	3.788	0.029	1.971	1.971	858.879	0.867
Other Lawn & Garden Equipment	2014	G4	R	6	15	7.898	528.312	5.278	0.024	0.318	0.318	858.879	0.443
Other Lawn & Garden Equipment	2014	G4	R	16	25	7.988	557.256	4.954	0.021	0.318	0.318	858.879	0.449
Other Lawn & Garden Equipment	2015	G2	C	0	2	82.696	345.46	2.846	0.035	0.886	0.886	858.879	5.139
Other Lawn & Garden Equipment	2015	G2	C	6	15	79.612	337.013	2.832	0.035	0.937	0.937	858.879	4.948
Other Lawn & Garden Equipment	2015	G2	R	0	2	82.696	345.46	2.846	0.035	0.886	0.886	858.879	5.139
Other Lawn & Garden Equipment	2015	G2	R	6	15	79.612	337.013	2.832	0.035	0.937	0.937	858.879	4.948
Other Lawn & Garden Equipment	2015	G4	C	3	5	14.909	483.663	3.709	0.029	1.971	1.971	858.879	0.838
Other Lawn & Garden Equipment	2015	G4	C	6	15	7.71	525.103	5.22	0.024	0.318	0.318	858.879	0.433
Other Lawn & Garden Equipment	2015	G4	C	16	25	7.821	554.482	4.912	0.021	0.318	0.318	858.879	0.439
Other Lawn & Garden Equipment	2015	G4	R	3	5	14.909	483.663	3.709	0.029	1.971	1.971	858.879	0.838
Other Lawn & Garden Equipment	2015	G4	R	6	15	7.71	525.103	5.22	0.024	0.318	0.318	858.879	0.433
Other Lawn & Garden Equipment	2015	G4	R	16	25	7.821	554.482	4.912	0.021	0.318	0.318	858.879	0.439
Other Lawn & Garden Equipment	2016	G2	C	0	2	79.657	340.134	2.839	0.035	0.812	0.812	858.879	4.951
Other Lawn & Garden Equipment	2016	G2	C	6	15	77.163	333.3	2.827	0.035	0.853	0.853	858.879	4.796
Other Lawn & Garden Equipment	2016	G2	R	0	2	79.657	340.134	2.839	0.035	0.812	0.812	858.879	4.951
Other Lawn & Garden Equipment	2016	G2	R	6	15	77.163	333.3	2.827	0.035	0.853	0.853	858.879	4.796
Other Lawn & Garden Equipment	2016	G4	C	3	5	14.43	477.614	3.63	0.029	1.971	1.971	858.879	0.811
Other Lawn & Garden Equipment	2016	G4	C	6	15	7.53	522.211	5.164	0.024	0.318	0.318	858.88	0.423
Other Lawn & Garden Equipment	2016	G4	C	16	25	7.662	551.995	4.871	0.021	0.318	0.318	858.879	0.43
Other Lawn & Garden Equipment	2016	G4	R	3	5	14.43	477.614	3.63	0.029	1.971	1.971	858.879	0.811
Other Lawn & Garden Equipment	2016	G4	R	6	15	7.53	522.211	5.164	0.024	0.318	0.318	858.88	0.423
Other Lawn & Garden Equipment	2016	G4	R	16	25	7.662	551.995	4.871	0.021	0.318	0.318	858.879	0.43
Other Lawn & Garden Equipment	2017	G2	C	0	2	77.493	336.104	2.824	0.035	0.762	0.762	858.879	4.816
Other Lawn & Garden Equipment	2017	G2	C	6	15	75.472	330.608	2.815	0.035	0.798	0.798	858.879	4.69
Other Lawn & Garden Equipment	2017	G2	R	0	2	77.493	336.104	2.824	0.035	0.762	0.762	858.879	4.816
Other Lawn & Garden Equipment	2017	G2	R	6	15	75.472	330.608	2.815	0.035	0.798	0.798	858.879	4.69
Other Lawn & Garden Equipment	2017	G4	C	3	5	13.993	472.178	3.552	0.029	1.971	1.971	858.879	0.786
Other Lawn & Garden Equipment	2017	G4	C	6	15	7.362	519.618	5.111	0.024	0.318	0.318	858.879	0.413
Other Lawn & Garden Equipment	2017	G4	C	16	25	7.513	549.763	4.832	0.021	0.318	0.318	858.879	0.422
Other Lawn & Garden Equipment	2017	G4	R	3	5	13.993	472.178	3.552	0.029	1.971	1.971	858.879	0.786
Other Lawn & Garden Equipment	2017	G4	R	6	15	7.362	519.618	5.111	0.024	0.318	0.318	858.879	0.413
Other Lawn & Garden Equipment	2017	G4	R	16	25	7.513	549.763	4.832	0.021	0.318	0.318	858.879	0.422

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Other Lawn & Garden Equipment	2018	G2	C	0	2	75.613	332.581	2.809	0.035	0.72	0.72	858.879	4.699
Other Lawn & Garden Equipment	2018	G2	C	6	15	74.009	328.268	2.801	0.035	0.751	0.751	858.879	4.6
Other Lawn & Garden Equipment	2018	G2	R	0	2	75.613	332.581	2.809	0.035	0.72	0.72	858.879	4.699
Other Lawn & Garden Equipment	2018	G2	R	6	15	74.009	328.268	2.801	0.035	0.751	0.751	858.879	4.6
Other Lawn & Garden Equipment	2018	G4	C	3	5	13.649	468.588	3.469	0.029	1.972	1.972	858.879	0.767
Other Lawn & Garden Equipment	2018	G4	C	6	15	7.227	518.013	5.055	0.024	0.318	0.318	858.879	0.406
Other Lawn & Garden Equipment	2018	G4	C	16	25	7.386	548.386	4.786	0.021	0.318	0.318	858.879	0.415
Other Lawn & Garden Equipment	2018	G4	R	3	5	13.649	468.588	3.469	0.029	1.972	1.972	858.879	0.767
Other Lawn & Garden Equipment	2018	G4	R	6	15	7.227	518.013	5.055	0.024	0.318	0.318	858.879	0.406
Other Lawn & Garden Equipment	2018	G4	R	16	25	7.386	548.386	4.786	0.021	0.318	0.318	858.879	0.415
Other Lawn & Garden Equipment	2019	G2	C	0	2	73.95	329.492	2.795	0.035	0.682	0.682	858.879	4.596
Other Lawn & Garden Equipment	2019	G2	C	6	15	72.71	326.209	2.788	0.035	0.709	0.709	858.879	4.519
Other Lawn & Garden Equipment	2019	G2	R	0	2	73.95	329.492	2.795	0.035	0.682	0.682	858.879	4.596
Other Lawn & Garden Equipment	2019	G2	R	6	15	72.71	326.209	2.788	0.035	0.709	0.709	858.879	4.519
Other Lawn & Garden Equipment	2019	G4	C	3	5	13.355	465.968	3.384	0.029	1.972	1.972	858.879	0.751
Other Lawn & Garden Equipment	2019	G4	C	6	15	7.111	516.889	5	0.024	0.318	0.318	858.879	0.399
Other Lawn & Garden Equipment	2019	G4	C	16	25	7.273	547.426	4.738	0.021	0.318	0.318	858.879	0.409
Other Lawn & Garden Equipment	2019	G4	R	3	5	13.355	465.968	3.384	0.029	1.972	1.972	858.879	0.751
Other Lawn & Garden Equipment	2019	G4	R	6	15	7.111	516.889	5	0.024	0.318	0.318	858.879	0.399
Other Lawn & Garden Equipment	2019	G4	R	16	25	7.273	547.426	4.738	0.021	0.318	0.318	858.879	0.409
Other Lawn & Garden Equipment	2020	G2	C	0	2	72.499	326.883	2.783	0.035	0.647	0.647	858.88	4.506
Other Lawn & Garden Equipment	2020	G2	C	6	15	71.561	324.439	2.777	0.035	0.67	0.67	858.879	4.447
Other Lawn & Garden Equipment	2020	G2	R	0	2	72.499	326.883	2.783	0.035	0.647	0.647	858.88	4.506
Other Lawn & Garden Equipment	2020	G2	R	6	15	71.561	324.439	2.777	0.035	0.67	0.67	858.879	4.447
Other Lawn & Garden Equipment	2020	G4	C	3	5	13.097	463.764	3.301	0.029	1.972	1.972	858.879	0.736
Other Lawn & Garden Equipment	2020	G4	C	6	15	7.003	515.951	4.947	0.024	0.318	0.318	858.879	0.393
Other Lawn & Garden Equipment	2020	G4	C	16	25	7.166	546.629	4.693	0.021	0.318	0.318	858.879	0.403
Other Lawn & Garden Equipment	2020	G4	R	3	5	13.097	463.764	3.301	0.029	1.972	1.972	858.879	0.736
Other Lawn & Garden Equipment	2020	G4	R	6	15	7.003	515.951	4.947	0.024	0.318	0.318	858.879	0.393
Other Lawn & Garden Equipment	2020	G4	R	16	25	7.166	546.629	4.693	0.021	0.318	0.318	858.879	0.403
Other Lawn & Garden Equipment	2021	G2	C	0	2	71.211	324.651	2.778	0.035	0.618	0.618	858.879	4.426
Other Lawn & Garden Equipment	2021	G2	C	6	15	70.528	322.915	2.773	0.035	0.637	0.637	858.879	4.383
Other Lawn & Garden Equipment	2021	G2	R	0	2	71.211	324.651	2.778	0.035	0.618	0.618	858.879	4.426
Other Lawn & Garden Equipment	2021	G2	R	6	15	70.528	322.915	2.773	0.035	0.637	0.637	858.879	4.383
Other Lawn & Garden Equipment	2021	G4	C	3	5	12.85	462.031	3.218	0.029	1.97	1.97	858.879	0.722
Other Lawn & Garden Equipment	2021	G4	C	6	15	6.895	515.104	4.893	0.024	0.318	0.318	858.879	0.387
Other Lawn & Garden Equipment	2021	G4	C	16	25	7.061	545.911	4.646	0.021	0.318	0.318	858.879	0.397
Other Lawn & Garden Equipment	2021	G4	R	3	5	12.85	462.031	3.218	0.029	1.97	1.97	858.879	0.722
Other Lawn & Garden Equipment	2021	G4	R	6	15	6.895	515.104	4.893	0.024	0.318	0.318	858.879	0.387
Other Lawn & Garden Equipment	2021	G4	R	16	25	7.061	545.911	4.646	0.021	0.318	0.318	858.879	0.397
Other Lawn & Garden Equipment	2022	G2	C	0	2	70.359	322.937	2.777	0.035	0.593	0.593	858.879	4.373
Other Lawn & Garden Equipment	2022	G2	C	6	15	69.865	321.711	2.773	0.035	0.608	0.608	858.879	4.342
Other Lawn & Garden Equipment	2022	G2	R	0	2	70.359	322.937	2.777	0.035	0.593	0.593	858.879	4.373
Other Lawn & Garden Equipment	2022	G2	R	6	15	69.865	321.711	2.773	0.035	0.608	0.608	858.879	4.342
Other Lawn & Garden Equipment	2022	G4	C	3	5	12.663	460.239	3.15	0.029	1.971	1.971	858.879	0.712
Other Lawn & Garden Equipment	2022	G4	C	6	15	6.803	514.379	4.847	0.024	0.318	0.318	858.879	0.382
Other Lawn & Garden Equipment	2022	G4	C	16	25	6.97	545.298	4.608	0.021	0.318	0.318	858.879	0.392
Other Lawn & Garden Equipment	2022	G4	R	3	5	12.663	460.239	3.15	0.029	1.971	1.971	858.879	0.712
Other Lawn & Garden Equipment	2022	G4	R	6	15	6.803	514.379	4.847	0.024	0.318	0.318	858.879	0.382
Other Lawn & Garden Equipment	2022	G4	R	16	25	6.97	545.298	4.608	0.021	0.318	0.318	858.879	0.392
Other Lawn & Garden Equipment	2023	G2	C	0	2	69.52	321.418	2.776	0.035	0.57	0.57	858.879	4.321
Other Lawn & Garden Equipment	2023	G2	C	6	15	69.189	320.632	2.773	0.035	0.583	0.583	858.879	4.3
Other Lawn & Garden Equipment	2023	G2	R	0	2	69.52	321.418	2.776	0.035	0.57	0.57	858.879	4.321
Other Lawn & Garden Equipment	2023	G2	R	6	15	69.189	320.632	2.773	0.035	0.583	0.583	858.879	4.3
Other Lawn & Garden Equipment	2023	G4	C	3	5	12.525	458.636	3.114	0.029	1.972	1.972	858.879	0.704
Other Lawn & Garden Equipment	2023	G4	C	6	15	6.722	513.716	4.806	0.024	0.318	0.318	858.879	0.378
Other Lawn & Garden Equipment	2023	G4	C	16	25	6.889	544.729	4.574	0.021	0.318	0.318	858.879	0.387
Other Lawn & Garden Equipment	2023	G4	R	3	5	12.525	458.636	3.114	0.029	1.972	1.972	858.879	0.704
Other Lawn & Garden Equipment	2023	G4	R	6	15	6.722	513.716	4.806	0.024	0.318	0.318	858.879	0.378
Other Lawn & Garden Equipment	2023	G4	R	16	25	6.889	544.729	4.574	0.021	0.318	0.318	858.879	0.387
Other Lawn & Garden Equipment	2024	G2	C	0	2	68.855	320.179	2.775	0.035	0.551	0.551	858.88	4.279
Other Lawn & Garden Equipment	2024	G2	C	6	15	68.655	319.739	2.773	0.035	0.56	0.56	858.879	4.267
Other Lawn & Garden Equipment	2024	G2	R	0	2	68.855	320.179	2.775	0.035	0.551	0.551	858.88	4.279
Other Lawn & Garden Equipment	2024	G2	R	6	15	68.655	319.739	2.773	0.035	0.56	0.56	858.879	4.267
Other Lawn & Garden Equipment	2024	G4	C	3	5	12.406	457.453	3.088	0.029	1.972	1.972	858.879	0.698
Other Lawn & Garden Equipment	2024	G4	C	6	15	6.664	513.136	4.781	0.024	0.318	0.318	858.879	0.375
Other Lawn & Garden Equipment	2024	G4	C	16	25	6.834	544.234	4.554	0.021	0.318	0.318	858.879	0.384
Other Lawn & Garden Equipment	2024	G4	R	3	5	12.406	457.453	3.088	0.029	1.972	1.972	858.879	0.698
Other Lawn & Garden Equipment	2024	G4	R	6	15	6.664	513.136	4.781	0.024	0.318	0.318	858.879	0.375
Other Lawn & Garden Equipment	2024	G4	R	16	25	6.834	544.234	4.554	0.021	0.318	0.318	858.879	0.384
Other Lawn & Garden Equipment	2025	G2	C	0	2	68.3	319.298	2.773	0.035	0.535	0.535	858.879	4.245
Other Lawn & Garden Equipment	2025	G2	C	6	15	68.187	319.079	2.772	0.035	0.542	0.542	858.879	4.238
Other Lawn & Garden Equipment	2025	G2	R	0	2	68.3	319.298	2.773	0.035	0.535	0.535	858.879	4.245
Other Lawn & Garden Equipment	2025	G2	R	6	15	68.187	319.079	2.772	0.035	0.542	0.542	858.879	4.238
Other Lawn & Garden Equipment	2025	G4	C	3	5	12.316	456.385	3.066	0.029	1.972	1.972	858.879	0.693
Other Lawn & Garden Equipment	2025	G4	C	6	15	6.622	512.645	4.766	0.024	0.318	0.318	858.879	0.372
Other Lawn & Garden Equipment	2025	G4	C	16	25	6.795	543.816	4.543	0.021	0.318	0.318	858.879	0.382

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Other Lawn & Garden Equipment	2025	G4	R	3	5	12.316	456.385	3.066	0.029	1.972	1.972	858.879	0.693
Other Lawn & Garden Equipment	2025	G4	R	6	15	6.622	512.645	4.766	0.024	0.318	0.318	858.879	0.372
Other Lawn & Garden Equipment	2025	G4	R	16	25	6.795	543.816	4.543	0.021	0.318	0.318	858.879	0.382
Other Lawn & Garden Equipment	2030	G2	C	0	2	67.063	317.793	2.764	0.035	0.5	0.5	858.879	4.168
Other Lawn & Garden Equipment	2030	G2	C	6	15	67.061	317.79	2.764	0.035	0.5	0.5	858.879	4.168
Other Lawn & Garden Equipment	2030	G2	R	0	2	67.063	317.793	2.764	0.035	0.5	0.5	858.879	4.168
Other Lawn & Garden Equipment	2030	G2	R	6	15	67.061	317.79	2.764	0.035	0.5	0.5	858.879	4.168
Other Lawn & Garden Equipment	2030	G4	C	3	5	12.077	453.765	2.985	0.029	1.971	1.971	858.879	0.68
Other Lawn & Garden Equipment	2030	G4	C	6	15	6.486	511.085	4.712	0.024	0.318	0.318	858.879	0.365
Other Lawn & Garden Equipment	2030	G4	C	16	25	6.668	542.44	4.502	0.021	0.318	0.318	858.879	0.375
Other Lawn & Garden Equipment	2030	G4	R	3	5	12.077	453.765	2.985	0.029	1.971	1.971	858.879	0.68
Other Lawn & Garden Equipment	2030	G4	R	6	15	6.486	511.085	4.712	0.024	0.318	0.318	858.879	0.365
Other Lawn & Garden Equipment	2030	G4	R	16	25	6.668	542.44	4.502	0.021	0.318	0.318	858.879	0.375
Other Lawn & Garden Equipment	2035	G2	C	0	2	66.983	317.759	2.758	0.035	0.499	0.499	858.879	4.163
Other Lawn & Garden Equipment	2035	G2	C	6	15	66.983	317.759	2.758	0.035	0.499	0.499	858.879	4.163
Other Lawn & Garden Equipment	2035	G2	R	0	2	66.983	317.759	2.758	0.035	0.499	0.499	858.879	4.163
Other Lawn & Garden Equipment	2035	G2	R	6	15	66.983	317.759	2.758	0.035	0.499	0.499	858.879	4.163
Other Lawn & Garden Equipment	2035	G4	C	3	5	12.016	453.055	2.948	0.029	1.971	1.971	858.879	0.677
Other Lawn & Garden Equipment	2035	G4	C	6	15	6.44	510.509	4.686	0.024	0.318	0.318	858.879	0.362
Other Lawn & Garden Equipment	2035	G4	C	16	25	6.62	541.868	4.48	0.021	0.318	0.318	858.879	0.373
Other Lawn & Garden Equipment	2035	G4	R	3	5	12.016	453.055	2.948	0.029	1.971	1.971	858.879	0.677
Other Lawn & Garden Equipment	2035	G4	R	6	15	6.44	510.509	4.686	0.024	0.318	0.318	858.879	0.362
Other Lawn & Garden Equipment	2035	G4	R	16	25	6.62	541.868	4.48	0.021	0.318	0.318	858.879	0.373
Other Lawn & Garden Equipment	2040	G2	C	0	2	66.971	317.759	2.758	0.035	0.499	0.499	858.879	4.162
Other Lawn & Garden Equipment	2040	G2	C	6	15	66.971	317.759	2.758	0.035	0.499	0.499	858.879	4.162
Other Lawn & Garden Equipment	2040	G2	R	0	2	66.971	317.759	2.758	0.035	0.499	0.499	858.879	4.162
Other Lawn & Garden Equipment	2040	G2	R	6	15	66.971	317.759	2.758	0.035	0.499	0.499	858.879	4.162
Other Lawn & Garden Equipment	2040	G4	C	3	5	12.002	452.678	2.942	0.029	1.971	1.971	858.879	0.676
Other Lawn & Garden Equipment	2040	G4	C	6	15	6.428	510.057	4.679	0.024	0.318	0.318	858.879	0.362
Other Lawn & Garden Equipment	2040	G4	C	16	25	6.607	541.388	4.474	0.021	0.318	0.318	858.879	0.372
Other Lawn & Garden Equipment	2040	G4	R	3	5	12.002	452.678	2.942	0.029	1.971	1.971	858.879	0.676
Other Lawn & Garden Equipment	2040	G4	R	6	15	6.428	510.057	4.679	0.024	0.318	0.318	858.879	0.362
Other Lawn & Garden Equipment	2040	G4	R	16	25	6.607	541.388	4.474	0.021	0.318	0.318	858.879	0.372
Rear Engine Riding Mowers	1990	G4	C	6	15	22.909	915.938	8.6	0.359	0.371	0.371	858.879	2.705
Rear Engine Riding Mowers	1990	G4	C	16	25	21.231	912.759	8.476	0.319	0.371	0.371	858.879	2.507
Rear Engine Riding Mowers	1990	G4	R	6	15	22.909	915.938	8.6	0.359	0.371	0.371	858.879	2.705
Rear Engine Riding Mowers	1990	G4	R	16	25	21.231	912.759	8.476	0.319	0.371	0.371	858.879	2.507
Rear Engine Riding Mowers	2000	G4	C	6	15	20.645	670.814	6.649	0.034	0.37	0.37	858.879	1.128
Rear Engine Riding Mowers	2000	G4	C	16	25	18.437	666.497	5.668	0.03	0.37	0.37	858.879	1.007
Rear Engine Riding Mowers	2000	G4	R	6	15	20.645	670.814	6.649	0.034	0.37	0.37	858.879	1.128
Rear Engine Riding Mowers	2000	G4	R	16	25	18.437	666.497	5.668	0.03	0.37	0.37	858.879	1.007
Rear Engine Riding Mowers	2005	G4	C	6	15	13.656	554.614	7.702	0.024	0.37	0.37	858.879	0.766
Rear Engine Riding Mowers	2005	G4	C	16	25	13.498	576.678	6.968	0.021	0.37	0.37	858.879	0.758
Rear Engine Riding Mowers	2005	G4	R	6	15	13.656	554.614	7.702	0.024	0.37	0.37	858.879	0.766
Rear Engine Riding Mowers	2005	G4	R	16	25	13.498	576.678	6.968	0.021	0.37	0.37	858.879	0.758
Rear Engine Riding Mowers	2010	G4	C	6	15	9.521	522.282	6.198	0.024	0.37	0.37	858.879	0.534
Rear Engine Riding Mowers	2010	G4	C	16	25	9.505	550.919	5.959	0.021	0.37	0.37	858.879	0.534
Rear Engine Riding Mowers	2010	G4	R	6	15	9.521	522.282	6.198	0.024	0.37	0.37	858.879	0.534
Rear Engine Riding Mowers	2010	G4	R	16	25	9.505	550.919	5.959	0.021	0.37	0.37	858.879	0.534
Rear Engine Riding Mowers	2011	G4	C	6	15	9.168	519.756	6.099	0.024	0.37	0.37	858.879	0.515
Rear Engine Riding Mowers	2011	G4	C	16	25	9.185	549.03	5.885	0.021	0.37	0.37	858.879	0.516
Rear Engine Riding Mowers	2011	G4	R	6	15	9.168	519.756	6.099	0.024	0.37	0.37	858.879	0.515
Rear Engine Riding Mowers	2011	G4	R	16	25	9.185	549.03	5.885	0.021	0.37	0.37	858.879	0.516
Rear Engine Riding Mowers	2012	G4	C	6	15	8.85	517.872	5.992	0.024	0.37	0.37	858.879	0.497
Rear Engine Riding Mowers	2012	G4	C	16	25	8.887	547.664	5.805	0.021	0.37	0.37	858.879	0.499
Rear Engine Riding Mowers	2012	G4	R	6	15	8.85	517.872	5.992	0.024	0.37	0.37	858.879	0.497
Rear Engine Riding Mowers	2012	G4	R	16	25	8.887	547.664	5.805	0.021	0.37	0.37	858.879	0.499
Rear Engine Riding Mowers	2013	G4	C	6	15	8.562	516.231	5.892	0.024	0.37	0.37	858.879	0.481
Rear Engine Riding Mowers	2013	G4	C	16	25	8.612	546.488	5.732	0.021	0.37	0.37	858.879	0.484
Rear Engine Riding Mowers	2013	G4	R	6	15	8.562	516.231	5.892	0.024	0.37	0.37	858.879	0.481
Rear Engine Riding Mowers	2013	G4	R	16	25	8.612	546.488	5.732	0.021	0.37	0.37	858.879	0.484
Rear Engine Riding Mowers	2014	G4	C	6	15	8.303	514.847	5.793	0.024	0.37	0.37	858.879	0.466
Rear Engine Riding Mowers	2014	G4	C	16	25	8.36	545.483	5.66	0.021	0.37	0.37	858.879	0.469
Rear Engine Riding Mowers	2014	G4	R	6	15	8.303	514.847	5.793	0.024	0.37	0.37	858.879	0.466
Rear Engine Riding Mowers	2014	G4	R	16	25	8.36	545.483	5.66	0.021	0.37	0.37	858.879	0.469
Rear Engine Riding Mowers	2015	G4	C	6	15	8.07	513.744	5.696	0.024	0.37	0.37	858.879	0.453
Rear Engine Riding Mowers	2015	G4	C	16	25	8.128	544.687	5.589	0.021	0.37	0.37	858.879	0.456
Rear Engine Riding Mowers	2015	G4	R	6	15	8.07	513.744	5.696	0.024	0.37	0.37	858.879	0.453
Rear Engine Riding Mowers	2015	G4	R	16	25	8.128	544.687	5.589	0.021	0.37	0.37	858.879	0.456
Rear Engine Riding Mowers	2016	G4	C	6	15	7.873	512.921	5.604	0.024	0.37	0.37	858.879	0.442
Rear Engine Riding Mowers	2016	G4	C	16	25	7.924	544.091	5.523	0.021	0.37	0.37	858.879	0.445
Rear Engine Riding Mowers	2016	G4	R	6	15	7.873	512.921	5.604	0.024	0.37	0.37	858.879	0.442
Rear Engine Riding Mowers	2016	G4	R	16	25	7.924	544.091	5.523	0.021	0.37	0.37	858.879	0.445
Rear Engine Riding Mowers	2017	G4	C	6	15	7.773	512.361	5.568	0.024	0.37	0.37	858.88	0.437
Rear Engine Riding Mowers	2017	G4	C	16	25	7.826	543.681	5.499	0.021	0.37	0.37	858.879	0.44
Rear Engine Riding Mowers	2017	G4	R	6	15	7.773	512.361	5.568	0.024	0.37	0.37	858.88	0.437
Rear Engine Riding Mowers	2017	G4	R	16	25	7.826	543.681	5.499	0.021	0.37	0.37	858.879	0.44

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Rear Engine Riding Mowers	2018	G4	C	6	15	7.704	511.993	5.54	0.024	0.37	0.37	858.879	0.433
Rear Engine Riding Mowers	2018	G4	C	16	25	7.756	543.404	5.48	0.021	0.37	0.37	858.879	0.436
Rear Engine Riding Mowers	2018	G4	R	6	15	7.704	511.993	5.54	0.024	0.37	0.37	858.879	0.433
Rear Engine Riding Mowers	2018	G4	R	16	25	7.756	543.404	5.48	0.021	0.37	0.37	858.879	0.436
Rear Engine Riding Mowers	2019	G4	C	6	15	7.66	511.821	5.514	0.024	0.37	0.37	858.879	0.43
Rear Engine Riding Mowers	2019	G4	C	16	25	7.707	543.26	5.463	0.021	0.37	0.37	858.88	0.433
Rear Engine Riding Mowers	2019	G4	R	6	15	7.66	511.821	5.514	0.024	0.37	0.37	858.879	0.43
Rear Engine Riding Mowers	2019	G4	R	16	25	7.707	543.26	5.463	0.021	0.37	0.37	858.88	0.433
Rear Engine Riding Mowers	2020	G4	C	6	15	7.631	511.749	5.492	0.024	0.37	0.37	858.879	0.429
Rear Engine Riding Mowers	2020	G4	C	16	25	7.672	543.183	5.446	0.021	0.37	0.37	858.879	0.431
Rear Engine Riding Mowers	2020	G4	R	6	15	7.631	511.749	5.492	0.024	0.37	0.37	858.879	0.429
Rear Engine Riding Mowers	2020	G4	R	16	25	7.672	543.183	5.446	0.021	0.37	0.37	858.879	0.431
Rear Engine Riding Mowers	2021	G4	C	6	15	7.604	511.699	5.471	0.024	0.37	0.37	858.88	0.427
Rear Engine Riding Mowers	2021	G4	C	16	25	7.641	543.131	5.43	0.021	0.37	0.37	858.879	0.429
Rear Engine Riding Mowers	2021	G4	R	6	15	7.604	511.699	5.471	0.024	0.37	0.37	858.88	0.427
Rear Engine Riding Mowers	2021	G4	R	16	25	7.641	543.131	5.43	0.021	0.37	0.37	858.879	0.429
Rear Engine Riding Mowers	2022	G4	C	6	15	7.589	511.628	5.459	0.024	0.37	0.37	858.88	0.426
Rear Engine Riding Mowers	2022	G4	C	16	25	7.622	543.055	5.422	0.021	0.37	0.37	858.879	0.428
Rear Engine Riding Mowers	2022	G4	R	6	15	7.589	511.628	5.459	0.024	0.37	0.37	858.88	0.426
Rear Engine Riding Mowers	2022	G4	R	16	25	7.622	543.055	5.422	0.021	0.37	0.37	858.879	0.428
Rear Engine Riding Mowers	2023	G4	C	6	15	7.579	511.555	5.452	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2023	G4	C	16	25	7.609	542.977	5.417	0.021	0.37	0.37	858.879	0.428
Rear Engine Riding Mowers	2023	G4	R	6	15	7.579	511.555	5.452	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2023	G4	R	16	25	7.609	542.977	5.417	0.021	0.37	0.37	858.879	0.428
Rear Engine Riding Mowers	2024	G4	C	6	15	7.573	511.479	5.447	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2024	G4	C	16	25	7.602	542.897	5.414	0.021	0.37	0.37	858.879	0.427
Rear Engine Riding Mowers	2024	G4	R	6	15	7.573	511.479	5.447	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2024	G4	R	16	25	7.602	542.897	5.414	0.021	0.37	0.37	858.879	0.427
Rear Engine Riding Mowers	2025	G4	C	6	15	7.571	511.402	5.445	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2025	G4	C	16	25	7.599	542.815	5.413	0.021	0.37	0.37	858.879	0.427
Rear Engine Riding Mowers	2025	G4	R	6	15	7.571	511.402	5.445	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2025	G4	R	16	25	7.599	542.815	5.413	0.021	0.37	0.37	858.879	0.427
Rear Engine Riding Mowers	2030	G4	C	6	15	7.565	510.995	5.443	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2030	G4	C	16	25	7.593	542.384	5.411	0.021	0.37	0.37	858.879	0.427
Rear Engine Riding Mowers	2030	G4	R	6	15	7.565	510.995	5.443	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2030	G4	R	16	25	7.593	542.384	5.411	0.021	0.37	0.37	858.879	0.427
Rear Engine Riding Mowers	2035	G4	C	6	15	7.56	510.58	5.441	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2035	G4	C	16	25	7.588	541.943	5.409	0.021	0.37	0.37	858.879	0.427
Rear Engine Riding Mowers	2035	G4	R	6	15	7.56	510.58	5.441	0.024	0.37	0.37	858.879	0.426
Rear Engine Riding Mowers	2035	G4	R	16	25	7.588	541.943	5.409	0.021	0.37	0.37	858.879	0.427
Rear Engine Riding Mowers	2040	G4	C	6	15	7.554	510.128	5.438	0.024	0.37	0.37	858.879	0.425
Rear Engine Riding Mowers	2040	G4	C	16	25	7.582	541.463	5.406	0.021	0.37	0.37	858.879	0.427
Rear Engine Riding Mowers	2040	G4	R	6	15	7.554	510.128	5.438	0.024	0.37	0.37	858.879	0.425
Rear Engine Riding Mowers	2040	G4	R	16	25	7.582	541.463	5.406	0.021	0.37	0.37	858.879	0.427
Shredders	1990	G2	C	6	15	383.517	971.999	0.625	0.518	7.199	7.199	858.879	32.707
Shredders	1990	G2	R	6	15	383.517	971.999	0.625	0.518	7.199	7.199	858.879	32.707
Shredders	1990	G4	C	3	5	73.086	1281.602	4.878	0.434	2.254	2.254	858.879	8.633
Shredders	1990	G4	R	3	5	73.086	1281.602	4.878	0.434	2.254	2.254	858.879	8.633
Shredders	2000	G2	C	6	15	140.016	646.117	4.113	0.049	7.199	7.199	858.879	8.474
Shredders	2000	G2	R	6	15	140.016	646.117	4.113	0.049	7.199	7.199	858.879	8.474
Shredders	2000	G4	C	3	5	42.745	785.17	5.669	0.041	5.16	5.16	858.879	2.336
Shredders	2000	G4	R	3	5	42.745	785.17	5.669	0.041	5.16	5.16	858.879	2.336
Shredders	2005	G2	C	6	15	87.504	541.643	5.415	0.035	7.199	7.199	858.879	5.438
Shredders	2005	G2	R	6	15	87.504	541.643	5.415	0.035	7.199	7.199	858.879	5.438
Shredders	2005	G4	C	3	5	26.261	563.118	7.001	0.029	1.606	1.606	858.879	1.474
Shredders	2005	G4	R	3	5	26.261	563.118	7.001	0.029	1.606	1.606	858.879	1.474
Shredders	2010	G2	C	6	15	44.762	499.088	6.097	0.035	7.199	7.199	858.879	2.782
Shredders	2010	G2	R	6	15	44.762	499.088	6.097	0.035	7.199	7.199	858.879	2.782
Shredders	2010	G4	C	3	5	21.525	509.857	7.252	0.029	1.289	1.289	858.879	1.209
Shredders	2010	G4	R	3	5	21.525	509.857	7.252	0.029	1.289	1.289	858.879	1.209
Shredders	2011	G2	C	6	15	36.618	490.701	6.226	0.035	7.199	7.199	858.879	2.275
Shredders	2011	G2	R	6	15	36.618	490.701	6.226	0.035	7.199	7.199	858.879	2.275
Shredders	2011	G4	C	3	5	20.596	499.294	7.299	0.029	1.218	1.218	858.879	1.157
Shredders	2011	G4	R	3	5	20.596	499.294	7.299	0.029	1.218	1.218	858.879	1.157
Shredders	2012	G2	C	6	15	29.387	482.281	6.335	0.035	7.199	7.199	858.879	1.826
Shredders	2012	G2	R	6	15	29.387	482.281	6.335	0.035	7.199	7.199	858.879	1.826
Shredders	2012	G4	C	3	5	19.754	488.364	7.34	0.029	1.143	1.143	858.879	1.11
Shredders	2012	G4	R	3	5	19.754	488.364	7.34	0.029	1.143	1.143	858.879	1.11
Shredders	2013	G2	C	6	15	25.29	477.106	6.4	0.035	7.199	7.199	858.879	1.571
Shredders	2013	G2	R	6	15	25.29	477.106	6.4	0.035	7.199	7.199	858.879	1.571
Shredders	2013	G4	C	3	5	19.236	481.12	7.372	0.029	1.031	1.031	858.879	1.081
Shredders	2013	G4	R	3	5	19.236	481.12	7.372	0.029	1.031	1.031	858.879	1.081
Shredders	2014	G2	C	6	15	22.674	473.079	6.444	0.035	7.199	7.199	858.879	1.409
Shredders	2014	G2	R	6	15	22.674	473.079	6.444	0.035	7.199	7.199	858.879	1.409
Shredders	2014	G4	C	3	5	18.878	474.915	7.402	0.029	0.904	0.904	858.879	1.061
Shredders	2014	G4	R	3	5	18.878	474.915	7.402	0.029	0.904	0.904	858.879	1.061
Shredders	2015	G2	C	6	15	20.409	469.199	6.483	0.035	7.199	7.199	858.879	1.268

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Shredders	2015	G2	R	6	15	20.409	469.199	6.483	0.035	7.199	7.199	858.879	1.268
Shredders	2015	G4	C	3	5	18.556	468.937	7.429	0.029	0.778	0.778	858.879	1.043
Shredders	2015	G4	R	3	5	18.556	468.937	7.429	0.029	0.778	0.778	858.879	1.043
Shredders	2016	G2	C	6	15	18.435	465.619	6.518	0.035	7.199	7.199	858.879	1.145
Shredders	2016	G2	R	6	15	18.435	465.619	6.518	0.035	7.199	7.199	858.879	1.145
Shredders	2016	G4	C	3	5	18.269	463.456	7.454	0.029	0.66	0.66	858.879	1.027
Shredders	2016	G4	R	3	5	18.269	463.456	7.454	0.029	0.66	0.66	858.879	1.027
Shredders	2017	G2	C	6	15	16.635	462.285	6.549	0.035	7.199	7.199	858.879	1.033
Shredders	2017	G2	R	6	15	16.635	462.285	6.549	0.035	7.199	7.199	858.879	1.033
Shredders	2017	G4	C	3	5	18.008	458.475	7.477	0.029	0.557	0.557	858.879	1.012
Shredders	2017	G4	R	3	5	18.008	458.475	7.477	0.029	0.557	0.557	858.879	1.012
Shredders	2018	G2	C	6	15	15.12	459.444	6.576	0.035	7.199	7.199	858.879	0.939
Shredders	2018	G2	R	6	15	15.12	459.444	6.576	0.035	7.199	7.199	858.879	0.939
Shredders	2018	G4	C	3	5	17.808	455.299	7.491	0.029	0.504	0.504	858.879	1.001
Shredders	2018	G4	R	3	5	17.808	455.299	7.491	0.029	0.504	0.504	858.879	1.001
Shredders	2019	G2	C	6	15	13.778	457.456	6.599	0.035	7.199	7.199	858.879	0.856
Shredders	2019	G2	R	6	15	13.778	457.456	6.599	0.035	7.199	7.199	858.879	0.856
Shredders	2019	G4	C	3	5	17.638	452.882	7.502	0.029	0.473	0.473	858.879	0.992
Shredders	2019	G4	R	3	5	17.638	452.882	7.502	0.029	0.473	0.473	858.879	0.992
Shredders	2020	G2	C	6	15	12.601	455.916	6.618	0.035	7.199	7.199	858.879	0.783
Shredders	2020	G2	R	6	15	12.601	455.916	6.618	0.035	7.199	7.199	858.879	0.783
Shredders	2020	G4	C	3	5	17.489	450.769	7.511	0.029	0.447	0.447	858.879	0.983
Shredders	2020	G4	R	3	5	17.489	450.769	7.511	0.029	0.447	0.447	858.879	0.983
Shredders	2021	G2	C	6	15	11.563	454.545	6.635	0.035	7.199	7.199	858.879	0.718
Shredders	2021	G2	R	6	15	11.563	454.545	6.635	0.035	7.199	7.199	858.879	0.718
Shredders	2021	G4	C	3	5	17.348	449.038	7.516	0.029	0.422	0.422	858.879	0.975
Shredders	2021	G4	R	3	5	17.348	449.038	7.516	0.029	0.422	0.422	858.879	0.975
Shredders	2022	G2	C	6	15	10.763	453.447	6.649	0.035	7.199	7.199	858.879	0.668
Shredders	2022	G2	R	6	15	10.763	453.447	6.649	0.035	7.199	7.199	858.879	0.668
Shredders	2022	G4	C	3	5	17.25	447.183	7.527	0.029	0.399	0.399	858.879	0.97
Shredders	2022	G4	R	3	5	17.25	447.183	7.527	0.029	0.399	0.399	858.879	0.97
Shredders	2023	G2	C	6	15	10.088	452.461	6.66	0.035	7.199	7.199	858.879	0.627
Shredders	2023	G2	R	6	15	10.088	452.461	6.66	0.035	7.199	7.199	858.879	0.627
Shredders	2023	G4	C	3	5	17.154	445.909	7.53	0.029	0.379	0.379	858.879	0.965
Shredders	2023	G4	R	3	5	17.154	445.909	7.53	0.029	0.379	0.379	858.879	0.965
Shredders	2024	G2	C	6	15	9.575	451.691	6.669	0.035	7.199	7.199	858.879	0.595
Shredders	2024	G2	R	6	15	9.575	451.691	6.669	0.035	7.199	7.199	858.879	0.595
Shredders	2024	G4	C	3	5	17.084	444.654	7.537	0.029	0.36	0.36	858.879	0.961
Shredders	2024	G4	R	3	5	17.084	444.654	7.537	0.029	0.36	0.36	858.879	0.961
Shredders	2025	G2	C	6	15	9.157	451.013	6.676	0.035	7.2	7.2	858.879	0.569
Shredders	2025	G2	R	6	15	9.157	451.013	6.676	0.035	7.2	7.2	858.879	0.569
Shredders	2025	G4	C	3	5	17.02	443.666	7.54	0.029	0.343	0.343	858.879	0.957
Shredders	2025	G4	R	3	5	17.02	443.666	7.54	0.029	0.343	0.343	858.879	0.957
Shredders	2030	G2	C	6	15	8.653	449.536	6.686	0.035	7.199	7.199	858.879	0.537
Shredders	2030	G2	R	6	15	8.653	449.536	6.686	0.035	7.199	7.199	858.879	0.537
Shredders	2030	G4	C	3	5	16.911	441.143	7.547	0.029	0.287	0.287	858.879	0.952
Shredders	2030	G4	R	3	5	16.911	441.143	7.547	0.029	0.287	0.287	858.879	0.952
Shredders	2035	G2	C	6	15	8.648	449.319	6.686	0.035	7.199	7.199	858.879	0.537
Shredders	2035	G2	R	6	15	8.648	449.319	6.686	0.035	7.199	7.199	858.879	0.537
Shredders	2035	G4	C	3	5	16.893	440.552	7.546	0.029	0.279	0.279	858.879	0.952
Shredders	2035	G4	R	3	5	16.893	440.552	7.546	0.029	0.279	0.279	858.879	0.952
Shredders	2040	G2	C	6	15	8.648	449.319	6.686	0.035	7.199	7.199	858.879	0.537
Shredders	2040	G2	R	6	15	8.648	449.319	6.686	0.035	7.199	7.199	858.879	0.537
Shredders	2040	G4	C	3	5	16.881	440.169	7.543	0.029	0.279	0.279	858.879	0.952
Shredders	2040	G4	R	3	5	16.881	440.169	7.543	0.029	0.279	0.279	858.879	0.952
Snowblowers	1990	G2	C	6	15	294.22	1043.999	1.937	0.518	7.239	7.239	858.879	25.092
Snowblowers	1990	G2	C	16	25	383.517	971.999	0.661	0.518	7.199	7.199	858.879	32.707
Snowblowers	1990	G2	R	6	15	294.22	1043.999	1.937	0.518	7.239	7.239	858.879	25.092
Snowblowers	1990	G2	R	16	25	383.517	971.999	0.661	0.518	7.199	7.199	858.879	32.707
Snowblowers	1990	G4	C	3	5	63.466	1319.693	5.335	0.434	1.646	1.646	858.879	6.925
Snowblowers	1990	G4	C	6	15	17.288	998.584	8.833	0.359	0.292	0.292	858.879	1.886
Snowblowers	1990	G4	C	16	25	17.033	998.089	8.814	0.319	0.292	0.292	858.879	1.858
Snowblowers	1990	G4	R	3	5	63.466	1319.693	5.335	0.434	1.646	1.646	858.879	6.925
Snowblowers	1990	G4	R	6	15	17.288	998.584	8.833	0.359	0.292	0.292	858.879	1.886
Snowblowers	1990	G4	R	16	25	17.033	998.089	8.814	0.319	0.292	0.292	858.879	1.858
Snowblowers	2000	G2	C	6	15	166.997	509.415	3.015	0.051	4.285	4.285	858.879	10.107
Snowblowers	2000	G2	C	16	25	183.257	440.038	2.719	0.051	4.275	4.275	858.879	11.092
Snowblowers	2000	G2	R	6	15	166.997	509.415	3.015	0.051	4.285	4.285	858.879	10.107
Snowblowers	2000	G2	R	16	25	183.257	440.038	2.719	0.051	4.275	4.275	858.879	11.092
Snowblowers	2000	G4	C	3	5	31.589	850.441	5.693	0.043	1.639	1.639	858.879	1.597
Snowblowers	2000	G4	C	6	15	13.541	715.233	7.256	0.035	0.292	0.292	858.88	0.684
Snowblowers	2000	G4	C	16	25	13.002	730.145	6.298	0.031	0.292	0.292	858.879	0.657
Snowblowers	2000	G4	R	3	5	31.589	850.441	5.693	0.043	1.639	1.639	858.879	1.597
Snowblowers	2000	G4	R	6	15	13.541	715.233	7.256	0.035	0.292	0.292	858.88	0.684
Snowblowers	2000	G4	R	16	25	13.002	730.145	6.298	0.031	0.292	0.292	858.879	0.657
Snowblowers	2005	G2	C	6	15	120.913	437.03	2.781	0.035	2.897	2.897	858.879	7.515
Snowblowers	2005	G2	C	16	25	127.158	389.652	2.603	0.035	2.89	2.89	858.879	7.903

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Snowblowers	2005	G2	R	6	15	120.913	437.03	2.781	0.035	2.897	2.897	858.879	7.515
Snowblowers	2005	G2	R	16	25	127.158	389.652	2.603	0.035	2.89	2.89	858.879	7.903
Snowblowers	2005	G4	C	3	5	23.699	681.336	6.453	0.029	1.645	1.645	858.879	1.231
Snowblowers	2005	G4	C	6	15	11.29	624.579	7.317	0.024	0.292	0.292	858.879	0.587
Snowblowers	2005	G4	C	16	25	11.494	650.913	6.689	0.021	0.292	0.292	858.879	0.597
Snowblowers	2005	G4	R	3	5	23.699	681.336	6.453	0.029	1.645	1.645	858.879	1.231
Snowblowers	2005	G4	R	6	15	11.29	624.579	7.317	0.024	0.292	0.292	858.879	0.587
Snowblowers	2005	G4	R	16	25	11.494	650.913	6.689	0.021	0.292	0.292	858.879	0.597
Snowblowers	2010	G2	C	6	15	87.804	375.893	2.851	0.035	1.934	1.934	858.879	5.457
Snowblowers	2010	G2	C	16	25	89.649	344.324	2.79	0.035	1.932	1.932	858.879	5.572
Snowblowers	2010	G2	R	6	15	87.804	375.893	2.851	0.035	1.934	1.934	858.879	5.457
Snowblowers	2010	G2	R	16	25	89.649	344.324	2.79	0.035	1.932	1.932	858.879	5.572
Snowblowers	2010	G4	C	3	5	15.722	625.42	3.815	0.029	1.647	1.647	858.879	0.818
Snowblowers	2010	G4	C	6	15	8.524	596.884	5.71	0.024	0.292	0.292	858.879	0.443
Snowblowers	2010	G4	C	16	25	8.65	627.18	5.206	0.021	0.292	0.292	858.879	0.45
Snowblowers	2010	G4	R	3	5	15.722	625.42	3.815	0.029	1.647	1.647	858.879	0.818
Snowblowers	2010	G4	R	6	15	8.524	596.884	5.71	0.024	0.292	0.292	858.879	0.443
Snowblowers	2010	G4	R	16	25	8.65	627.18	5.206	0.021	0.292	0.292	858.879	0.45
Snowblowers	2011	G2	C	6	15	81.769	367.186	2.88	0.035	1.73	1.73	858.879	5.082
Snowblowers	2011	G2	C	16	25	83.443	339.783	2.832	0.035	1.728	1.728	858.879	5.186
Snowblowers	2011	G2	R	6	15	81.769	367.186	2.88	0.035	1.73	1.73	858.879	5.082
Snowblowers	2011	G2	R	16	25	83.443	339.783	2.832	0.035	1.728	1.728	858.879	5.186
Snowblowers	2011	G4	C	3	5	14.985	618.315	3.717	0.029	1.647	1.647	858.879	0.78
Snowblowers	2011	G4	C	6	15	8.316	593.895	5.631	0.024	0.292	0.292	858.88	0.433
Snowblowers	2011	G4	C	16	25	8.459	624.839	5.138	0.021	0.292	0.292	858.879	0.44
Snowblowers	2011	G4	R	3	5	14.985	618.315	3.717	0.029	1.647	1.647	858.879	0.78
Snowblowers	2011	G4	R	6	15	8.316	593.895	5.631	0.024	0.292	0.292	858.88	0.433
Snowblowers	2011	G4	R	16	25	8.459	624.839	5.138	0.021	0.292	0.292	858.879	0.44
Snowblowers	2012	G2	C	6	15	76.002	359.672	2.906	0.035	1.532	1.532	858.879	4.723
Snowblowers	2012	G2	C	16	25	77.837	336.967	2.865	0.035	1.531	1.531	858.88	4.837
Snowblowers	2012	G2	R	6	15	76.002	359.672	2.906	0.035	1.532	1.532	858.879	4.723
Snowblowers	2012	G2	R	16	25	77.837	336.967	2.865	0.035	1.531	1.531	858.88	4.837
Snowblowers	2012	G4	C	3	5	14.444	611.581	3.618	0.029	1.647	1.647	858.879	0.752
Snowblowers	2012	G4	C	6	15	8.128	590.571	5.557	0.024	0.292	0.292	858.879	0.423
Snowblowers	2012	G4	C	16	25	8.29	622.001	5.081	0.021	0.292	0.292	858.879	0.431
Snowblowers	2012	G4	R	3	5	14.444	611.581	3.618	0.029	1.647	1.647	858.879	0.752
Snowblowers	2012	G4	R	6	15	8.128	590.571	5.557	0.024	0.292	0.292	858.879	0.423
Snowblowers	2012	G4	R	16	25	8.29	622.001	5.081	0.021	0.292	0.292	858.879	0.431
Snowblowers	2013	G2	C	6	15	70.36	352.374	2.931	0.035	1.341	1.341	858.879	4.373
Snowblowers	2013	G2	C	16	25	72.339	334.375	2.895	0.035	1.34	1.34	858.879	4.496
Snowblowers	2013	G2	R	6	15	70.36	352.374	2.931	0.035	1.341	1.341	858.879	4.373
Snowblowers	2013	G2	R	16	25	72.339	334.375	2.895	0.035	1.34	1.34	858.879	4.496
Snowblowers	2013	G4	C	3	5	13.944	604.538	3.519	0.029	1.647	1.647	858.879	0.726
Snowblowers	2013	G4	C	6	15	7.943	586.794	5.483	0.024	0.292	0.292	858.879	0.413
Snowblowers	2013	G4	C	16	25	8.124	618.655	5.026	0.021	0.292	0.292	858.879	0.423
Snowblowers	2013	G4	R	3	5	13.944	604.538	3.519	0.029	1.647	1.647	858.879	0.726
Snowblowers	2013	G4	R	6	15	7.943	586.794	5.483	0.024	0.292	0.292	858.879	0.413
Snowblowers	2013	G4	R	16	25	8.124	618.655	5.026	0.021	0.292	0.292	858.879	0.423
Snowblowers	2014	G2	C	6	15	65.026	345.508	2.952	0.035	1.16	1.16	858.879	4.041
Snowblowers	2014	G2	C	16	25	67.062	331.911	2.922	0.035	1.159	1.159	858.879	4.168
Snowblowers	2014	G2	R	6	15	65.026	345.508	2.952	0.035	1.16	1.16	858.879	4.041
Snowblowers	2014	G2	R	16	25	67.062	331.911	2.922	0.035	1.159	1.159	858.879	4.168
Snowblowers	2014	G4	C	3	5	13.463	597.617	3.42	0.029	1.647	1.647	858.879	0.701
Snowblowers	2014	G4	C	6	15	7.759	583.06	5.411	0.024	0.292	0.292	858.879	0.404
Snowblowers	2014	G4	C	16	25	7.959	615.34	4.972	0.021	0.292	0.292	858.879	0.414
Snowblowers	2014	G4	R	3	5	13.463	597.617	3.42	0.029	1.647	1.647	858.879	0.701
Snowblowers	2014	G4	R	6	15	7.759	583.06	5.411	0.024	0.292	0.292	858.879	0.404
Snowblowers	2014	G4	R	16	25	7.959	615.34	4.972	0.021	0.292	0.292	858.879	0.414
Snowblowers	2015	G2	C	6	15	60.176	339.189	2.969	0.035	0.997	0.997	858.879	3.74
Snowblowers	2015	G2	C	16	25	62.152	329.468	2.944	0.035	0.996	0.996	858.879	3.863
Snowblowers	2015	G2	R	6	15	60.176	339.189	2.969	0.035	0.997	0.997	858.879	3.74
Snowblowers	2015	G2	R	16	25	62.152	329.468	2.944	0.035	0.996	0.996	858.879	3.863
Snowblowers	2015	G4	C	3	5	12.989	590.776	3.324	0.029	1.647	1.647	858.879	0.676
Snowblowers	2015	G4	C	6	15	7.579	579.355	5.341	0.024	0.292	0.292	858.879	0.395
Snowblowers	2015	G4	C	16	25	7.797	612.045	4.92	0.021	0.292	0.292	858.879	0.406
Snowblowers	2015	G4	R	3	5	12.989	590.776	3.324	0.029	1.647	1.647	858.879	0.676
Snowblowers	2015	G4	R	6	15	7.579	579.355	5.341	0.024	0.292	0.292	858.879	0.395
Snowblowers	2015	G4	R	16	25	7.797	612.045	4.92	0.021	0.292	0.292	858.879	0.406
Snowblowers	2016	G2	C	6	15	57.315	335.352	2.964	0.035	0.906	0.906	858.879	3.562
Snowblowers	2016	G2	C	16	25	59.144	327.612	2.943	0.035	0.905	0.905	858.879	3.676
Snowblowers	2016	G2	R	6	15	57.315	335.352	2.964	0.035	0.906	0.906	858.879	3.562
Snowblowers	2016	G2	R	16	25	59.144	327.612	2.943	0.035	0.905	0.905	858.879	3.676
Snowblowers	2016	G4	C	3	5	12.555	584.605	3.23	0.029	1.647	1.647	858.879	0.654
Snowblowers	2016	G4	C	6	15	7.408	576.051	5.274	0.024	0.292	0.292	858.879	0.386
Snowblowers	2016	G4	C	16	25	7.644	609.121	4.871	0.021	0.292	0.292	858.879	0.398
Snowblowers	2016	G4	R	3	5	12.555	584.605	3.23	0.029	1.647	1.647	858.879	0.654
Snowblowers	2016	G4	R	6	15	7.408	576.051	5.274	0.024	0.292	0.292	858.879	0.386

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Snowblowers	2016	G4	R	16	25	7.644	609.121	4.871	0.021	0.292	0.292	858.879	0.398
Snowblowers	2017	G2	C	6	15	55.381	332.569	2.953	0.035	0.847	0.847	858.879	3.442
Snowblowers	2017	G2	C	16	25	57.035	325.993	2.936	0.035	0.847	0.847	858.879	3.545
Snowblowers	2017	G2	R	6	15	55.381	332.569	2.953	0.035	0.847	0.847	858.879	3.442
Snowblowers	2017	G2	R	16	25	57.035	325.993	2.936	0.035	0.847	0.847	858.879	3.545
Snowblowers	2017	G4	C	3	5	12.174	579.337	3.144	0.029	1.647	1.647	858.879	0.634
Snowblowers	2017	G4	C	6	15	7.258	573.275	5.213	0.024	0.292	0.292	858.879	0.378
Snowblowers	2017	G4	C	16	25	7.509	606.665	4.824	0.021	0.292	0.292	858.879	0.391
Snowblowers	2017	G4	R	3	5	12.174	579.337	3.144	0.029	1.647	1.647	858.879	0.634
Snowblowers	2017	G4	R	6	15	7.258	573.275	5.213	0.024	0.292	0.292	858.879	0.378
Snowblowers	2017	G4	R	16	25	7.509	606.665	4.824	0.021	0.292	0.292	858.879	0.391
Snowblowers	2018	G2	C	6	15	53.698	330.087	2.941	0.035	0.796	0.796	858.879	3.337
Snowblowers	2018	G2	C	16	25	55.166	324.485	2.928	0.035	0.796	0.796	858.879	3.428
Snowblowers	2018	G2	R	6	15	53.698	330.087	2.941	0.035	0.796	0.796	858.879	3.337
Snowblowers	2018	G2	R	16	25	55.166	324.485	2.928	0.035	0.796	0.796	858.879	3.428
Snowblowers	2018	G4	C	3	5	11.857	575.798	3.058	0.029	1.647	1.647	858.879	0.618
Snowblowers	2018	G4	C	6	15	7.134	571.462	5.154	0.024	0.292	0.292	858.879	0.372
Snowblowers	2018	G4	C	16	25	7.391	605.064	4.774	0.021	0.292	0.292	858.879	0.385
Snowblowers	2018	G4	R	3	5	11.857	575.798	3.058	0.029	1.647	1.647	858.879	0.618
Snowblowers	2018	G4	R	6	15	7.134	571.462	5.154	0.024	0.292	0.292	858.879	0.372
Snowblowers	2018	G4	R	16	25	7.391	605.064	4.774	0.021	0.292	0.292	858.879	0.385
Snowblowers	2019	G2	C	6	15	52.176	327.869	2.93	0.035	0.75	0.75	858.879	3.242
Snowblowers	2019	G2	C	16	25	53.46	323.141	2.92	0.035	0.75	0.75	858.879	3.322
Snowblowers	2019	G2	R	6	15	52.176	327.869	2.93	0.035	0.75	0.75	858.879	3.242
Snowblowers	2019	G2	R	16	25	53.46	323.141	2.92	0.035	0.75	0.75	858.879	3.322
Snowblowers	2019	G4	C	3	5	11.577	573.112	2.971	0.029	1.648	1.648	858.879	0.604
Snowblowers	2019	G4	C	6	15	7.023	570.119	5.096	0.024	0.292	0.292	858.879	0.366
Snowblowers	2019	G4	C	16	25	7.282	603.882	4.723	0.021	0.292	0.292	858.879	0.38
Snowblowers	2019	G4	R	3	5	11.577	573.112	2.971	0.029	1.648	1.648	858.879	0.604
Snowblowers	2019	G4	R	6	15	7.023	570.119	5.096	0.024	0.292	0.292	858.879	0.366
Snowblowers	2019	G4	R	16	25	7.282	603.882	4.723	0.021	0.292	0.292	858.879	0.38
Snowblowers	2020	G2	C	6	15	50.759	325.86	2.921	0.035	0.706	0.706	858.879	3.154
Snowblowers	2020	G2	C	16	25	51.862	321.96	2.913	0.035	0.706	0.706	858.879	3.223
Snowblowers	2020	G2	R	6	15	50.759	325.86	2.921	0.035	0.706	0.706	858.879	3.154
Snowblowers	2020	G2	R	16	25	51.862	321.96	2.913	0.035	0.706	0.706	858.879	3.223
Snowblowers	2020	G4	C	3	5	11.32	570.763	2.884	0.029	1.648	1.648	858.879	0.59
Snowblowers	2020	G4	C	6	15	6.917	568.949	5.038	0.024	0.292	0.292	858.879	0.361
Snowblowers	2020	G4	C	16	25	7.178	602.855	4.673	0.021	0.292	0.292	858.879	0.374
Snowblowers	2020	G4	R	3	5	11.32	570.763	2.884	0.029	1.648	1.648	858.879	0.59
Snowblowers	2020	G4	R	6	15	6.917	568.949	5.038	0.024	0.292	0.292	858.879	0.361
Snowblowers	2020	G4	R	16	25	7.178	602.855	4.673	0.021	0.292	0.292	858.879	0.374
Snowblowers	2021	G2	C	6	15	49.269	323.908	2.918	0.035	0.663	0.663	858.879	3.062
Snowblowers	2021	G2	C	16	25	50.166	320.811	2.913	0.035	0.663	0.663	858.879	3.118
Snowblowers	2021	G2	R	6	15	49.269	323.908	2.918	0.035	0.663	0.663	858.879	3.062
Snowblowers	2021	G2	R	16	25	50.166	320.811	2.913	0.035	0.663	0.663	858.879	3.118
Snowblowers	2021	G4	C	3	5	11.036	568.463	2.784	0.029	1.647	1.647	858.879	0.576
Snowblowers	2021	G4	C	6	15	6.794	567.544	4.97	0.024	0.292	0.292	858.879	0.354
Snowblowers	2021	G4	C	16	25	7.056	601.586	4.613	0.021	0.292	0.292	858.88	0.368
Snowblowers	2021	G4	R	3	5	11.036	568.463	2.784	0.029	1.647	1.647	858.879	0.576
Snowblowers	2021	G4	R	6	15	6.794	567.544	4.97	0.024	0.292	0.292	858.879	0.354
Snowblowers	2021	G4	R	16	25	7.056	601.586	4.613	0.021	0.292	0.292	858.88	0.368
Snowblowers	2022	G2	C	6	15	48.322	322.483	2.918	0.035	0.629	0.629	858.879	3.003
Snowblowers	2022	G2	C	16	25	49.065	320.014	2.915	0.035	0.629	0.629	858.879	3.049
Snowblowers	2022	G2	R	6	15	48.322	322.483	2.918	0.035	0.629	0.629	858.879	3.003
Snowblowers	2022	G2	R	16	25	49.065	320.014	2.915	0.035	0.629	0.629	858.879	3.049
Snowblowers	2022	G4	C	3	5	10.839	566.566	2.708	0.029	1.647	1.647	858.879	0.566
Snowblowers	2022	G4	C	6	15	6.7	566.599	4.917	0.024	0.292	0.292	858.879	0.349
Snowblowers	2022	G4	C	16	25	6.963	600.747	4.567	0.021	0.292	0.292	858.88	0.363
Snowblowers	2022	G4	R	3	5	10.839	566.566	2.708	0.029	1.647	1.647	858.879	0.566
Snowblowers	2022	G4	R	6	15	6.7	566.599	4.917	0.024	0.292	0.292	858.879	0.349
Snowblowers	2022	G4	R	16	25	6.963	600.747	4.567	0.021	0.292	0.292	858.88	0.363
Snowblowers	2023	G2	C	6	15	47.429	321.202	2.919	0.035	0.599	0.599	858.879	2.947
Snowblowers	2023	G2	C	16	25	48.018	319.301	2.917	0.035	0.599	0.599	858.879	2.984
Snowblowers	2023	G2	R	6	15	47.429	321.202	2.919	0.035	0.599	0.599	858.879	2.947
Snowblowers	2023	G2	R	16	25	48.018	319.301	2.917	0.035	0.599	0.599	858.879	2.984
Snowblowers	2023	G4	C	3	5	10.691	564.937	2.664	0.029	1.647	1.647	858.879	0.558
Snowblowers	2023	G4	C	6	15	6.613	565.723	4.868	0.024	0.292	0.292	858.879	0.345
Snowblowers	2023	G4	C	16	25	6.877	599.961	4.524	0.021	0.292	0.292	858.879	0.359
Snowblowers	2023	G4	R	3	5	10.691	564.937	2.664	0.029	1.647	1.647	858.879	0.558
Snowblowers	2023	G4	R	6	15	6.613	565.723	4.868	0.024	0.292	0.292	858.879	0.345
Snowblowers	2023	G4	R	16	25	6.877	599.961	4.524	0.021	0.292	0.292	858.879	0.359
Snowblowers	2024	G2	C	6	15	46.67	320.149	2.92	0.035	0.573	0.573	858.879	2.9
Snowblowers	2024	G2	C	16	25	47.12	318.737	2.919	0.035	0.573	0.573	858.879	2.928
Snowblowers	2024	G2	R	6	15	46.67	320.149	2.92	0.035	0.573	0.573	858.879	2.9
Snowblowers	2024	G2	R	16	25	47.12	318.737	2.919	0.035	0.573	0.573	858.879	2.928
Snowblowers	2024	G4	C	3	5	10.578	563.519	2.635	0.029	1.647	1.647	858.879	0.552
Snowblowers	2024	G4	C	6	15	6.556	564.959	4.839	0.024	0.292	0.292	858.879	0.342

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Snowblowers	2024	G4	C	16	25	6.822	599.274	4.5	0.021	0.292	0.292	858.879	0.356
Snowblowers	2024	G4	R	3	5	10.578	563.519	2.635	0.029	1.647	1.647	858.879	0.552
Snowblowers	2024	G4	R	6	15	6.556	564.959	4.839	0.024	0.292	0.292	858.879	0.342
Snowblowers	2024	G4	R	16	25	6.822	599.274	4.5	0.021	0.292	0.292	858.879	0.356
Snowblowers	2025	G2	C	6	15	46.053	319.364	2.919	0.035	0.552	0.552	858.879	2.862
Snowblowers	2025	G2	C	16	25	46.385	318.356	2.919	0.035	0.552	0.552	858.879	2.883
Snowblowers	2025	G2	R	6	15	46.053	319.364	2.919	0.035	0.552	0.552	858.879	2.862
Snowblowers	2025	G2	R	16	25	46.385	318.356	2.919	0.035	0.552	0.552	858.879	2.883
Snowblowers	2025	G4	C	3	5	10.49	562.347	2.61	0.029	1.647	1.647	858.879	0.548
Snowblowers	2025	G4	C	6	15	6.514	564.306	4.82	0.024	0.292	0.292	858.879	0.34
Snowblowers	2025	G4	C	16	25	6.782	598.683	4.485	0.021	0.292	0.292	858.879	0.354
Snowblowers	2025	G4	R	3	5	10.49	562.347	2.61	0.029	1.647	1.647	858.879	0.548
Snowblowers	2025	G4	R	6	15	6.514	564.306	4.82	0.024	0.292	0.292	858.879	0.34
Snowblowers	2025	G4	R	16	25	6.782	598.683	4.485	0.021	0.292	0.292	858.879	0.354
Snowblowers	2030	G2	C	6	15	44.544	317.797	2.911	0.035	0.501	0.501	858.879	2.768
Snowblowers	2030	G2	C	16	25	44.555	317.775	2.911	0.035	0.501	0.501	858.879	2.769
Snowblowers	2030	G2	R	6	15	44.544	317.797	2.911	0.035	0.501	0.501	858.879	2.768
Snowblowers	2030	G2	R	16	25	44.555	317.775	2.911	0.035	0.501	0.501	858.879	2.769
Snowblowers	2030	G4	C	3	5	10.268	559.045	2.518	0.029	1.647	1.647	858.879	0.537
Snowblowers	2030	G4	C	6	15	6.384	562.117	4.754	0.024	0.292	0.292	858.879	0.334
Snowblowers	2030	G4	C	16	25	6.658	596.614	4.433	0.021	0.292	0.292	858.879	0.348
Snowblowers	2030	G4	R	3	5	10.268	559.045	2.518	0.029	1.647	1.647	858.879	0.537
Snowblowers	2030	G4	R	6	15	6.384	562.117	4.754	0.024	0.292	0.292	858.879	0.334
Snowblowers	2030	G4	R	16	25	6.658	596.614	4.433	0.021	0.292	0.292	858.879	0.348
Snowblowers	2035	G2	C	6	15	44.492	317.759	2.904	0.035	0.499	0.499	858.879	2.765
Snowblowers	2035	G2	C	16	25	44.492	317.759	2.904	0.035	0.499	0.499	858.879	2.765
Snowblowers	2035	G2	R	6	15	44.492	317.759	2.904	0.035	0.499	0.499	858.879	2.765
Snowblowers	2035	G2	R	16	25	44.492	317.759	2.904	0.035	0.499	0.499	858.879	2.765
Snowblowers	2035	G4	C	3	5	10.203	557.747	2.478	0.029	1.647	1.647	858.88	0.534
Snowblowers	2035	G4	C	6	15	6.334	561.031	4.721	0.024	0.292	0.292	858.879	0.331
Snowblowers	2035	G4	C	16	25	6.607	595.493	4.404	0.021	0.292	0.292	858.879	0.346
Snowblowers	2035	G4	R	3	5	10.203	557.747	2.478	0.029	1.647	1.647	858.88	0.534
Snowblowers	2035	G4	R	6	15	6.334	561.031	4.721	0.024	0.292	0.292	858.879	0.331
Snowblowers	2035	G4	R	16	25	6.607	595.493	4.404	0.021	0.292	0.292	858.879	0.346
Snowblowers	2040	G2	C	6	15	44.458	317.759	2.902	0.035	0.499	0.499	858.879	2.763
Snowblowers	2040	G2	C	16	25	44.458	317.759	2.902	0.035	0.499	0.499	858.879	2.763
Snowblowers	2040	G2	R	6	15	44.458	317.759	2.902	0.035	0.499	0.499	858.879	2.763
Snowblowers	2040	G2	R	16	25	44.458	317.759	2.902	0.035	0.499	0.499	858.879	2.763
Snowblowers	2040	G4	C	3	5	10.181	556.898	2.469	0.029	1.647	1.647	858.879	0.534
Snowblowers	2040	G4	C	6	15	6.318	560.117	4.709	0.024	0.292	0.292	858.879	0.331
Snowblowers	2040	G4	C	16	25	6.589	594.522	4.393	0.021	0.292	0.292	858.879	0.345
Snowblowers	2040	G4	R	3	5	10.181	556.898	2.469	0.029	1.647	1.647	858.879	0.534
Snowblowers	2040	G4	R	6	15	6.318	560.117	4.709	0.024	0.292	0.292	858.879	0.331
Snowblowers	2040	G4	R	16	25	6.589	594.522	4.393	0.021	0.292	0.292	858.879	0.345
Tillers	1990	G4	C	3	5	78.112	1313.172	4.892	0.434	2.184	2.184	858.879	9.227
Tillers	1990	G4	R	3	5	78.112	1313.172	4.892	0.434	2.184	2.184	858.879	9.227
Tillers	2000	G4	C	3	5	44.791	796.46	5.611	0.041	2.193	2.193	858.879	2.448
Tillers	2000	G4	R	3	5	44.791	796.46	5.611	0.041	2.193	2.193	858.879	2.448
Tillers	2005	G4	C	3	5	30.033	576.602	6.868	0.029	2.205	2.205	858.879	1.686
Tillers	2005	G4	R	3	5	30.033	576.602	6.868	0.029	2.205	2.205	858.879	1.686
Tillers	2010	G4	C	3	5	19.82	476.644	4.825	0.029	2.202	2.202	858.879	1.113
Tillers	2010	G4	R	3	5	19.82	476.644	4.825	0.029	2.202	2.202	858.879	1.113
Tillers	2011	G4	C	3	5	18.665	464.23	4.587	0.029	2.201	2.201	858.879	1.048
Tillers	2011	G4	R	3	5	18.665	464.23	4.587	0.029	2.201	2.201	858.879	1.048
Tillers	2012	G4	C	3	5	17.59	452.097	4.413	0.029	2.201	2.201	858.879	0.988
Tillers	2012	G4	R	3	5	17.59	452.097	4.413	0.029	2.201	2.201	858.879	0.988
Tillers	2013	G4	C	3	5	16.614	440.935	4.284	0.029	2.202	2.202	858.879	0.933
Tillers	2013	G4	R	3	5	16.614	440.935	4.284	0.029	2.202	2.202	858.879	0.933
Tillers	2014	G4	C	3	5	16.012	434.739	4.16	0.029	2.203	2.203	858.879	0.899
Tillers	2014	G4	R	3	5	16.012	434.739	4.16	0.029	2.203	2.203	858.879	0.899
Tillers	2015	G4	C	3	5	15.546	430.244	4.042	0.029	2.203	2.203	858.879	0.873
Tillers	2015	G4	R	3	5	15.546	430.244	4.042	0.029	2.203	2.203	858.879	0.873
Tillers	2016	G4	C	3	5	15.127	426.462	3.92	0.029	2.203	2.203	858.879	0.85
Tillers	2016	G4	R	3	5	15.127	426.462	3.92	0.029	2.203	2.203	858.879	0.85
Tillers	2017	G4	C	3	5	14.77	423.384	3.802	0.029	2.203	2.203	858.879	0.83
Tillers	2017	G4	R	3	5	14.77	423.384	3.802	0.029	2.203	2.203	858.879	0.83
Tillers	2018	G4	C	3	5	14.48	421.308	3.679	0.029	2.202	2.202	858.879	0.814
Tillers	2018	G4	R	3	5	14.48	421.308	3.679	0.029	2.202	2.202	858.879	0.814
Tillers	2019	G4	C	3	5	14.288	419.526	3.625	0.029	2.201	2.201	858.879	0.803
Tillers	2019	G4	R	3	5	14.288	419.526	3.625	0.029	2.201	2.201	858.879	0.803
Tillers	2020	G4	C	3	5	14.146	417.94	3.592	0.029	2.201	2.201	858.879	0.795
Tillers	2020	G4	R	3	5	14.146	417.94	3.592	0.029	2.201	2.201	858.879	0.795
Tillers	2021	G4	C	3	5	14.021	417.224	3.555	0.029	2.199	2.199	858.879	0.788
Tillers	2021	G4	R	3	5	14.021	417.224	3.555	0.029	2.199	2.199	858.879	0.788
Tillers	2022	G4	C	3	5	13.948	416.23	3.529	0.029	2.2	2.2	858.879	0.784
Tillers	2022	G4	R	3	5	13.948	416.23	3.529	0.029	2.2	2.2	858.879	0.784
Tillers	2023	G4	C	3	5	13.897	415.541	3.507	0.029	2.201	2.201	858.879	0.781

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Tillers	2023	G4	R	3	5	13.897	415.541	3.507	0.029	2.201	2.201	858.879	0.781
Tillers	2024	G4	C	3	5	13.867	415.111	3.487	0.029	2.201	2.201	858.879	0.78
Tillers	2024	G4	R	3	5	13.867	415.111	3.487	0.029	2.201	2.201	858.879	0.78
Tillers	2025	G4	C	3	5	13.844	415.049	3.467	0.029	2.201	2.201	858.879	0.779
Tillers	2025	G4	R	3	5	13.844	415.049	3.467	0.029	2.201	2.201	858.879	0.779
Tillers	2030	G4	C	3	5	13.817	414.708	3.43	0.029	2.201	2.201	858.879	0.778
Tillers	2030	G4	R	3	5	13.817	414.708	3.43	0.029	2.201	2.201	858.879	0.778
Tillers	2035	G4	C	3	5	13.802	414.506	3.427	0.029	2.2	2.2	858.879	0.777
Tillers	2035	G4	R	3	5	13.802	414.506	3.427	0.029	2.2	2.2	858.879	0.777
Tillers	2040	G4	C	3	5	13.793	414.121	3.426	0.029	2.2	2.2	858.879	0.777
Tillers	2040	G4	R	3	5	13.793	414.121	3.426	0.029	2.2	2.2	858.879	0.777
Trimmers/Edgers/Brush Cutters	1990	G2	C	0	2	375.815	1332.647	1.862	0.466	6.479	6.479	772.991	32.05
Trimmers/Edgers/Brush Cutters	1990	G2	R	0	2	375.815	1332.647	1.862	0.466	6.479	6.479	772.991	32.05
Trimmers/Edgers/Brush Cutters	1990	G4	C	3	5	87.785	1374.249	4.92	0.434	2.809	2.809	858.879	10.37
Trimmers/Edgers/Brush Cutters	1990	G4	R	3	5	87.785	1374.249	4.92	0.434	2.809	2.809	858.879	10.37
Trimmers/Edgers/Brush Cutters	2000	G2	C	0	2	176.618	459.625	2.752	0.044	3.345	3.345	772.991	10.69
Trimmers/Edgers/Brush Cutters	2000	G2	R	0	2	176.618	459.625	2.752	0.044	3.345	3.345	772.991	10.69
Trimmers/Edgers/Brush Cutters	2000	G4	C	3	5	54.699	841.478	5.786	0.041	5.753	5.753	858.879	2.99
Trimmers/Edgers/Brush Cutters	2000	G4	R	3	5	54.699	841.478	5.786	0.041	5.753	5.753	858.879	2.99
Trimmers/Edgers/Brush Cutters	2005	G2	C	0	2	98.602	316.166	2.832	0.031	1.087	1.087	772.991	6.128
Trimmers/Edgers/Brush Cutters	2005	G2	R	0	2	98.602	316.166	2.832	0.031	1.087	1.087	772.991	6.128
Trimmers/Edgers/Brush Cutters	2005	G4	C	3	5	35.939	581.254	7.372	0.029	2.009	2.009	858.879	2.018
Trimmers/Edgers/Brush Cutters	2005	G4	R	3	5	35.939	581.254	7.372	0.029	2.009	2.009	858.879	2.018
Trimmers/Edgers/Brush Cutters	2010	G2	C	0	2	79.871	287.902	2.592	0.031	0.496	0.496	772.991	4.964
Trimmers/Edgers/Brush Cutters	2010	G2	R	0	2	79.871	287.902	2.592	0.031	0.496	0.496	772.991	4.964
Trimmers/Edgers/Brush Cutters	2010	G4	C	3	5	26.461	465.71	8.024	0.029	1.29	1.29	858.879	1.486
Trimmers/Edgers/Brush Cutters	2010	G4	R	3	5	26.461	465.71	8.024	0.029	1.29	1.29	858.879	1.486
Trimmers/Edgers/Brush Cutters	2011	G2	C	0	2	78.813	286.76	2.544	0.031	0.468	0.468	772.991	4.898
Trimmers/Edgers/Brush Cutters	2011	G2	R	0	2	78.813	286.76	2.544	0.031	0.468	0.468	772.991	4.898
Trimmers/Edgers/Brush Cutters	2011	G4	C	3	5	25.278	450.89	8.121	0.029	1.107	1.107	858.879	1.42
Trimmers/Edgers/Brush Cutters	2011	G4	R	3	5	25.278	450.89	8.121	0.029	1.107	1.107	858.879	1.42
Trimmers/Edgers/Brush Cutters	2012	G2	C	0	2	78.373	286.165	2.526	0.031	0.454	0.454	772.991	4.871
Trimmers/Edgers/Brush Cutters	2012	G2	R	0	2	78.373	286.165	2.526	0.031	0.454	0.454	772.991	4.871
Trimmers/Edgers/Brush Cutters	2012	G4	C	3	5	24.16	436.282	8.219	0.029	0.931	0.931	858.879	1.357
Trimmers/Edgers/Brush Cutters	2012	G4	R	3	5	24.16	436.282	8.219	0.029	0.931	0.931	858.879	1.357
Trimmers/Edgers/Brush Cutters	2013	G2	C	0	2	78.144	285.984	2.511	0.031	0.449	0.449	772.991	4.857
Trimmers/Edgers/Brush Cutters	2013	G2	R	0	2	78.144	285.984	2.511	0.031	0.449	0.449	772.991	4.857
Trimmers/Edgers/Brush Cutters	2013	G4	C	3	5	23.066	422.421	8.311	0.029	0.765	0.765	858.879	1.296
Trimmers/Edgers/Brush Cutters	2013	G4	R	3	5	23.066	422.421	8.311	0.029	0.765	0.765	858.879	1.296
Trimmers/Edgers/Brush Cutters	2014	G2	C	0	2	78.02	285.983	2.5	0.031	0.449	0.449	772.991	4.849
Trimmers/Edgers/Brush Cutters	2014	G2	R	0	2	78.02	285.983	2.5	0.031	0.449	0.449	772.991	4.849
Trimmers/Edgers/Brush Cutters	2014	G4	C	3	5	22.083	409.949	8.4	0.029	0.613	0.613	858.879	1.241
Trimmers/Edgers/Brush Cutters	2014	G4	R	3	5	22.083	409.949	8.4	0.029	0.613	0.613	858.879	1.241
Trimmers/Edgers/Brush Cutters	2015	G2	C	0	2	77.92	285.983	2.491	0.031	0.449	0.449	772.991	4.843
Trimmers/Edgers/Brush Cutters	2015	G2	R	0	2	77.92	285.983	2.491	0.031	0.449	0.449	772.991	4.843
Trimmers/Edgers/Brush Cutters	2015	G4	C	3	5	21.454	402.105	8.453	0.029	0.544	0.544	858.879	1.206
Trimmers/Edgers/Brush Cutters	2015	G4	R	3	5	21.454	402.105	8.453	0.029	0.544	0.544	858.879	1.206
Trimmers/Edgers/Brush Cutters	2016	G2	C	0	2	77.872	285.983	2.486	0.031	0.449	0.449	772.991	4.84
Trimmers/Edgers/Brush Cutters	2016	G2	R	0	2	77.872	285.983	2.486	0.031	0.449	0.449	772.991	4.84
Trimmers/Edgers/Brush Cutters	2016	G4	C	3	5	20.977	396.349	8.491	0.029	0.498	0.498	858.879	1.179
Trimmers/Edgers/Brush Cutters	2016	G4	R	3	5	20.977	396.349	8.491	0.029	0.498	0.498	858.879	1.179
Trimmers/Edgers/Brush Cutters	2017	G2	C	0	2	77.862	285.983	2.483	0.031	0.449	0.449	772.992	4.839
Trimmers/Edgers/Brush Cutters	2017	G2	R	0	2	77.862	285.983	2.483	0.031	0.449	0.449	772.992	4.839
Trimmers/Edgers/Brush Cutters	2017	G4	C	3	5	20.584	391.403	8.525	0.029	0.456	0.456	858.879	1.157
Trimmers/Edgers/Brush Cutters	2017	G4	R	3	5	20.584	391.403	8.525	0.029	0.456	0.456	858.879	1.157
Trimmers/Edgers/Brush Cutters	2018	G2	C	0	2	77.847	285.983	2.482	0.031	0.449	0.449	772.991	4.838
Trimmers/Edgers/Brush Cutters	2018	G2	R	0	2	77.847	285.983	2.482	0.031	0.449	0.449	772.991	4.838
Trimmers/Edgers/Brush Cutters	2018	G4	C	3	5	20.244	387.191	8.552	0.029	0.419	0.419	858.88	1.138
Trimmers/Edgers/Brush Cutters	2018	G4	R	3	5	20.244	387.191	8.552	0.029	0.419	0.419	858.88	1.138
Trimmers/Edgers/Brush Cutters	2019	G2	C	0	2	77.85	285.983	2.482	0.031	0.449	0.449	772.991	4.838
Trimmers/Edgers/Brush Cutters	2019	G2	R	0	2	77.85	285.983	2.482	0.031	0.449	0.449	772.991	4.838
Trimmers/Edgers/Brush Cutters	2019	G4	C	3	5	19.984	384.057	8.573	0.029	0.389	0.389	858.88	1.123
Trimmers/Edgers/Brush Cutters	2019	G4	R	3	5	19.984	384.057	8.573	0.029	0.389	0.389	858.88	1.123
Trimmers/Edgers/Brush Cutters	2020	G2	C	0	2	77.851	285.983	2.482	0.031	0.449	0.449	772.991	4.838
Trimmers/Edgers/Brush Cutters	2020	G2	R	0	2	77.851	285.983	2.482	0.031	0.449	0.449	772.991	4.838
Trimmers/Edgers/Brush Cutters	2020	G4	C	3	5	19.759	381.691	8.585	0.029	0.361	0.361	858.879	1.111
Trimmers/Edgers/Brush Cutters	2020	G4	R	3	5	19.759	381.691	8.585	0.029	0.361	0.361	858.879	1.111
Trimmers/Edgers/Brush Cutters	2021	G2	C	0	2	77.75	285.983	2.482	0.031	0.449	0.449	772.991	4.832
Trimmers/Edgers/Brush Cutters	2021	G2	R	0	2	77.75	285.983	2.482	0.031	0.449	0.449	772.991	4.832
Trimmers/Edgers/Brush Cutters	2021	G4	C	3	5	19.581	380.309	8.589	0.029	0.338	0.338	858.879	1.101
Trimmers/Edgers/Brush Cutters	2021	G4	R	3	5	19.581	380.309	8.589	0.029	0.338	0.338	858.879	1.101
Trimmers/Edgers/Brush Cutters	2022	G2	C	0	2	77.784	285.983	2.482	0.031	0.449	0.449	772.991	4.834
Trimmers/Edgers/Brush Cutters	2022	G2	R	0	2	77.784	285.983	2.482	0.031	0.449	0.449	772.991	4.834
Trimmers/Edgers/Brush Cutters	2022	G4	C	3	5	19.486	378.671	8.602	0.029	0.318	0.318	858.879	1.096
Trimmers/Edgers/Brush Cutters	2022	G4	R	3	5	19.486	378.671	8.602	0.029	0.318	0.318	858.879	1.096
Trimmers/Edgers/Brush Cutters	2023	G2	C	0	2	77.802	285.983	2.482	0.031	0.449	0.449	772.991	4.835
Trimmers/Edgers/Brush Cutters	2023	G2	R	0	2	77.802	285.983	2.482	0.031	0.449	0.449	772.991	4.835

Table 7.2 Landscape Equipment Running Emission Factors

Equipment Type	Year	Engine Type	Commercial or Residential	Low Hp	High Hp	ROG g/bhp-hr	CO, g/bhp-hr	NOX, g/bhp-hr	SO2, g/bhp-hr	PM10, g/bhp-hr	PM2_5, g/bhp-hr	CO2, g/bhp-hr	CH4, g/bhp-hr
Trimmers/Edgers/Brush Cutters	2023	G4	C	3	5	19.411	377.801	8.608	0.029	0.303	0.303	858.879	1.092
Trimmers/Edgers/Brush Cutters	2023	G4	R	3	5	19.411	377.801	8.608	0.029	0.303	0.303	858.879	1.092
Trimmers/Edgers/Brush Cutters	2024	G2	C	0	2	77.822	285.983	2.482	0.031	0.449	0.449	772.991	4.837
Trimmers/Edgers/Brush Cutters	2024	G2	R	0	2	77.822	285.983	2.482	0.031	0.449	0.449	772.991	4.837
Trimmers/Edgers/Brush Cutters	2024	G4	C	3	5	19.364	377.078	8.613	0.029	0.292	0.292	858.879	1.089
Trimmers/Edgers/Brush Cutters	2024	G4	R	3	5	19.364	377.078	8.613	0.029	0.292	0.292	858.879	1.089
Trimmers/Edgers/Brush Cutters	2025	G2	C	0	2	77.833	285.983	2.482	0.031	0.449	0.449	772.991	4.837
Trimmers/Edgers/Brush Cutters	2025	G2	R	0	2	77.833	285.983	2.482	0.031	0.449	0.449	772.991	4.837
Trimmers/Edgers/Brush Cutters	2025	G4	C	3	5	19.327	376.636	8.615	0.029	0.285	0.285	858.879	1.087
Trimmers/Edgers/Brush Cutters	2025	G4	R	3	5	19.327	376.636	8.615	0.029	0.285	0.285	858.879	1.087
Trimmers/Edgers/Brush Cutters	2030	G2	C	0	2	77.793	285.983	2.482	0.031	0.449	0.449	772.991	4.835
Trimmers/Edgers/Brush Cutters	2030	G2	R	0	2	77.793	285.983	2.482	0.031	0.449	0.449	772.991	4.835
Trimmers/Edgers/Brush Cutters	2030	G4	C	3	5	19.297	375.8	8.618	0.029	0.279	0.279	858.879	1.086
Trimmers/Edgers/Brush Cutters	2030	G4	R	3	5	19.297	375.8	8.618	0.029	0.279	0.279	858.879	1.086
Trimmers/Edgers/Brush Cutters	2035	G2	C	0	2	77.785	285.983	2.482	0.031	0.449	0.449	772.991	4.834
Trimmers/Edgers/Brush Cutters	2035	G2	R	0	2	77.785	285.983	2.482	0.031	0.449	0.449	772.991	4.834
Trimmers/Edgers/Brush Cutters	2035	G4	C	3	5	19.273	375.785	8.61	0.029	0.279	0.279	858.879	1.086
Trimmers/Edgers/Brush Cutters	2035	G4	R	3	5	19.273	375.785	8.61	0.029	0.279	0.279	858.879	1.086
Trimmers/Edgers/Brush Cutters	2040	G2	C	0	2	77.783	285.983	2.482	0.031	0.449	0.449	772.991	4.834
Trimmers/Edgers/Brush Cutters	2040	G2	R	0	2	77.783	285.983	2.482	0.031	0.449	0.449	772.991	4.834
Trimmers/Edgers/Brush Cutters	2040	G4	C	3	5	19.26	375.439	8.607	0.029	0.279	0.279	858.88	1.086
Trimmers/Edgers/Brush Cutters	2040	G4	R	3	5	19.26	375.439	8.607	0.029	0.279	0.279	858.88	1.086
Wood Splitters	1990	G4	C	3	5	72.405	1277.201	4.876	0.434	2.026	2.026	858.879	8.553
Wood Splitters	1990	G4	R	3	5	72.405	1277.201	4.876	0.434	2.026	2.026	858.879	8.553
Wood Splitters	2000	G4	C	3	5	39.734	763.399	5.668	0.041	2.025	2.025	858.879	2.172
Wood Splitters	2000	G4	R	3	5	39.734	763.399	5.668	0.041	2.025	2.025	858.879	2.172
Wood Splitters	2005	G4	C	3	5	24.031	546.706	6.964	0.029	2.026	2.026	858.879	1.349
Wood Splitters	2005	G4	R	3	5	24.031	546.706	6.964	0.029	2.026	2.026	858.879	1.349
Wood Splitters	2010	G4	C	3	5	17.322	497.944	4.296	0.029	2.027	2.027	858.879	0.973
Wood Splitters	2010	G4	R	3	5	17.322	497.944	4.296	0.029	2.027	2.027	858.879	0.973
Wood Splitters	2011	G4	C	3	5	16.626	491.73	4.202	0.029	2.026	2.026	858.88	0.934
Wood Splitters	2011	G4	R	3	5	16.626	491.73	4.202	0.029	2.026	2.026	858.88	0.934
Wood Splitters	2012	G4	C	3	5	16.118	485.723	4.111	0.029	2.027	2.027	858.879	0.905
Wood Splitters	2012	G4	R	3	5	16.118	485.723	4.111	0.029	2.027	2.027	858.879	0.905
Wood Splitters	2013	G4	C	3	5	15.648	479.726	4.02	0.029	2.026	2.026	858.879	0.879
Wood Splitters	2013	G4	R	3	5	15.648	479.726	4.02	0.029	2.026	2.026	858.879	0.879
Wood Splitters	2014	G4	C	3	5	15.214	473.893	3.931	0.029	2.027	2.027	858.879	0.855
Wood Splitters	2014	G4	R	3	5	15.214	473.893	3.931	0.029	2.027	2.027	858.879	0.855
Wood Splitters	2015	G4	C	3	5	14.797	468.31	3.845	0.029	2.027	2.027	858.879	0.831
Wood Splitters	2015	G4	R	3	5	14.797	468.31	3.845	0.029	2.027	2.027	858.879	0.831
Wood Splitters	2016	G4	C	3	5	14.421	463.308	3.759	0.029	2.026	2.026	858.879	0.81
Wood Splitters	2016	G4	R	3	5	14.421	463.308	3.759	0.029	2.026	2.026	858.879	0.81
Wood Splitters	2017	G4	C	3	5	14.081	458.821	3.676	0.029	2.027	2.027	858.879	0.791
Wood Splitters	2017	G4	R	3	5	14.081	458.821	3.676	0.029	2.027	2.027	858.879	0.791
Wood Splitters	2018	G4	C	3	5	13.794	455.965	3.589	0.029	2.027	2.027	858.879	0.775
Wood Splitters	2018	G4	R	3	5	13.794	455.965	3.589	0.029	2.027	2.027	858.879	0.775
Wood Splitters	2019	G4	C	3	5	13.542	453.901	3.503	0.029	2.027	2.027	858.88	0.761
Wood Splitters	2019	G4	R	3	5	13.542	453.901	3.503	0.029	2.027	2.027	858.88	0.761
Wood Splitters	2020	G4	C	3	5	13.32	452.189	3.419	0.029	2.027	2.027	858.879	0.749
Wood Splitters	2020	G4	R	3	5	13.32	452.189	3.419	0.029	2.027	2.027	858.879	0.749
Wood Splitters	2021	G4	C	3	5	13.11	450.835	3.337	0.029	2.026	2.026	858.879	0.737
Wood Splitters	2021	G4	R	3	5	13.11	450.835	3.337	0.029	2.026	2.026	858.879	0.737
Wood Splitters	2022	G4	C	3	5	12.957	449.327	3.27	0.029	2.027	2.027	858.879	0.728
Wood Splitters	2022	G4	R	3	5	12.957	449.327	3.27	0.029	2.027	2.027	858.879	0.728
Wood Splitters	2023	G4	C	3	5	12.835	448.312	3.229	0.029	2.026	2.026	858.879	0.722
Wood Splitters	2023	G4	R	3	5	12.835	448.312	3.229	0.029	2.026	2.026	858.879	0.722
Wood Splitters	2024	G4	C	3	5	12.751	447.259	3.204	0.029	2.027	2.027	858.879	0.717
Wood Splitters	2024	G4	R	3	5	12.751	447.259	3.204	0.029	2.027	2.027	858.879	0.717
Wood Splitters	2025	G4	C	3	5	12.68	446.516	3.181	0.029	2.027	2.027	858.879	0.713
Wood Splitters	2025	G4	R	3	5	12.68	446.516	3.181	0.029	2.027	2.027	858.879	0.713
Wood Splitters	2030	G4	C	3	5	12.507	444.35	3.1	0.029	2.026	2.026	858.879	0.704
Wood Splitters	2030	G4	R	3	5	12.507	444.35	3.1	0.029	2.026	2.026	858.879	0.704
Wood Splitters	2035	G4	C	3	5	12.449	443.751	3.065	0.029	2.026	2.026	858.879	0.701
Wood Splitters	2035	G4	R	3	5	12.449	443.751	3.065	0.029	2.026	2.026	858.879	0.701
Wood Splitters	2040	G4	C	3	5	12.434	443.365	3.059	0.029	2.026	2.026	858.879	0.701
Wood Splitters	2040	G4	R	3	5	12.434	443.365	3.059	0.029	2.026	2.026	858.879	0.701

Table 7.3 Landscape Equipment Usage

Land Use Type	Landscape Equipment Type	Usage	Units
Non-Residential	Chainsaws	2.47E-05	hr/sqft/day
	Chainsaws Preempt	2.47E-05	hr/sqft/day
	Front Mowers	1.81E-06	hr/sqft/day
	Lawn & Garden Tractors	4.04E-07	hr/sqft/day
	Lawn Mowers	2.49E-05	hr/sqft/day
	Leaf Blowers/Vacuums	9.54E-06	hr/sqft/day
	Other Lawn & Garden Equipment	1.43E-05	hr/sqft/day
	Rear Engine Riding Mowers	1.81E-06	hr/sqft/day
	Shredders	8.60E-06	hr/sqft/day
	Snowblowers	1.41E-07	hr/sqft/day
	Tillers	1.07E-06	hr/sqft/day
	Trimmers/Edgers/Brush Cutters	1.96E-05	hr/sqft/day
	Wood Splitters	7.18E-06	hr/sqft/day
Residential	Chainsaws	2.46E-03	hr/du/day
	Chainsaws Preempt	2.46E-03	hr/du/day
	Chippers/Stump Grinders	1.36E-03	hr/du/day
	Front Mowers	3.09E-03	hr/du/day
	Lawn & Garden Tractors	7.60E-04	hr/du/day
	Lawn Mowers	1.51E-02	hr/du/day
	Leaf Blowers/Vacuums	1.05E-03	hr/du/day
	Other Lawn & Garden Equipment	3.53E-04	hr/du/day
	Rear Engine Riding Mowers	3.09E-03	hr/du/day
	Shredders	5.18E-05	hr/du/day
	Snowblowers	2.98E-05	hr/du/day
	Tillers	1.48E-03	hr/du/day
	Trimmers/Edgers/Brush Cutters	1.45E-03	hr/du/day
	Wood Splitters	5.42E-05	hr/du/day

Notes:

1. Based on the total hours in OFFROAD2007 and number of dwelling units and non-residential square footage in California.

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Day-Care Center	10	Y	3.64	1.49	4.52	8.05	1.79
Day-Care Center	11	Y	2.29	1.59	3.2	10.71	1.08
Day-Care Center	5	Y	0.86	1.27	3.11	17.5	1.62
Day-Care Center	9	Y	2.29	1.59	3.2	10.71	1.08
Day-Care Center	1	Y	2.18	1.48	4.55	16.29	0.86
Day-Care Center	6	Y	2.74	2.17	3.82	17.38	0.66
Day-Care Center	14	Y	2.18	1.48	4.55	16.29	0.86
Day-Care Center	12	Y	2.29	1.59	3.2	10.71	1.08
Day-Care Center	3	Y	2.81	1.89	3.69	27.22	1.92
Day-Care Center	7	Y	2.54	1.95	4.27	12.48	0.46
Day-Care Center	13	Y	2.03	1.18	3.14	6.4	0.48
Day-Care Center	2	Y	2.43	1.42	2.9	11.11	0.42
Day-Care Center	8	Y	2.46	1.51	3.3	12.37	1.03
Day-Care Center	15	Y	3.64	1.49	4.52	8.05	1.79
Day-Care Center	4	Y	2.03	1.28	3.02	21.22	0.93
Elementary School	9	Y	2.29	1.59	3.2	10.71	1.08
Elementary School	8	Y	2.46	1.51	3.3	12.37	1.03
Elementary School	3	Y	2.81	1.89	3.69	27.22	1.92
Elementary School	4	Y	2.03	1.28	3.02	21.22	0.93
Elementary School	10	Y	3.64	1.49	4.52	8.05	1.79
Elementary School	5	Y	0.86	1.27	3.11	17.5	1.62
Elementary School	1	Y	2.18	1.48	4.55	16.29	0.86
Elementary School	7	Y	2.54	1.95	4.27	12.48	0.46
Elementary School	15	Y	3.64	1.49	4.52	8.05	1.79
Elementary School	13	Y	2.03	1.18	3.14	6.4	0.48
Elementary School	2	Y	2.43	1.42	2.9	11.11	0.42
Elementary School	14	Y	2.18	1.48	4.55	16.29	0.86
Elementary School	11	Y	2.29	1.59	3.2	10.71	1.08
Elementary School	6	Y	2.74	2.17	3.82	17.38	0.66
Elementary School	12	Y	2.29	1.59	3.2	10.71	1.08
Junior High School	10	Y	3.64	1.49	4.52	8.05	1.79
Junior High School	9	Y	2.29	1.59	3.2	10.71	1.08
Junior High School	13	Y	2.03	1.18	3.14	6.4	0.48
Junior High School	11	Y	2.29	1.59	3.2	10.71	1.08
Junior High School	2	Y	2.43	1.42	2.9	11.11	0.42
Junior High School	12	Y	2.29	1.59	3.2	10.71	1.08
Junior High School	5	Y	0.86	1.27	3.11	17.5	1.62
Junior High School	8	Y	2.46	1.51	3.3	12.37	1.03
Junior High School	1	Y	2.18	1.48	4.55	16.29	0.86
Junior High School	6	Y	2.74	2.17	3.82	17.38	0.66
Junior High School	14	Y	2.18	1.48	4.55	16.29	0.86
Junior High School	4	Y	2.03	1.28	3.02	21.22	0.93
Junior High School	7	Y	2.54	1.95	4.27	12.48	0.46
Junior High School	3	Y	2.81	1.89	3.69	27.22	1.92
Junior High School	15	Y	3.64	1.49	4.52	8.05	1.79
High School	7	Y	2.54	1.95	4.27	12.48	0.46
High School	1	Y	2.18	1.48	4.55	16.29	0.86
High School	12	Y	2.29	1.59	3.2	10.71	1.08
High School	5	Y	0.86	1.27	3.11	17.5	1.62
High School	14	Y	2.18	1.48	4.55	16.29	0.86
High School	10	Y	3.64	1.49	4.52	8.05	1.79
High School	13	Y	2.03	1.18	3.14	6.4	0.48
High School	9	Y	2.29	1.59	3.2	10.71	1.08
High School	8	Y	2.46	1.51	3.3	12.37	1.03
High School	15	Y	3.64	1.49	4.52	8.05	1.79
High School	6	Y	2.74	2.17	3.82	17.38	0.66
High School	3	Y	2.81	1.89	3.69	27.22	1.92
High School	11	Y	2.29	1.59	3.2	10.71	1.08
High School	2	Y	2.43	1.42	2.9	11.11	0.42
High School	4	Y	2.03	1.28	3.02	21.22	0.93
Junior College (2yr)	6	Y	4.47	2.09	3.75	31.42	0.23
Junior College (2yr)	10	Y	2.64	1.92	4.86	16.77	0.01
Junior College (2yr)	2	Y	5.14	0.34	5.63	50.36	0
Junior College (2yr)	11	Y	4.07	3.59	4.14	30.74	0.59
Junior College (2yr)	8	Y	7.1	2.72	5.59	12.16	5.21
Junior College (2yr)	13	Y	3.73	2.69	4.35	36.09	5.16
Junior College (2yr)	5	Y	5.41	3.15	3.61	40.12	0.74
Junior College (2yr)	14	Y	3.42	1.73	7.02	24.56	0
Junior College (2yr)	9	Y	4.07	3.59	4.14	30.74	0.59
Junior College (2yr)	15	Y	2.64	1.92	4.86	16.77	0.01

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Junior College (2yr)	7	Y	4.74	6.44	7.07	58.88	0.34
Junior College (2yr)	1	Y	3.42	1.73	7.02	24.56	0
Junior College (2yr)	4	Y	3.49	2.27	3.58	23.84	3.3
Junior College (2yr)	3	Y	3.94	2.63	7	25	1.34
Junior College (2yr)	12	Y	4.07	3.59	4.14	30.74	0.59
University/College (4yr)	11	Y	4.07	3.59	4.14	30.74	0.59
University/College (4yr)	8	Y	7.1	2.72	5.59	12.16	5.21
University/College (4yr)	6	Y	4.47	2.09	3.75	31.42	0.23
University/College (4yr)	10	Y	2.64	1.92	4.86	16.77	0.01
University/College (4yr)	4	Y	3.49	2.27	3.58	23.84	3.3
University/College (4yr)	15	Y	2.64	1.92	4.86	16.77	0.01
University/College (4yr)	9	Y	4.07	3.59	4.14	30.74	0.59
University/College (4yr)	14	Y	3.42	1.73	7.02	24.56	0
University/College (4yr)	7	Y	4.74	6.44	7.07	58.88	0.34
University/College (4yr)	13	Y	3.73	2.69	4.35	36.09	5.16
University/College (4yr)	3	Y	3.94	2.63	7	25	1.34
University/College (4yr)	1	Y	3.42	1.73	7.02	24.56	0
University/College (4yr)	12	Y	4.07	3.59	4.14	30.74	0.59
University/College (4yr)	2	Y	5.14	0.34	5.63	50.36	0
University/College (4yr)	5	Y	5.41	3.15	3.61	40.12	0.74
Library	15	Y	2.89	5.02	3.62	16.76	17.13
Library	6	Y	4.47	7.2	5.65	26.2	12.42
Library	14	Y	0.83	1.85	2.28	3.66	0.31
Library	13	Y	1.59	4.27	3.52	5.04	7.25
Library	9	Y	2.94	5.75	3.85	15.35	4.45
Library	5	Y	1.59	3.36	3.7	20.06	6.9
Library	11	Y	2.94	5.75	3.85	15.35	4.45
Library	10	Y	2.89	5.02	3.62	16.76	17.13
Library	3	Y	2.52	4.16	3.35	19.93	3.84
Library	4	Y	1.93	3.7	3.8	22.58	6.67
Library	12	Y	2.94	5.75	3.85	15.35	4.45
Library	1	Y	0.83	1.85	2.28	3.66	0.31
Library	2	Y	2.17	4.2	3.26	21.82	0.06
Library	7	Y	0.51	1.31	0.91	19.32	0.12
Library	8	Y	2.12	3.83	3.7	15.24	6.86
Place of Worship	6	Y	4.47	7.2	5.65	26.2	12.42
Place of Worship	5	Y	1.59	3.36	3.7	20.06	6.9
Place of Worship	11	Y	2.94	5.75	3.85	15.35	4.45
Place of Worship	10	Y	2.89	5.02	3.62	16.76	17.13
Place of Worship	13	Y	1.59	4.27	3.52	5.04	7.25
Place of Worship	4	Y	1.93	3.7	3.8	22.58	6.67
Place of Worship	8	Y	2.12	3.83	3.7	15.24	6.86
Place of Worship	14	Y	0.83	1.85	2.28	3.66	0.31
Place of Worship	3	Y	2.52	4.16	3.35	19.93	3.84
Place of Worship	12	Y	2.94	5.75	3.85	15.35	4.45
Place of Worship	1	Y	0.83	1.85	2.28	3.66	0.31
Place of Worship	15	Y	2.89	5.02	3.62	16.76	17.13
Place of Worship	2	Y	2.17	4.2	3.26	21.82	0.06
Place of Worship	9	Y	2.94	5.75	3.85	15.35	4.45
Place of Worship	7	Y	0.51	1.31	0.91	19.32	0.12
City Park	6	Y	0	0	0	0	0
City Park	12	Y	0	0	0	0	0
City Park	1	Y	0	0	0	0	0
City Park	8	Y	0	0	0	0	0
City Park	11	Y	0	0	0	0	0
City Park	9	Y	0	0	0	0	0
City Park	5	Y	0	0	0	0	0
City Park	3	Y	0	0	0	0	0
City Park	2	Y	0	0	0	0	0
City Park	13	Y	0	0	0	0	0
City Park	4	Y	0	0	0	0	0
City Park	14	Y	0	0	0	0	0
City Park	15	Y	0	0	0	0	0
City Park	7	Y	0	0	0	0	0
City Park	10	Y	0	0	0	0	0
Golf Course	7	Y	0	0	0	0	0
Golf Course	2	Y	0	0	0	0	0
Golf Course	14	Y	0	0	0	0	0
Golf Course	3	Y	0	0	0	0	0
Golf Course	5	Y	0	0	0	0	0

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Golf Course	9	Y	0	0	0	0	0
Golf Course	8	Y	0	0	0	0	0
Golf Course	13	Y	0	0	0	0	0
Golf Course	10	Y	0	0	0	0	0
Golf Course	12	Y	0	0	0	0	0
Golf Course	4	Y	0	0	0	0	0
Golf Course	11	Y	0	0	0	0	0
Golf Course	6	Y	0	0	0	0	0
Golf Course	15	Y	0	0	0	0	0
Golf Course	1	Y	0	0	0	0	0
Recreational Swimming Pool	10	Y	0	0	0	0	0
Recreational Swimming Pool	6	Y	0	0	0	0	0
Recreational Swimming Pool	4	Y	0	0	0	0	0
Recreational Swimming Pool	2	Y	0	0	0	0	0
Recreational Swimming Pool	14	Y	0	0	0	0	0
Recreational Swimming Pool	15	Y	0	0	0	0	0
Recreational Swimming Pool	5	Y	0	0	0	0	0
Recreational Swimming Pool	13	Y	0	0	0	0	0
Recreational Swimming Pool	7	Y	0	0	0	0	0
Recreational Swimming Pool	1	Y	0	0	0	0	0
Recreational Swimming Pool	9	Y	0	0	0	0	0
Recreational Swimming Pool	8	Y	0	0	0	0	0
Recreational Swimming Pool	12	Y	0	0	0	0	0
Recreational Swimming Pool	11	Y	0	0	0	0	0
Recreational Swimming Pool	3	Y	0	0	0	0	0
Racquet Club	3	Y	2.52	4.16	3.35	19.93	3.84
Racquet Club	8	Y	2.12	3.83	3.7	15.24	6.86
Racquet Club	6	Y	4.47	7.2	5.65	26.2	12.42
Racquet Club	15	Y	2.89	5.02	3.62	16.76	17.13
Racquet Club	9	Y	2.94	5.75	3.85	15.35	4.45
Racquet Club	14	Y	0.83	1.85	2.28	3.66	0.31
Racquet Club	4	Y	1.93	3.7	3.8	22.58	6.67
Racquet Club	11	Y	2.94	5.75	3.85	15.35	4.45
Racquet Club	13	Y	1.59	4.27	3.52	5.04	7.25
Racquet Club	1	Y	0.83	1.85	2.28	3.66	0.31
Racquet Club	7	Y	0.51	1.31	0.91	19.32	0.12
Racquet Club	10	Y	2.89	5.02	3.62	16.76	17.13
Racquet Club	5	Y	1.59	3.36	3.7	20.06	6.9
Racquet Club	12	Y	2.94	5.75	3.85	15.35	4.45
Racquet Club	2	Y	2.17	4.2	3.26	21.82	0.06
Health Club	9	Y	2.94	5.75	3.85	15.35	4.45
Health Club	2	Y	2.17	4.2	3.26	21.82	0.06
Health Club	5	Y	1.59	3.36	3.7	20.06	6.9
Health Club	3	Y	2.52	4.16	3.35	19.93	3.84
Health Club	6	Y	4.47	7.2	5.65	26.2	12.42
Health Club	7	Y	0.51	1.31	0.91	19.32	0.12
Health Club	12	Y	2.94	5.75	3.85	15.35	4.45
Health Club	8	Y	2.12	3.83	3.7	15.24	6.86
Health Club	14	Y	0.83	1.85	2.28	3.66	0.31
Health Club	13	Y	1.59	4.27	3.52	5.04	7.25
Health Club	15	Y	2.89	5.02	3.62	16.76	17.13
Health Club	11	Y	2.94	5.75	3.85	15.35	4.45
Health Club	1	Y	0.83	1.85	2.28	3.66	0.31
Health Club	10	Y	2.89	5.02	3.62	16.76	17.13
Health Club	4	Y	1.93	3.7	3.8	22.58	6.67
Movie Theater (No Matinee)	12	Y	2.94	5.75	3.85	15.35	4.45
Movie Theater (No Matinee)	7	Y	0.51	1.31	0.91	19.32	0.12
Movie Theater (No Matinee)	9	Y	2.94	5.75	3.85	15.35	4.45
Movie Theater (No Matinee)	15	Y	2.89	5.02	3.62	16.76	17.13
Movie Theater (No Matinee)	1	Y	0.83	1.85	2.28	3.66	0.31
Movie Theater (No Matinee)	10	Y	2.89	5.02	3.62	16.76	17.13
Movie Theater (No Matinee)	13	Y	1.59	4.27	3.52	5.04	7.25
Movie Theater (No Matinee)	8	Y	2.12	3.83	3.7	15.24	6.86
Movie Theater (No Matinee)	11	Y	2.94	5.75	3.85	15.35	4.45
Movie Theater (No Matinee)	5	Y	1.59	3.36	3.7	20.06	6.9
Movie Theater (No Matinee)	14	Y	0.83	1.85	2.28	3.66	0.31
Movie Theater (No Matinee)	4	Y	1.93	3.7	3.8	22.58	6.67
Movie Theater (No Matinee)	6	Y	4.47	7.2	5.65	26.2	12.42
Movie Theater (No Matinee)	2	Y	2.17	4.2	3.26	21.82	0.06
Movie Theater (No Matinee)	3	Y	2.52	4.16	3.35	19.93	3.84

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Arena	11	Y	2.94	5.75	3.85	15.35	4.45
Arena	5	Y	1.59	3.36	3.7	20.06	6.9
Arena	1	Y	0.83	1.85	2.28	3.66	0.31
Arena	14	Y	0.83	1.85	2.28	3.66	0.31
Arena	2	Y	2.17	4.2	3.26	21.82	0.06
Arena	4	Y	1.93	3.7	3.8	22.58	6.67
Arena	15	Y	2.89	5.02	3.62	16.76	17.13
Arena	3	Y	2.52	4.16	3.35	19.93	3.84
Arena	9	Y	2.94	5.75	3.85	15.35	4.45
Arena	6	Y	4.47	7.2	5.65	26.2	12.42
Arena	10	Y	2.89	5.02	3.62	16.76	17.13
Arena	13	Y	1.59	4.27	3.52	5.04	7.25
Arena	7	Y	0.51	1.31	0.91	19.32	0.12
Arena	12	Y	2.94	5.75	3.85	15.35	4.45
Arena	8	Y	2.12	3.83	3.7	15.24	6.86
Quality Restaurant	8	Y	11.27	20.11	9.2	83.7	180.76
Quality Restaurant	10	Y	16.13	28.48	9.51	83.58	195.77
Quality Restaurant	6	Y	11.47	26.72	7.44	64.97	118.04
Quality Restaurant	7	Y	10.14	20.65	6.13	20.52	81.41
Quality Restaurant	1	Y	5.3	15.83	5.76	30.01	88.55
Quality Restaurant	3	Y	8.49	16.25	7.47	39.04	174.7
Quality Restaurant	12	Y	10.52	28.16	9.64	46.57	187.78
Quality Restaurant	2	Y	7.8	17.72	9.18	45.12	68.83
Quality Restaurant	4	Y	6.58	22.3	6.25	64.82	147.47
Quality Restaurant	9	Y	10.52	28.16	9.64	46.57	187.78
Quality Restaurant	11	Y	10.52	28.16	9.64	46.57	187.78
Quality Restaurant	14	Y	5.3	15.83	5.76	30.01	88.55
Quality Restaurant	15	Y	16.13	28.48	9.51	83.58	195.77
Quality Restaurant	13	Y	10.67	23.69	8.19	38.26	138.46
Quality Restaurant	5	Y	3.42	20.97	6.45	42.87	128.02
High Turnover (Sit Down Restaurant)	3	Y	8.49	16.25	7.47	39.04	174.7
High Turnover (Sit Down Restaurant)	11	Y	10.52	28.16	9.64	46.57	187.78
High Turnover (Sit Down Restaurant)	13	Y	10.67	23.69	8.19	38.26	138.46
High Turnover (Sit Down Restaurant)	5	Y	3.42	20.97	6.45	42.87	128.02
High Turnover (Sit Down Restaurant)	12	Y	10.52	28.16	9.64	46.57	187.78
High Turnover (Sit Down Restaurant)	10	Y	16.13	28.48	9.51	83.58	195.77
High Turnover (Sit Down Restaurant)	7	Y	10.14	20.65	6.13	20.52	81.41
High Turnover (Sit Down Restaurant)	2	Y	7.8	17.72	9.18	45.12	68.83
High Turnover (Sit Down Restaurant)	9	Y	10.52	28.16	9.64	46.57	187.78
High Turnover (Sit Down Restaurant)	14	Y	5.3	15.83	5.76	30.01	88.55
High Turnover (Sit Down Restaurant)	6	Y	11.47	26.72	7.44	64.97	118.04
High Turnover (Sit Down Restaurant)	8	Y	11.27	20.11	9.2	83.7	180.76
High Turnover (Sit Down Restaurant)	15	Y	16.13	28.48	9.51	83.58	195.77
High Turnover (Sit Down Restaurant)	4	Y	6.58	22.3	6.25	64.82	147.47
High Turnover (Sit Down Restaurant)	1	Y	5.3	15.83	5.76	30.01	88.55
Fast Food Restaurant with Drive Thru	11	Y	10.52	28.16	9.64	46.57	187.78
Fast Food Restaurant with Drive Thru	13	Y	10.67	23.69	8.19	38.26	138.46
Fast Food Restaurant with Drive Thru	8	Y	11.27	20.11	9.2	83.7	180.76
Fast Food Restaurant with Drive Thru	10	Y	16.13	28.48	9.51	83.58	195.77
Fast Food Restaurant with Drive Thru	9	Y	10.52	28.16	9.64	46.57	187.78
Fast Food Restaurant with Drive Thru	5	Y	3.42	20.97	6.45	42.87	128.02
Fast Food Restaurant with Drive Thru	15	Y	16.13	28.48	9.51	83.58	195.77
Fast Food Restaurant with Drive Thru	1	Y	5.3	15.83	5.76	30.01	88.55
Fast Food Restaurant with Drive Thru	3	Y	8.49	16.25	7.47	39.04	174.7
Fast Food Restaurant with Drive Thru	14	Y	5.3	15.83	5.76	30.01	88.55
Fast Food Restaurant with Drive Thru	6	Y	11.47	26.72	7.44	64.97	118.04
Fast Food Restaurant with Drive Thru	4	Y	6.58	22.3	6.25	64.82	147.47
Fast Food Restaurant with Drive Thru	2	Y	7.8	17.72	9.18	45.12	68.83
Fast Food Restaurant with Drive Thru	7	Y	10.14	20.65	6.13	20.52	81.41
Fast Food Restaurant with Drive Thru	12	Y	10.52	28.16	9.64	46.57	187.78
Fast Food Restaurant w/o Drive Thru	11	Y	10.52	28.16	9.64	46.57	187.78
Fast Food Restaurant w/o Drive Thru	9	Y	10.52	28.16	9.64	46.57	187.78
Fast Food Restaurant w/o Drive Thru	15	Y	16.13	28.48	9.51	83.58	195.77
Fast Food Restaurant w/o Drive Thru	13	Y	10.67	23.69	8.19	38.26	138.46
Fast Food Restaurant w/o Drive Thru	7	Y	10.14	20.65	6.13	20.52	81.41
Fast Food Restaurant w/o Drive Thru	5	Y	3.42	20.97	6.45	42.87	128.02
Fast Food Restaurant w/o Drive Thru	8	Y	11.27	20.11	9.2	83.7	180.76
Fast Food Restaurant w/o Drive Thru	3	Y	8.49	16.25	7.47	39.04	174.7
Fast Food Restaurant w/o Drive Thru	2	Y	7.8	17.72	9.18	45.12	68.83
Fast Food Restaurant w/o Drive Thru	12	Y	10.52	28.16	9.64	46.57	187.78

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Fast Food Restaurant w/o Drive Thru	4	Y	6.58	22.3	6.25	64.82	147.47
Fast Food Restaurant w/o Drive Thru	6	Y	11.47	26.72	7.44	64.97	118.04
Fast Food Restaurant w/o Drive Thru	10	Y	16.13	28.48	9.51	83.58	195.77
Fast Food Restaurant w/o Drive Thru	1	Y	5.3	15.83	5.76	30.01	88.55
Fast Food Restaurant w/o Drive Thru	14	Y	5.3	15.83	5.76	30.01	88.55
Hotel	9	Y	3.5	2.89	2.67	21.79	4.06
Hotel	7	Y	5.99	3.68	4.67	36.19	2.04
Hotel	8	Y	3.64	3.24	3.71	31.09	5.15
Hotel	6	Y	4.91	3.33	3.53	35.8	5.53
Hotel	3	Y	5.38	2.3	1.93	19.81	7.16
Hotel	11	Y	3.5	2.89	2.67	21.79	4.06
Hotel	15	Y	8.54	6.23	6.57	63.16	4.86
Hotel	2	Y	2.68	1.37	4.22	28.26	0.26
Hotel	10	Y	8.54	6.23	6.57	63.16	4.86
Hotel	4	Y	2.81	3.22	2.93	42.1	4.75
Hotel	13	Y	6.29	3.67	5.43	50.49	11.1
Hotel	12	Y	3.5	2.89	2.67	21.79	4.06
Hotel	1	Y	2.8	2.87	3.23	21.81	0.05
Hotel	5	Y	2.95	2.85	3.82	31.8	7.13
Hotel	14	Y	2.8	2.87	3.23	21.81	0.05
Motel	8	Y	3.64	3.24	3.71	31.09	5.15
Motel	12	Y	3.5	2.89	2.67	21.79	4.06
Motel	10	Y	8.54	6.23	6.57	63.16	4.86
Motel	7	Y	5.99	3.68	4.67	36.19	2.04
Motel	13	Y	6.29	3.67	5.43	50.49	11.1
Motel	2	Y	2.68	1.37	4.22	28.26	0.26
Motel	3	Y	5.38	2.3	1.93	19.81	7.16
Motel	5	Y	2.95	2.85	3.82	31.8	7.13
Motel	1	Y	2.8	2.87	3.23	21.81	0.05
Motel	11	Y	3.5	2.89	2.67	21.79	4.06
Motel	9	Y	3.5	2.89	2.67	21.79	4.06
Motel	14	Y	2.8	2.87	3.23	21.81	0.05
Motel	6	Y	4.91	3.33	3.53	35.8	5.53
Motel	15	Y	8.54	6.23	6.57	63.16	4.86
Motel	4	Y	2.81	3.22	2.93	42.1	4.75
Parking Lot	5	Y	0	0	0.876	0	0
Parking Lot	6	Y	0	0	0.876	0	0
Parking Lot	2	Y	0	0	0.876	0	0
Parking Lot	15	Y	0	0	0.876	0	0
Parking Lot	4	Y	0	0	0.876	0	0
Parking Lot	7	Y	0	0	0.876	0	0
Parking Lot	13	Y	0	0	0.876	0	0
Parking Lot	10	Y	0	0	0.876	0	0
Parking Lot	1	Y	0	0	0.876	0	0
Parking Lot	9	Y	0	0	0.876	0	0
Parking Lot	3	Y	0	0	0.876	0	0
Parking Lot	12	Y	0	0	0.876	0	0
Parking Lot	14	Y	0	0	0.876	0	0
Parking Lot	11	Y	0	0	0.876	0	0
Parking Lot	8	Y	0	0	0.876	0	0
Unenclosed Parking Structure	3	Y	0	0	2.628	0	0
Unenclosed Parking Structure	11	Y	0	0	2.628	0	0
Unenclosed Parking Structure	12	Y	0	0	2.628	0	0
Unenclosed Parking Structure	5	Y	0	0	2.628	0	0
Unenclosed Parking Structure	8	Y	0	0	2.628	0	0
Unenclosed Parking Structure	1	Y	0	0	2.628	0	0
Unenclosed Parking Structure	2	Y	0	0	2.628	0	0
Unenclosed Parking Structure	13	Y	0	0	2.628	0	0
Unenclosed Parking Structure	6	Y	0	0	2.628	0	0
Unenclosed Parking Structure	15	Y	0	0	2.628	0	0
Unenclosed Parking Structure	14	Y	0	0	2.628	0	0
Unenclosed Parking Structure	4	Y	0	0	2.628	0	0
Unenclosed Parking Structure	10	Y	0	0	2.628	0	0
Unenclosed Parking Structure	7	Y	0	0	2.628	0	0
Unenclosed Parking Structure	9	Y	0	0	2.628	0	0
Enclosed Parking Structure	3	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	11	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	12	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	5	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	8	Y	3.920976	0	2.628	0	0

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Enclosed Parking Structure	1	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	2	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	13	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	6	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	15	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	14	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	4	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	10	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	7	Y	3.920976	0	2.628	0	0
Enclosed Parking Structure	9	Y	3.920976	0	2.628	0	0
Unenclosed Parking with Elevator	3	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	11	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	12	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	5	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	8	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	1	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	2	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	13	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	6	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	15	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	14	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	4	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	10	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	7	Y	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	9	Y	0	0.19	2.628	0	0
Enclosed Parking with Elevator	3	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	11	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	12	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	5	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	8	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	1	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	2	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	13	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	6	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	15	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	14	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	4	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	10	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	7	Y	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	9	Y	3.920976	0.19	2.628	0	0
Other Asphalt Surfaces	3	Y	0	0	0	0	0
Other Asphalt Surfaces	11	Y	0	0	0	0	0
Other Asphalt Surfaces	12	Y	0	0	0	0	0
Other Asphalt Surfaces	5	Y	0	0	0	0	0
Other Asphalt Surfaces	8	Y	0	0	0	0	0
Other Asphalt Surfaces	1	Y	0	0	0	0	0
Other Asphalt Surfaces	2	Y	0	0	0	0	0
Other Asphalt Surfaces	13	Y	0	0	0	0	0
Other Asphalt Surfaces	6	Y	0	0	0	0	0
Other Asphalt Surfaces	15	Y	0	0	0	0	0
Other Asphalt Surfaces	14	Y	0	0	0	0	0
Other Asphalt Surfaces	4	Y	0	0	0	0	0
Other Asphalt Surfaces	10	Y	0	0	0	0	0
Other Asphalt Surfaces	7	Y	0	0	0	0	0
Other Asphalt Surfaces	9	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	3	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	11	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	12	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	5	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	8	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	1	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	2	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	13	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	6	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	15	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	14	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	4	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	10	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	7	Y	0	0	0	0	0
Other Non-Asphalt Surfaces	9	Y	0	0	0	0	0

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Free-Standing Discount Store	1	Y	6.81	2.81	6.86	9.02	0
Free-Standing Discount Store	3	Y	2.77	2.3	4.53	10.42	2.08
Free-Standing Discount Store	2	Y	4.97	1.98	7.17	14.13	0.36
Free-Standing Discount Store	10	Y	5.95	2.44	8.2	2.29	0.3
Free-Standing Discount Store	15	Y	5.95	2.44	8.2	2.29	0.3
Free-Standing Discount Store	14	Y	6.81	2.81	6.86	9.02	0
Free-Standing Discount Store	12	Y	5.17	3.23	7.56	1.33	0.49
Free-Standing Discount Store	13	Y	4.13	3.16	7.5	1.32	1.09
Free-Standing Discount Store	11	Y	5.17	3.23	7.56	1.33	0.49
Free-Standing Discount Store	5	Y	2.9	3.36	5.88	4.68	0.7
Free-Standing Discount Store	4	Y	3.55	2.68	6.02	2.92	0
Free-Standing Discount Store	6	Y	4.2	2.98	6.45	5.52	0.93
Free-Standing Discount Store	9	Y	5.17	3.23	7.56	1.33	0.49
Free-Standing Discount Store	7	Y	4.12	2.49	5.5	6.84	0.07
Free-Standing Discount Store	8	Y	3.79	2.8	6.85	1.06	1.05
Free-Standing Discount Superstore	13	Y	4.13	3.16	7.5	1.32	1.09
Free-Standing Discount Superstore	2	Y	4.97	1.98	7.17	14.13	0.36
Free-Standing Discount Superstore	3	Y	2.77	2.3	4.53	10.42	2.08
Free-Standing Discount Superstore	1	Y	6.81	2.81	6.86	9.02	0
Free-Standing Discount Superstore	14	Y	6.81	2.81	6.86	9.02	0
Free-Standing Discount Superstore	15	Y	5.95	2.44	8.2	2.29	0.3
Free-Standing Discount Superstore	4	Y	3.55	2.68	6.02	2.92	0
Free-Standing Discount Superstore	12	Y	5.17	3.23	7.56	1.33	0.49
Free-Standing Discount Superstore	5	Y	2.9	3.36	5.88	4.68	0.7
Free-Standing Discount Superstore	10	Y	5.95	2.44	8.2	2.29	0.3
Free-Standing Discount Superstore	6	Y	4.2	2.98	6.45	5.52	0.93
Free-Standing Discount Superstore	9	Y	5.17	3.23	7.56	1.33	0.49
Free-Standing Discount Superstore	7	Y	4.12	2.49	5.5	6.84	0.07
Free-Standing Discount Superstore	8	Y	3.79	2.8	6.85	1.06	1.05
Free-Standing Discount Superstore	11	Y	5.17	3.23	7.56	1.33	0.49
Discount Club	3	Y	2.77	2.3	4.53	10.42	2.08
Discount Club	1	Y	6.81	2.81	6.86	9.02	0
Discount Club	14	Y	6.81	2.81	6.86	9.02	0
Discount Club	15	Y	5.95	2.44	8.2	2.29	0.3
Discount Club	12	Y	5.17	3.23	7.56	1.33	0.49
Discount Club	7	Y	4.12	2.49	5.5	6.84	0.07
Discount Club	8	Y	3.79	2.8	6.85	1.06	1.05
Discount Club	10	Y	5.95	2.44	8.2	2.29	0.3
Discount Club	6	Y	4.2	2.98	6.45	5.52	0.93
Discount Club	5	Y	2.9	3.36	5.88	4.68	0.7
Discount Club	11	Y	5.17	3.23	7.56	1.33	0.49
Discount Club	13	Y	4.13	3.16	7.5	1.32	1.09
Discount Club	9	Y	5.17	3.23	7.56	1.33	0.49
Discount Club	2	Y	4.97	1.98	7.17	14.13	0.36
Discount Club	4	Y	3.55	2.68	6.02	2.92	0
Regional Shopping Center	14	Y	6.81	2.81	6.86	9.02	0
Regional Shopping Center	11	Y	5.17	3.23	7.56	1.33	0.49
Regional Shopping Center	15	Y	5.95	2.44	8.2	2.29	0.3
Regional Shopping Center	1	Y	6.81	2.81	6.86	9.02	0
Regional Shopping Center	5	Y	2.9	3.36	5.88	4.68	0.7
Regional Shopping Center	4	Y	3.55	2.68	6.02	2.92	0
Regional Shopping Center	8	Y	3.79	2.8	6.85	1.06	1.05
Regional Shopping Center	9	Y	5.17	3.23	7.56	1.33	0.49
Regional Shopping Center	7	Y	4.12	2.49	5.5	6.84	0.07
Regional Shopping Center	3	Y	2.77	2.3	4.53	10.42	2.08
Regional Shopping Center	6	Y	4.2	2.98	6.45	5.52	0.93
Regional Shopping Center	10	Y	5.95	2.44	8.2	2.29	0.3
Regional Shopping Center	12	Y	5.17	3.23	7.56	1.33	0.49
Regional Shopping Center	13	Y	4.13	3.16	7.5	1.32	1.09
Regional Shopping Center	2	Y	4.97	1.98	7.17	14.13	0.36
Electronic Superstore	2	Y	4.97	1.98	7.17	14.13	0.36
Electronic Superstore	6	Y	4.2	2.98	6.45	5.52	0.93
Electronic Superstore	12	Y	5.17	3.23	7.56	1.33	0.49
Electronic Superstore	14	Y	6.81	2.81	6.86	9.02	0
Electronic Superstore	3	Y	2.77	2.3	4.53	10.42	2.08
Electronic Superstore	7	Y	4.12	2.49	5.5	6.84	0.07
Electronic Superstore	10	Y	5.95	2.44	8.2	2.29	0.3
Electronic Superstore	1	Y	6.81	2.81	6.86	9.02	0
Electronic Superstore	11	Y	5.17	3.23	7.56	1.33	0.49
Electronic Superstore	15	Y	5.95	2.44	8.2	2.29	0.3

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Electronic Superstore	5	Y	2.9	3.36	5.88	4.68	0.7
Electronic Superstore	9	Y	5.17	3.23	7.56	1.33	0.49
Electronic Superstore	8	Y	3.79	2.8	6.85	1.06	1.05
Electronic Superstore	13	Y	4.13	3.16	7.5	1.32	1.09
Electronic Superstore	4	Y	3.55	2.68	6.02	2.92	0
Home Improvement Superstore	8	Y	3.79	2.8	6.85	1.06	1.05
Home Improvement Superstore	11	Y	5.17	3.23	7.56	1.33	0.49
Home Improvement Superstore	14	Y	6.81	2.81	6.86	9.02	0
Home Improvement Superstore	9	Y	5.17	3.23	7.56	1.33	0.49
Home Improvement Superstore	10	Y	5.95	2.44	8.2	2.29	0.3
Home Improvement Superstore	6	Y	4.2	2.98	6.45	5.52	0.93
Home Improvement Superstore	2	Y	4.97	1.98	7.17	14.13	0.36
Home Improvement Superstore	15	Y	5.95	2.44	8.2	2.29	0.3
Home Improvement Superstore	4	Y	3.55	2.68	6.02	2.92	0
Home Improvement Superstore	12	Y	5.17	3.23	7.56	1.33	0.49
Home Improvement Superstore	3	Y	2.77	2.3	4.53	10.42	2.08
Home Improvement Superstore	13	Y	4.13	3.16	7.5	1.32	1.09
Home Improvement Superstore	5	Y	2.9	3.36	5.88	4.68	0.7
Home Improvement Superstore	1	Y	6.81	2.81	6.86	9.02	0
Home Improvement Superstore	7	Y	4.12	2.49	5.5	6.84	0.07
Strip Mall	2	Y	4.97	1.98	7.17	14.13	0.36
Strip Mall	9	Y	5.17	3.23	7.56	1.33	0.49
Strip Mall	11	Y	5.17	3.23	7.56	1.33	0.49
Strip Mall	12	Y	5.17	3.23	7.56	1.33	0.49
Strip Mall	10	Y	5.95	2.44	8.2	2.29	0.3
Strip Mall	3	Y	2.77	2.3	4.53	10.42	2.08
Strip Mall	7	Y	4.12	2.49	5.5	6.84	0.07
Strip Mall	1	Y	6.81	2.81	6.86	9.02	0
Strip Mall	8	Y	3.79	2.8	6.85	1.06	1.05
Strip Mall	4	Y	3.55	2.68	6.02	2.92	0
Strip Mall	5	Y	2.9	3.36	5.88	4.68	0.7
Strip Mall	13	Y	4.13	3.16	7.5	1.32	1.09
Strip Mall	6	Y	4.2	2.98	6.45	5.52	0.93
Strip Mall	14	Y	6.81	2.81	6.86	9.02	0
Strip Mall	15	Y	5.95	2.44	8.2	2.29	0.3
Hardware/Paint Store	2	Y	4.97	1.98	7.17	14.13	0.36
Hardware/Paint Store	6	Y	4.2	2.98	6.45	5.52	0.93
Hardware/Paint Store	13	Y	4.13	3.16	7.5	1.32	1.09
Hardware/Paint Store	12	Y	5.17	3.23	7.56	1.33	0.49
Hardware/Paint Store	10	Y	5.95	2.44	8.2	2.29	0.3
Hardware/Paint Store	11	Y	5.17	3.23	7.56	1.33	0.49
Hardware/Paint Store	8	Y	3.79	2.8	6.85	1.06	1.05
Hardware/Paint Store	7	Y	4.12	2.49	5.5	6.84	0.07
Hardware/Paint Store	9	Y	5.17	3.23	7.56	1.33	0.49
Hardware/Paint Store	5	Y	2.9	3.36	5.88	4.68	0.7
Hardware/Paint Store	14	Y	6.81	2.81	6.86	9.02	0
Hardware/Paint Store	1	Y	6.81	2.81	6.86	9.02	0
Hardware/Paint Store	4	Y	3.55	2.68	6.02	2.92	0
Hardware/Paint Store	3	Y	2.77	2.3	4.53	10.42	2.08
Hardware/Paint Store	15	Y	5.95	2.44	8.2	2.29	0.3
Supermarket	8	Y	6.08	25.23	10.35	11.28	10.6
Supermarket	11	Y	5.77	25.88	8.45	11.07	12.24
Supermarket	2	Y	7.5	26.2	9.86	45.07	0
Supermarket	6	Y	7.36	25.85	10.53	19.14	9.38
Supermarket	13	Y	4.18	25.54	8.33	10.95	15.42
Supermarket	15	Y	7.92	22.82	9.7	15.07	6.61
Supermarket	12	Y	5.77	25.88	8.45	11.07	12.24
Supermarket	7	Y	5.16	25.36	9.92	8.47	0.95
Supermarket	1	Y	3.02	25.04	8.09	27.25	1.18
Supermarket	5	Y	3.43	27.24	8.88	28.18	12.69
Supermarket	4	Y	5.25	30.13	8.17	19.57	5.79
Supermarket	3	Y	5.05	22.51	7.91	17.65	14.03
Supermarket	9	Y	5.77	25.88	8.45	11.07	12.24
Supermarket	14	Y	3.02	25.04	8.09	27.25	1.18
Supermarket	10	Y	7.92	22.82	9.7	15.07	6.61
Convenience Market (24 hour)	9	Y	5.17	3.23	7.56	1.33	0.49
Convenience Market (24 hour)	7	Y	4.12	2.49	5.5	6.84	0.07
Convenience Market (24 hour)	8	Y	3.79	2.8	6.85	1.06	1.05
Convenience Market (24 hour)	6	Y	4.2	2.98	6.45	5.52	0.93
Convenience Market (24 hour)	12	Y	5.17	3.23	7.56	1.33	0.49

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Convenience Market (24 hour)	14	Y	6.81	2.81	6.86	9.02	0
Convenience Market (24 hour)	13	Y	4.13	3.16	7.5	1.32	1.09
Convenience Market (24 hour)	2	Y	4.97	1.98	7.17	14.13	0.36
Convenience Market (24 hour)	15	Y	5.95	2.44	8.2	2.29	0.3
Convenience Market (24 hour)	3	Y	2.77	2.3	4.53	10.42	2.08
Convenience Market (24 hour)	10	Y	5.95	2.44	8.2	2.29	0.3
Convenience Market (24 hour)	1	Y	6.81	2.81	6.86	9.02	0
Convenience Market (24 hour)	5	Y	2.9	3.36	5.88	4.68	0.7
Convenience Market (24 hour)	11	Y	5.17	3.23	7.56	1.33	0.49
Convenience Market (24 hour)	4	Y	3.55	2.68	6.02	2.92	0
Convenience Market with Gas Pumps	11	Y	5.17	3.23	7.56	1.33	0.49
Convenience Market with Gas Pumps	5	Y	2.9	3.36	5.88	4.68	0.7
Convenience Market with Gas Pumps	4	Y	3.55	2.68	6.02	2.92	0
Convenience Market with Gas Pumps	6	Y	4.2	2.98	6.45	5.52	0.93
Convenience Market with Gas Pumps	9	Y	5.17	3.23	7.56	1.33	0.49
Convenience Market with Gas Pumps	7	Y	4.12	2.49	5.5	6.84	0.07
Convenience Market with Gas Pumps	8	Y	3.79	2.8	6.85	1.06	1.05
Convenience Market with Gas Pumps	12	Y	5.17	3.23	7.56	1.33	0.49
Convenience Market with Gas Pumps	13	Y	4.13	3.16	7.5	1.32	1.09
Convenience Market with Gas Pumps	2	Y	4.97	1.98	7.17	14.13	0.36
Convenience Market with Gas Pumps	3	Y	2.77	2.3	4.53	10.42	2.08
Convenience Market with Gas Pumps	1	Y	6.81	2.81	6.86	9.02	0
Convenience Market with Gas Pumps	15	Y	5.95	2.44	8.2	2.29	0.3
Convenience Market with Gas Pumps	14	Y	6.81	2.81	6.86	9.02	0
Convenience Market with Gas Pumps	10	Y	5.95	2.44	8.2	2.29	0.3
Automobile Care Center	5	Y	1.59	3.36	3.7	20.06	6.9
Automobile Care Center	9	Y	2.94	5.75	3.85	15.35	4.45
Automobile Care Center	2	Y	2.17	4.2	3.26	21.82	0.06
Automobile Care Center	4	Y	1.93	3.7	3.8	22.58	6.67
Automobile Care Center	13	Y	1.59	4.27	3.52	5.04	7.25
Automobile Care Center	11	Y	2.94	5.75	3.85	15.35	4.45
Automobile Care Center	1	Y	0.83	1.85	2.28	3.66	0.31
Automobile Care Center	12	Y	2.94	5.75	3.85	15.35	4.45
Automobile Care Center	14	Y	0.83	1.85	2.28	3.66	0.31
Automobile Care Center	10	Y	2.89	5.02	3.62	16.76	17.13
Automobile Care Center	6	Y	4.47	7.2	5.65	26.2	12.42
Automobile Care Center	7	Y	0.51	1.31	0.91	19.32	0.12
Automobile Care Center	8	Y	2.12	3.83	3.7	15.24	6.86
Automobile Care Center	3	Y	2.52	4.16	3.35	19.93	3.84
Automobile Care Center	15	Y	2.89	5.02	3.62	16.76	17.13
Gasoline/Service Station	11	Y	2.94	5.75	3.85	15.35	4.45
Gasoline/Service Station	1	Y	0.83	1.85	2.28	3.66	0.31
Gasoline/Service Station	4	Y	1.93	3.7	3.8	22.58	6.67
Gasoline/Service Station	5	Y	1.59	3.36	3.7	20.06	6.9
Gasoline/Service Station	6	Y	4.47	7.2	5.65	26.2	12.42
Gasoline/Service Station	13	Y	1.59	4.27	3.52	5.04	7.25
Gasoline/Service Station	15	Y	2.89	5.02	3.62	16.76	17.13
Gasoline/Service Station	2	Y	2.17	4.2	3.26	21.82	0.06
Gasoline/Service Station	14	Y	0.83	1.85	2.28	3.66	0.31
Gasoline/Service Station	3	Y	2.52	4.16	3.35	19.93	3.84
Gasoline/Service Station	7	Y	0.51	1.31	0.91	19.32	0.12
Gasoline/Service Station	10	Y	2.89	5.02	3.62	16.76	17.13
Gasoline/Service Station	8	Y	2.12	3.83	3.7	15.24	6.86
Gasoline/Service Station	9	Y	2.94	5.75	3.85	15.35	4.45
Gasoline/Service Station	12	Y	2.94	5.75	3.85	15.35	4.45
Bank (with Drive-Through)	15	Y	2.89	5.02	3.62	16.76	17.13
Bank (with Drive-Through)	12	Y	2.94	5.75	3.85	15.35	4.45
Bank (with Drive-Through)	8	Y	2.12	3.83	3.7	15.24	6.86
Bank (with Drive-Through)	6	Y	4.47	7.2	5.65	26.2	12.42
Bank (with Drive-Through)	3	Y	2.52	4.16	3.35	19.93	3.84
Bank (with Drive-Through)	11	Y	2.94	5.75	3.85	15.35	4.45
Bank (with Drive-Through)	2	Y	2.17	4.2	3.26	21.82	0.06
Bank (with Drive-Through)	9	Y	2.94	5.75	3.85	15.35	4.45
Bank (with Drive-Through)	10	Y	2.89	5.02	3.62	16.76	17.13
Bank (with Drive-Through)	5	Y	1.59	3.36	3.7	20.06	6.9
Bank (with Drive-Through)	4	Y	1.93	3.7	3.8	22.58	6.67
Bank (with Drive-Through)	14	Y	0.83	1.85	2.28	3.66	0.31
Bank (with Drive-Through)	13	Y	1.59	4.27	3.52	5.04	7.25
Bank (with Drive-Through)	1	Y	0.83	1.85	2.28	3.66	0.31
Bank (with Drive-Through)	7	Y	0.51	1.31	0.91	19.32	0.12

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
General Office Building	13	Y	6.14	4.97	4.63	19.36	4.2
General Office Building	11	Y	5.99	4.62	4.63	12.05	0.39
General Office Building	5	Y	5.42	4.8	4.34	22.58	1.01
General Office Building	8	Y	6.17	4.94	5.27	10.28	0.55
General Office Building	3	Y	3.45	3.58	3.58	15.38	0.28
General Office Building	6	Y	6.76	5.75	4.5	15.15	0.68
General Office Building	15	Y	4.03	2.79	4.45	4.2	0
General Office Building	2	Y	4.2	3.62	3.88	19.58	0.47
General Office Building	1	Y	5.02	3.98	4.24	24.42	0
General Office Building	10	Y	4.03	2.79	4.45	4.2	0
General Office Building	12	Y	5.99	4.62	4.63	12.05	0.39
General Office Building	9	Y	5.99	4.62	4.63	12.05	0.39
General Office Building	4	Y	8.01	7.84	4.72	19.9	0.06
General Office Building	14	Y	5.02	3.98	4.24	24.42	0
General Office Building	7	Y	3.78	3.31	4.58	19.64	1.08
Office Park	15	Y	4.01	2.6	5.13	3.64	0
Office Park	12	Y	7.3	4.79	4.56	11.79	0.19
Office Park	11	Y	7.3	4.79	4.56	11.79	0.19
Office Park	1	Y	1.78	2.42	4.48	21.35	0
Office Park	8	Y	7.05	5.6	5.32	12.78	0.73
Office Park	10	Y	4.01	2.6	5.13	3.64	0
Office Park	14	Y	1.78	2.42	4.48	21.35	0
Office Park	5	Y	5.65	4.81	4.21	21.48	1.17
Office Park	13	Y	7.71	6.01	4.74	31.12	6.68
Office Park	4	Y	9.54	8.4	4.71	25.6	0.08
Office Park	2	Y	3.91	4.35	3.89	13.12	0
Office Park	6	Y	7.89	6.47	4.84	18.28	0.98
Office Park	7	Y	5.26	3.76	6.13	44.13	0.13
Office Park	3	Y	4.73	4.49	4.39	26.17	0.82
Office Park	9	Y	7.3	4.79	4.56	11.79	0.19
Research & Development	11	Y	2.94	5.75	3.85	15.35	4.45
Research & Development	7	Y	0.51	1.31	0.91	19.32	0.12
Research & Development	15	Y	2.89	5.02	3.62	16.76	17.13
Research & Development	9	Y	2.94	5.75	3.85	15.35	4.45
Research & Development	13	Y	1.59	4.27	3.52	5.04	7.25
Research & Development	8	Y	2.12	3.83	3.7	15.24	6.86
Research & Development	1	Y	0.83	1.85	2.28	3.66	0.31
Research & Development	10	Y	2.89	5.02	3.62	16.76	17.13
Research & Development	3	Y	2.52	4.16	3.35	19.93	3.84
Research & Development	12	Y	2.94	5.75	3.85	15.35	4.45
Research & Development	6	Y	4.47	7.2	5.65	26.2	12.42
Research & Development	5	Y	1.59	3.36	3.7	20.06	6.9
Research & Development	14	Y	0.83	1.85	2.28	3.66	0.31
Research & Development	2	Y	2.17	4.2	3.26	21.82	0.06
Research & Development	4	Y	1.93	3.7	3.8	22.58	6.67
Government Office Building	1	Y	5.02	3.98	4.24	24.42	0
Government Office Building	11	Y	5.99	4.62	4.63	12.05	0.39
Government Office Building	13	Y	6.14	4.97	4.63	19.36	4.2
Government Office Building	7	Y	3.78	3.31	4.58	19.64	1.08
Government Office Building	12	Y	5.99	4.62	4.63	12.05	0.39
Government Office Building	10	Y	4.03	2.79	4.45	4.2	0
Government Office Building	5	Y	5.42	4.8	4.34	22.58	1.01
Government Office Building	14	Y	5.02	3.98	4.24	24.42	0
Government Office Building	3	Y	3.45	3.58	3.58	15.38	0.28
Government Office Building	9	Y	5.99	4.62	4.63	12.05	0.39
Government Office Building	8	Y	6.17	4.94	5.27	10.28	0.55
Government Office Building	4	Y	8.01	7.84	4.72	19.9	0.06
Government Office Building	15	Y	4.03	2.79	4.45	4.2	0
Government Office Building	6	Y	6.76	5.75	4.5	15.15	0.68
Government Office Building	2	Y	4.2	3.62	3.88	19.58	0.47
Government (Civic Center)	1	Y	5.02	3.98	4.24	24.42	0
Government (Civic Center)	6	Y	6.76	5.75	4.5	15.15	0.68
Government (Civic Center)	14	Y	5.02	3.98	4.24	24.42	0
Government (Civic Center)	13	Y	6.14	4.97	4.63	19.36	4.2
Government (Civic Center)	2	Y	4.2	3.62	3.88	19.58	0.47
Government (Civic Center)	15	Y	4.03	2.79	4.45	4.2	0
Government (Civic Center)	12	Y	5.99	4.62	4.63	12.05	0.39
Government (Civic Center)	4	Y	8.01	7.84	4.72	19.9	0.06
Government (Civic Center)	9	Y	5.99	4.62	4.63	12.05	0.39
Government (Civic Center)	8	Y	6.17	4.94	5.27	10.28	0.55

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Government (Civic Center)	7	Y	3.78	3.31	4.58	19.64	1.08
Government (Civic Center)	10	Y	4.03	2.79	4.45	4.2	0
Government (Civic Center)	11	Y	5.99	4.62	4.63	12.05	0.39
Government (Civic Center)	3	Y	3.45	3.58	3.58	15.38	0.28
Government (Civic Center)	5	Y	5.42	4.8	4.34	22.58	1.01
Pharmacy/Drugstore with Drive Thru	7	Y	4.12	2.49	5.5	6.84	0.07
Pharmacy/Drugstore with Drive Thru	11	Y	5.17	3.23	7.56	1.33	0.49
Pharmacy/Drugstore with Drive Thru	9	Y	5.17	3.23	7.56	1.33	0.49
Pharmacy/Drugstore with Drive Thru	14	Y	6.81	2.81	6.86	9.02	0
Pharmacy/Drugstore with Drive Thru	10	Y	5.95	2.44	8.2	2.29	0.3
Pharmacy/Drugstore with Drive Thru	5	Y	2.9	3.36	5.88	4.68	0.7
Pharmacy/Drugstore with Drive Thru	6	Y	4.2	2.98	6.45	5.52	0.93
Pharmacy/Drugstore with Drive Thru	13	Y	4.13	3.16	7.5	1.32	1.09
Pharmacy/Drugstore with Drive Thru	15	Y	5.95	2.44	8.2	2.29	0.3
Pharmacy/Drugstore with Drive Thru	4	Y	3.55	2.68	6.02	2.92	0
Pharmacy/Drugstore with Drive Thru	12	Y	5.17	3.23	7.56	1.33	0.49
Pharmacy/Drugstore with Drive Thru	2	Y	4.97	1.98	7.17	14.13	0.36
Pharmacy/Drugstore with Drive Thru	3	Y	2.77	2.3	4.53	10.42	2.08
Pharmacy/Drugstore with Drive Thru	8	Y	3.79	2.8	6.85	1.06	1.05
Pharmacy/Drugstore with Drive Thru	1	Y	6.81	2.81	6.86	9.02	0
Pharmacy/Drugstore w/o Drive Thru	9	Y	5.17	3.23	7.56	1.33	0.49
Pharmacy/Drugstore w/o Drive Thru	7	Y	4.12	2.49	5.5	6.84	0.07
Pharmacy/Drugstore w/o Drive Thru	4	Y	3.55	2.68	6.02	2.92	0
Pharmacy/Drugstore w/o Drive Thru	11	Y	5.17	3.23	7.56	1.33	0.49
Pharmacy/Drugstore w/o Drive Thru	10	Y	5.95	2.44	8.2	2.29	0.3
Pharmacy/Drugstore w/o Drive Thru	5	Y	2.9	3.36	5.88	4.68	0.7
Pharmacy/Drugstore w/o Drive Thru	2	Y	4.97	1.98	7.17	14.13	0.36
Pharmacy/Drugstore w/o Drive Thru	6	Y	4.2	2.98	6.45	5.52	0.93
Pharmacy/Drugstore w/o Drive Thru	14	Y	6.81	2.81	6.86	9.02	0
Pharmacy/Drugstore w/o Drive Thru	1	Y	6.81	2.81	6.86	9.02	0
Pharmacy/Drugstore w/o Drive Thru	12	Y	5.17	3.23	7.56	1.33	0.49
Pharmacy/Drugstore w/o Drive Thru	8	Y	3.79	2.8	6.85	1.06	1.05
Pharmacy/Drugstore w/o Drive Thru	13	Y	4.13	3.16	7.5	1.32	1.09
Pharmacy/Drugstore w/o Drive Thru	15	Y	5.95	2.44	8.2	2.29	0.3
Pharmacy/Drugstore w/o Drive Thru	3	Y	2.77	2.3	4.53	10.42	2.08
Medical Office Building	2	Y	4.2	3.62	3.88	19.58	0.47
Medical Office Building	13	Y	6.14	4.97	4.63	19.36	4.2
Medical Office Building	1	Y	5.02	3.98	4.24	24.42	0
Medical Office Building	9	Y	5.99	4.62	4.63	12.05	0.39
Medical Office Building	4	Y	8.01	7.84	4.72	19.9	0.06
Medical Office Building	11	Y	5.99	4.62	4.63	12.05	0.39
Medical Office Building	15	Y	4.03	2.79	4.45	4.2	0
Medical Office Building	12	Y	5.99	4.62	4.63	12.05	0.39
Medical Office Building	10	Y	4.03	2.79	4.45	4.2	0
Medical Office Building	7	Y	3.78	3.31	4.58	19.64	1.08
Medical Office Building	3	Y	3.45	3.58	3.58	15.38	0.28
Medical Office Building	6	Y	6.76	5.75	4.5	15.15	0.68
Medical Office Building	5	Y	5.42	4.8	4.34	22.58	1.01
Medical Office Building	14	Y	5.02	3.98	4.24	24.42	0
Medical Office Building	8	Y	6.17	4.94	5.27	10.28	0.55
Hospital	7	Y	4.7	4.96	4.55	27.6	1.9
Hospital	12	Y	11.27	7.55	5.99	61.6	9.82
Hospital	9	Y	11.27	7.55	5.99	61.6	9.82
Hospital	8	Y	7.95	4.33	5.09	56.13	9.03
Hospital	2	Y	6.11	5.64	5.11	64.29	23.87
Hospital	1	Y	4.83	5.35	3.91	10.69	0
Hospital	4	Y	10.23	6.46	5.43	100.56	16.57
Hospital	10	Y	9.5	5.56	5.13	77.24	6.03
Hospital	5	Y	7.39	5.52	4.78	93.09	15.8
Hospital	3	Y	6.26	3.96	4.17	38.28	7.64
Hospital	15	Y	9.5	5.56	5.13	77.24	6.03
Hospital	11	Y	11.27	7.55	5.99	61.6	9.82
Hospital	14	Y	4.83	5.35	3.91	10.69	0
Hospital	6	Y	10.35	6.17	5.59	64.04	9.61
Hospital	13	Y	7.21	5.87	5.09	53.56	6.92
Unrefrigerated Warehouse-No Rail	9	Y	0.85	1.34	2.38	1.01	0.03
Unrefrigerated Warehouse-No Rail	14	Y	0	0	0	0	0
Unrefrigerated Warehouse-No Rail	7	Y	0	0	0	0	0
Unrefrigerated Warehouse-No Rail	15	Y	0.48	0.82	1.88	2.48	0.03
Unrefrigerated Warehouse-No Rail	8	Y	0.77	1.61	2.3	4.83	0.05

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Unrefrigerated Warehouse-No Rail	4	Y	0.42	1.07	2.57	4.2	0.07
Unrefrigerated Warehouse-No Rail	1	Y	0	0	0	0	0
Unrefrigerated Warehouse-No Rail	11	Y	0.85	1.34	2.38	1.01	0.03
Unrefrigerated Warehouse-No Rail	6	Y	0.38	1.36	1.88	0.62	0
Unrefrigerated Warehouse-No Rail	3	Y	1.36	5.13	3.94	17.98	1.05
Unrefrigerated Warehouse-No Rail	2	Y	0.65	1.77	2.89	7.64	0
Unrefrigerated Warehouse-No Rail	13	Y	1.13	1.11	2.09	1.91	0.11
Unrefrigerated Warehouse-No Rail	10	Y	0.48	0.82	1.88	2.48	0.03
Unrefrigerated Warehouse-No Rail	12	Y	0.85	1.34	2.38	1.01	0.03
Unrefrigerated Warehouse-No Rail	5	Y	0.31	1.38	2.69	1.43	0.21
Refrigerated Warehouse-Rail	15	Y	1.41	36.52	3.63	3.42	48.51
Refrigerated Warehouse-Rail	10	Y	1.41	36.52	3.63	3.42	48.51
Refrigerated Warehouse-Rail	5	Y	1.08	20.65	2.89	5.79	12.77
Refrigerated Warehouse-Rail	2	Y	0.46	15.28	3.8	1.32	0
Refrigerated Warehouse-Rail	13	Y	2.64	27.88	4.39	7.02	0.02
Refrigerated Warehouse-Rail	6	Y	0.63	13.7	2.33	0.93	0.63
Refrigerated Warehouse-Rail	8	Y	0.38	19.26	3.22	0.96	0.06
Refrigerated Warehouse-Rail	9	Y	0.55	13.61	3.35	1.08	0.09
Refrigerated Warehouse-Rail	11	Y	0.55	13.61	3.35	1.08	0.09
Refrigerated Warehouse-Rail	3	Y	0.61	21.99	3.04	0.19	0
Refrigerated Warehouse-Rail	1	Y	0.28	11.15	2.96	0	0
Refrigerated Warehouse-Rail	4	Y	0.19	7.99	1.82	0.8	3.06
Refrigerated Warehouse-Rail	14	Y	0.28	11.15	2.96	0	0
Refrigerated Warehouse-Rail	12	Y	0.55	13.61	3.35	1.08	0.09
Refrigerated Warehouse-Rail	7	Y	0.72	26.24	2.64	6.54	3.1
General Light Industry	4	Y	1.93	3.7	3.8	22.58	6.67
General Light Industry	15	Y	2.89	5.02	3.62	16.76	17.13
General Light Industry	14	Y	0.83	1.85	2.28	3.66	0.31
General Light Industry	5	Y	1.59	3.36	3.7	20.06	6.9
General Light Industry	10	Y	2.89	5.02	3.62	16.76	17.13
General Light Industry	13	Y	1.59	4.27	3.52	5.04	7.25
General Light Industry	1	Y	0.83	1.85	2.28	3.66	0.31
General Light Industry	11	Y	2.94	5.75	3.85	15.35	4.45
General Light Industry	6	Y	4.47	7.2	5.65	26.2	12.42
General Light Industry	2	Y	2.17	4.2	3.26	21.82	0.06
General Light Industry	3	Y	2.52	4.16	3.35	19.93	3.84
General Light Industry	12	Y	2.94	5.75	3.85	15.35	4.45
General Light Industry	9	Y	2.94	5.75	3.85	15.35	4.45
General Light Industry	8	Y	2.12	3.83	3.7	15.24	6.86
General Light Industry	7	Y	0.51	1.31	0.91	19.32	0.12
General Heavy Industry	1	Y	0.83	1.85	2.28	3.66	0.31
General Heavy Industry	13	Y	1.59	4.27	3.52	5.04	7.25
General Heavy Industry	15	Y	2.89	5.02	3.62	16.76	17.13
General Heavy Industry	4	Y	1.93	3.7	3.8	22.58	6.67
General Heavy Industry	14	Y	0.83	1.85	2.28	3.66	0.31
General Heavy Industry	2	Y	2.17	4.2	3.26	21.82	0.06
General Heavy Industry	12	Y	2.94	5.75	3.85	15.35	4.45
General Heavy Industry	11	Y	2.94	5.75	3.85	15.35	4.45
General Heavy Industry	6	Y	4.47	7.2	5.65	26.2	12.42
General Heavy Industry	8	Y	2.12	3.83	3.7	15.24	6.86
General Heavy Industry	3	Y	2.52	4.16	3.35	19.93	3.84
General Heavy Industry	5	Y	1.59	3.36	3.7	20.06	6.9
General Heavy Industry	7	Y	0.51	1.31	0.91	19.32	0.12
General Heavy Industry	10	Y	2.89	5.02	3.62	16.76	17.13
General Heavy Industry	9	Y	2.94	5.75	3.85	15.35	4.45
Industrial Park	11	Y	5.99	4.62	4.63	12.05	0.39
Industrial Park	8	Y	6.17	4.94	5.27	10.28	0.55
Industrial Park	7	Y	3.78	3.31	4.58	19.64	1.08
Industrial Park	10	Y	4.03	2.79	4.45	4.2	0
Industrial Park	14	Y	5.02	3.98	4.24	24.42	0
Industrial Park	15	Y	4.03	2.79	4.45	4.2	0
Industrial Park	3	Y	3.45	3.58	3.58	15.38	0.28
Industrial Park	13	Y	6.14	4.97	4.63	19.36	4.2
Industrial Park	6	Y	6.76	5.75	4.5	15.15	0.68
Industrial Park	1	Y	5.02	3.98	4.24	24.42	0
Industrial Park	2	Y	4.2	3.62	3.88	19.58	0.47
Industrial Park	12	Y	5.99	4.62	4.63	12.05	0.39
Industrial Park	5	Y	5.42	4.8	4.34	22.58	1.01
Industrial Park	4	Y	8.01	7.84	4.72	19.9	0.06
Industrial Park	9	Y	5.99	4.62	4.63	12.05	0.39

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Manufacturing	13	Y	1.59	4.27	3.52	5.04	7.25
Manufacturing	14	Y	0.83	1.85	2.28	3.66	0.31
Manufacturing	4	Y	1.93	3.7	3.8	22.58	6.67
Manufacturing	3	Y	2.52	4.16	3.35	19.93	3.84
Manufacturing	10	Y	2.89	5.02	3.62	16.76	17.13
Manufacturing	7	Y	0.51	1.31	0.91	19.32	0.12
Manufacturing	8	Y	2.12	3.83	3.7	15.24	6.86
Manufacturing	5	Y	1.59	3.36	3.7	20.06	6.9
Manufacturing	1	Y	0.83	1.85	2.28	3.66	0.31
Manufacturing	11	Y	2.94	5.75	3.85	15.35	4.45
Manufacturing	9	Y	2.94	5.75	3.85	15.35	4.45
Manufacturing	2	Y	2.17	4.2	3.26	21.82	0.06
Manufacturing	6	Y	4.47	7.2	5.65	26.2	12.42
Manufacturing	15	Y	2.89	5.02	3.62	16.76	17.13
Manufacturing	12	Y	2.94	5.75	3.85	15.35	4.45
Day-Care Center	10	N	3.4	1.49	4.2	7.34	1.79
Day-Care Center	11	N	2.13	1.59	2.98	9.81	1.08
Day-Care Center	5	N	0.81	1.27	2.89	15.63	1.62
Day-Care Center	9	N	2.13	1.59	2.98	9.81	1.08
Day-Care Center	1	N	1.98	1.48	4.21	14.21	0.86
Day-Care Center	6	N	2.51	2.17	3.55	15.37	0.66
Day-Care Center	14	N	1.98	1.48	4.21	14.21	0.86
Day-Care Center	12	N	2.13	1.59	2.98	9.81	1.08
Day-Care Center	3	N	2.62	1.89	3.43	24.41	1.92
Day-Care Center	7	N	2.38	1.95	3.92	10.78	0.46
Day-Care Center	13	N	1.86	1.18	2.92	5.72	0.48
Apartments High Rise	1	N	222.68138	2557.38	741.44	2693.04485	1662
Apartments High Rise	2	N	322.47557	2554.47	741.44	8261.24759	1716.22
Apartments High Rise	3	N	427.66156	2553.86	741.44	9942.80422	1662
Apartments High Rise	4	N	226.56568	2558.55	741.44	6391.63527	1735.98
Apartments High Rise	5	N	312.05058	2561.86	741.44	7191.66571	1662
Apartments High Rise	6	N	322.47557	2554.47	741.44	8261.24759	1716.22
Apartments High Rise	7	N	527.22475	2553.86	741.44	12726.3372	1704.22
Apartments High Rise	8	N	181.82029	2555.58	741.44	6951.79613	1662
Apartments High Rise	9	N	246.65582	2553.86	741.44	8201.58595	1718.92
Apartments High Rise	10	N	559.53918	2553.86	741.44	10214.6057	1779.14
Apartments High Rise	11	N	185.96598	2553.86	741.44	5157.79965	1662
Apartments High Rise	12	N	267.11675	2553.86	741.44	5523.82106	1662
Apartments High Rise	13	N	160.76972	2553.86	741.44	3820.46951	1662
Apartments High Rise	14	N	222.68138	2557.38	741.44	2693.04485	1662
Apartments High Rise	15	N	559.53918	2553.86	741.44	10214.6057	1779.14
Apartments High Rise	1	Y	277.31181	2557.38	741.44	2895.74715	1662
Apartments High Rise	2	Y	401.5885	2554.47	741.44	8883.06192	1716.22
Apartments High Rise	3	Y	532.57978	2553.86	741.44	10691.1873	1662
Apartments High Rise	4	Y	282.14904	2558.55	741.44	6872.7261	1735.98
Apartments High Rise	5	Y	388.60595	2561.86	741.44	7732.97388	1662
Apartments High Rise	6	Y	401.5885	2554.47	741.44	8883.06192	1716.22
Apartments High Rise	7	Y	656.56881	2553.86	741.44	13684.2335	1704.22
Apartments High Rise	8	Y	226.42627	2555.58	741.44	7475.0496	1662
Apartments High Rise	9	Y	307.16789	2553.86	741.44	8818.90962	1718.92
Apartments High Rise	10	Y	696.81093	2553.86	741.44	10983.447	1779.14
Apartments High Rise	11	Y	231.58901	2553.86	741.44	5546.02113	1662
Apartments High Rise	12	Y	332.64851	2553.86	741.44	5939.59254	1662
Apartments High Rise	13	Y	200.21136	2553.86	741.44	4108.03173	1662
Apartments High Rise	14	Y	277.31181	2557.38	741.44	2895.74715	1662
Apartments High Rise	15	Y	696.81093	2553.86	741.44	10983.447	1779.14
Apartments Low Rise	1	N	150.10159	2635.07	810.36	10819.7598	2498
Apartments Low Rise	2	N	348.17635	2631.74	810.36	11068.0572	2498
Apartments Low Rise	3	N	400.70856	2630.88	810.36	12246.0806	2498
Apartments Low Rise	4	N	236.91164	2634.44	810.36	8283.4737	2498
Apartments Low Rise	5	N	115.11861	2630.88	810.36	20655.8708	2752.67
Apartments Low Rise	6	N	348.17635	2631.74	810.36	11068.0572	2498
Apartments Low Rise	7	N	352.41929	2630.88	810.36	14007.3847	2498
Apartments Low Rise	8	N	158.56315	2631.99	810.36	8518.36495	2498
Apartments Low Rise	9	N	229.93936	2630.88	810.36	11615.2195	2616.15
Apartments Low Rise	10	N	636.58075	2630.88	810.36	11224.1967	2498
Apartments Low Rise	11	N	137.3059	2630.88	810.36	10855.8939	2578.64
Apartments Low Rise	12	N	188.48864	2630.88	810.36	5288.14583	2498
Apartments Low Rise	13	N	184.75023	2635.92	810.36	8285.40232	2498
Apartments Low Rise	14	N	150.10159	2635.07	810.36	10819.7598	2498

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Apartments Low Rise	15	N	636.58075	2630.88	810.36	11224.1967	2498
Apartments Low Rise	1	Y	186.92601	2635.07	810.36	11634.1503	2498
Apartments Low Rise	2	Y	433.59446	2631.74	810.36	11901.1368	2498
Apartments Low Rise	3	Y	499.0144	2630.88	810.36	13167.8286	2498
Apartments Low Rise	4	Y	295.03318	2634.44	810.36	8906.96097	2498
Apartments Low Rise	5	Y	143.36066	2630.88	810.36	22210.6137	2752.67
Apartments Low Rise	6	Y	433.59446	2631.74	810.36	11901.1368	2498
Apartments Low Rise	7	Y	438.87832	2630.88	810.36	15061.704	2498
Apartments Low Rise	8	Y	197.46345	2631.99	810.36	9159.5322	2498
Apartments Low Rise	9	Y	286.35039	2630.88	810.36	12489.4834	2616.15
Apartments Low Rise	10	Y	792.75311	2630.88	810.36	12069.0287	2498
Apartments Low Rise	11	Y	170.99116	2630.88	810.36	11673.0041	2578.64
Apartments Low Rise	12	Y	234.73056	2630.88	810.36	5686.17831	2498
Apartments Low Rise	13	Y	230.07501	2635.92	810.36	8909.03475	2498
Apartments Low Rise	14	Y	186.92601	2635.07	810.36	11634.1503	2498
Apartments Low Rise	15	Y	792.75311	2630.88	810.36	12069.0287	2498
Apartments Mid Rise	1	N	222.68138	2557.38	741.44	2693.04485	1662
Apartments Mid Rise	2	N	322.47557	2554.47	741.44	8261.24759	1716.22
Apartments Mid Rise	3	N	427.66156	2553.86	741.44	9942.80422	1662
Apartments Mid Rise	4	N	226.56568	2558.55	741.44	6391.63527	1735.98
Apartments Mid Rise	5	N	312.05058	2561.86	741.44	7191.66571	1662
Apartments Mid Rise	6	N	322.47557	2554.47	741.44	8261.24759	1716.22
Apartments Mid Rise	7	N	527.22475	2553.86	741.44	12726.3372	1704.22
Apartments Mid Rise	8	N	181.82029	2555.58	741.44	6951.79613	1662
Apartments Mid Rise	9	N	246.65582	2553.86	741.44	8201.58595	1718.92
Apartments Mid Rise	10	N	559.53918	2553.86	741.44	10214.6057	1779.14
Apartments Mid Rise	11	N	185.96598	2553.86	741.44	5157.79965	1662
Apartments Mid Rise	12	N	267.11675	2553.86	741.44	5523.82106	1662
Apartments Mid Rise	13	N	160.76972	2553.86	741.44	3820.46951	1662
Apartments Mid Rise	14	N	222.68138	2557.38	741.44	2693.04485	1662
Apartments Mid Rise	15	N	559.53918	2553.86	741.44	10214.6057	1779.14
Apartments Mid Rise	1	Y	277.31181	2557.38	741.44	2895.74715	1662
Apartments Mid Rise	2	Y	401.5885	2554.47	741.44	8883.06192	1716.22
Apartments Mid Rise	3	Y	532.57978	2553.86	741.44	10691.1873	1662
Apartments Mid Rise	4	Y	282.14904	2558.55	741.44	6872.7261	1735.98
Apartments Mid Rise	5	Y	388.60595	2561.86	741.44	7732.97388	1662
Apartments Mid Rise	6	Y	401.5885	2554.47	741.44	8883.06192	1716.22
Apartments Mid Rise	7	Y	656.56881	2553.86	741.44	13684.2335	1704.22
Apartments Mid Rise	8	Y	226.42627	2555.58	741.44	7475.0496	1662
Apartments Mid Rise	9	Y	307.16789	2553.86	741.44	8818.90962	1718.92
Apartments Mid Rise	10	Y	696.81093	2553.86	741.44	10983.447	1779.14
Apartments Mid Rise	11	Y	231.58901	2553.86	741.44	5546.02113	1662
Apartments Mid Rise	12	Y	332.64851	2553.86	741.44	5939.59254	1662
Apartments Mid Rise	13	Y	200.21136	2553.86	741.44	4108.03173	1662
Apartments Mid Rise	14	Y	277.31181	2557.38	741.44	2895.74715	1662
Apartments Mid Rise	15	Y	696.81093	2553.86	741.44	10983.447	1779.14
Condo/Townhouse	1	N	496.55158	3125.85	1001.1	3925.90832	2951
Condo/Townhouse	2	N	301.14537	3125.85	1001.1	18960.7982	2951
Condo/Townhouse	3	N	539.46728	3125.85	1001.1	15116.8168	2951
Condo/Townhouse	4	N	184.25178	3125.85	1001.1	16523.6084	2951
Condo/Townhouse	5	N	135.74367	3125.85	1001.1	21338.24	2951
Condo/Townhouse	6	N	301.14537	3125.85	1001.1	18960.7982	2951
Condo/Townhouse	7	N	442.52401	3125.85	1001.1	7826.47025	2951
Condo/Townhouse	8	N	197.21159	3126.32	1001.1	12874.1742	2951
Condo/Townhouse	9	N	269.80962	3126.97	1001.1	11455.0347	2951
Condo/Townhouse	10	N	749.55357	3125.85	1001.1	17654.5297	2951
Condo/Townhouse	11	N	230.21291	3125.85	1001.1	14173.6141	3046.55
Condo/Townhouse	12	N	270.06493	3125.85	1001.1	10359.2127	2974.44
Condo/Townhouse	13	N	206.6883	3126.41	1001.1	10789.4821	3001.57
Condo/Townhouse	14	N	496.55158	3125.85	1001.1	3925.90832	2951
Condo/Townhouse	15	N	749.55357	3125.85	1001.1	17654.5297	2951
Condo/Townhouse	1	Y	618.37059	3125.85	1001.1	4221.4068	2951
Condo/Townhouse	2	Y	375.02537	3125.85	1001.1	20387.955	2951
Condo/Townhouse	3	Y	671.81479	3125.85	1001.1	16254.6417	2951
Condo/Townhouse	4	Y	229.45427	3125.85	1001.1	17767.3209	2951
Condo/Townhouse	5	Y	169.04567	3125.85	1001.1	22944.3441	2951
Condo/Townhouse	6	Y	375.02537	3125.85	1001.1	20387.955	2951
Condo/Townhouse	7	Y	551.08843	3125.85	1001.1	8415.55941	2951
Condo/Townhouse	8	Y	245.59351	3126.32	1001.1	13843.1981	2951
Condo/Townhouse	9	Y	336.00202	3126.97	1001.1	12317.2416	2951

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Condo/Townhouse	10	Y	933.44156	3125.85	1001.1	18983.3653	2951
Condo/Townhouse	11	Y	286.69104	3125.85	1001.1	15240.4453	3046.55
Condo/Townhouse	12	Y	336.31996	3125.85	1001.1	11138.9384	2974.44
Condo/Townhouse	13	Y	257.39514	3126.41	1001.1	11601.5936	3001.57
Condo/Townhouse	14	Y	618.37059	3125.85	1001.1	4221.4068	2951
Condo/Townhouse	15	Y	933.44156	3125.85	1001.1	18983.3653	2951
Condo/Townhouse High Rise	1	N	496.55158	3125.85	1001.1	3925.90832	2951
Condo/Townhouse High Rise	2	N	301.14537	3125.85	1001.1	18960.7982	2951
Condo/Townhouse High Rise	3	N	539.46728	3125.85	1001.1	15116.8168	2951
Condo/Townhouse High Rise	4	N	184.25178	3125.85	1001.1	16523.6084	2951
Condo/Townhouse High Rise	5	N	135.74367	3125.85	1001.1	21338.24	2951
Condo/Townhouse High Rise	6	N	301.14537	3125.85	1001.1	18960.7982	2951
Condo/Townhouse High Rise	7	N	442.52401	3125.85	1001.1	7826.47025	2951
Condo/Townhouse High Rise	8	N	197.21159	3126.32	1001.1	12874.1742	2951
Condo/Townhouse High Rise	9	N	269.80962	3126.97	1001.1	11455.0347	2951
Condo/Townhouse High Rise	10	N	749.55357	3125.85	1001.1	17654.5297	2951
Condo/Townhouse High Rise	11	N	230.21291	3125.85	1001.1	14173.6141	3046.55
Condo/Townhouse High Rise	12	N	270.06493	3125.85	1001.1	10359.2127	2974.44
Condo/Townhouse High Rise	13	N	206.6883	3126.41	1001.1	10789.4821	3001.57
Day-Care Center	2	N	2.3	1.42	2.7	9.52	0.42
Day-Care Center	8	N	2.31	1.51	3.09	11.38	1.03
Day-Care Center	15	N	3.4	1.49	4.2	7.34	1.79
Day-Care Center	4	N	1.9	1.28	2.82	18.43	0.93
Elementary School	9	N	2.13	1.59	2.98	9.81	1.08
Elementary School	8	N	2.31	1.51	3.09	11.38	1.03
Elementary School	3	N	2.62	1.89	3.43	24.41	1.92
Elementary School	4	N	1.9	1.28	2.82	18.43	0.93
Elementary School	10	N	3.4	1.49	4.2	7.34	1.79
Elementary School	5	N	0.81	1.27	2.89	15.63	1.62
Elementary School	1	N	1.98	1.48	4.21	14.21	0.86
Elementary School	7	N	2.38	1.95	3.92	10.78	0.46
Elementary School	15	N	3.4	1.49	4.2	7.34	1.79
Elementary School	13	N	1.86	1.18	2.92	5.72	0.48
Elementary School	2	N	2.3	1.42	2.7	9.52	0.42
Elementary School	14	N	1.98	1.48	4.21	14.21	0.86
Elementary School	11	N	2.13	1.59	2.98	9.81	1.08
Elementary School	6	N	2.51	2.17	3.55	15.37	0.66
Elementary School	12	N	2.13	1.59	2.98	9.81	1.08
Junior High School	10	N	3.4	1.49	4.2	7.34	1.79
Junior High School	9	N	2.13	1.59	2.98	9.81	1.08
Junior High School	13	N	1.86	1.18	2.92	5.72	0.48
Junior High School	11	N	2.13	1.59	2.98	9.81	1.08
Junior High School	2	N	2.3	1.42	2.7	9.52	0.42
Junior High School	12	N	2.13	1.59	2.98	9.81	1.08
Junior High School	5	N	0.81	1.27	2.89	15.63	1.62
Junior High School	8	N	2.31	1.51	3.09	11.38	1.03
Junior High School	1	N	1.98	1.48	4.21	14.21	0.86
Junior High School	6	N	2.51	2.17	3.55	15.37	0.66
Junior High School	14	N	1.98	1.48	4.21	14.21	0.86
Junior High School	4	N	1.9	1.28	2.82	18.43	0.93
Junior High School	7	N	2.38	1.95	3.92	10.78	0.46
Junior High School	3	N	2.62	1.89	3.43	24.41	1.92
Junior High School	15	N	3.4	1.49	4.2	7.34	1.79
High School	7	N	2.38	1.95	3.92	10.78	0.46
High School	1	N	1.98	1.48	4.21	14.21	0.86
High School	12	N	2.13	1.59	2.98	9.81	1.08
High School	5	N	0.81	1.27	2.89	15.63	1.62
High School	14	N	1.98	1.48	4.21	14.21	0.86
High School	10	N	3.4	1.49	4.2	7.34	1.79
High School	13	N	1.86	1.18	2.92	5.72	0.48
High School	9	N	2.13	1.59	2.98	9.81	1.08
High School	8	N	2.31	1.51	3.09	11.38	1.03
High School	15	N	3.4	1.49	4.2	7.34	1.79
High School	6	N	2.51	2.17	3.55	15.37	0.66
High School	3	N	2.62	1.89	3.43	24.41	1.92
High School	11	N	2.13	1.59	2.98	9.81	1.08
High School	2	N	2.3	1.42	2.7	9.52	0.42
High School	4	N	1.9	1.28	2.82	18.43	0.93
Junior College (2yr)	6	N	4.12	2.09	3.47	27.37	0.23
Junior College (2yr)	10	N	2.41	1.92	4.53	14.54	0.01

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Junior College (2yr)	2	N	4.59	0.34	5.23	42.99	0
Junior College (2yr)	11	N	3.71	3.59	3.86	27.88	0.59
Junior College (2yr)	8	N	6.1	2.72	5.23	10.65	5.21
Junior College (2yr)	13	N	3.25	2.69	4.02	32.81	5.16
Junior College (2yr)	5	N	5.06	3.15	3.36	35.21	0.74
Junior College (2yr)	14	N	3.17	1.73	6.49	22.85	0
Junior College (2yr)	9	N	3.71	3.59	3.86	27.88	0.59
Junior College (2yr)	15	N	2.41	1.92	4.53	14.54	0.01
Junior College (2yr)	7	N	4.43	6.44	6.57	54.53	0.34
Junior College (2yr)	1	N	3.17	1.73	6.49	22.85	0
Junior College (2yr)	4	N	3.34	2.27	3.34	21.92	3.3
Junior College (2yr)	3	N	3.63	2.63	6.55	21.84	1.34
Junior College (2yr)	12	N	3.71	3.59	3.86	27.88	0.59
University/College (4yr)	11	N	3.71	3.59	3.86	27.88	0.59
University/College (4yr)	8	N	6.1	2.72	5.23	10.65	5.21
University/College (4yr)	6	N	4.12	2.09	3.47	27.37	0.23
University/College (4yr)	10	N	2.41	1.92	4.53	14.54	0.01
University/College (4yr)	4	N	3.34	2.27	3.34	21.92	3.3
University/College (4yr)	15	N	2.41	1.92	4.53	14.54	0.01
University/College (4yr)	9	N	3.71	3.59	3.86	27.88	0.59
University/College (4yr)	14	N	3.17	1.73	6.49	22.85	0
University/College (4yr)	7	N	4.43	6.44	6.57	54.53	0.34
University/College (4yr)	13	N	3.25	2.69	4.02	32.81	5.16
University/College (4yr)	3	N	3.63	2.63	6.55	21.84	1.34
University/College (4yr)	1	N	3.17	1.73	6.49	22.85	0
University/College (4yr)	12	N	3.71	3.59	3.86	27.88	0.59
University/College (4yr)	2	N	4.59	0.34	5.23	42.99	0
University/College (4yr)	5	N	5.06	3.15	3.36	35.21	0.74
Library	15	N	2.69	5.02	3.36	16.16	17.13
Library	6	N	4.17	7.2	5.19	24.61	12.42
Library	14	N	0.76	1.85	2.12	3.37	0.31
Library	13	N	1.48	4.27	3.25	4.54	7.25
Library	9	N	2.75	5.75	3.55	14.36	4.45
Library	5	N	1.48	3.36	3.43	18.78	6.9
Library	11	N	2.75	5.75	3.55	14.36	4.45
Library	10	N	2.69	5.02	3.36	16.16	17.13
Library	3	N	2.39	4.16	3.11	17.92	3.84
Library	4	N	1.81	3.7	3.52	20.74	6.67
Library	12	N	2.75	5.75	3.55	14.36	4.45
Library	1	N	0.76	1.85	2.12	3.37	0.31
Library	2	N	2.02	4.2	3.01	19.55	0.06
Library	7	N	0.49	1.31	0.84	17.55	0.12
Library	8	N	1.99	3.83	3.42	14.78	6.86
Place of Worship	6	N	4.17	7.2	5.19	24.61	12.42
Place of Worship	5	N	1.48	3.36	3.43	18.78	6.9
Place of Worship	11	N	2.75	5.75	3.55	14.36	4.45
Place of Worship	10	N	2.69	5.02	3.36	16.16	17.13
Place of Worship	13	N	1.48	4.27	3.25	4.54	7.25
Place of Worship	4	N	1.81	3.7	3.52	20.74	6.67
Place of Worship	8	N	1.99	3.83	3.42	14.78	6.86
Place of Worship	14	N	0.76	1.85	2.12	3.37	0.31
Place of Worship	3	N	2.39	4.16	3.11	17.92	3.84
Place of Worship	12	N	2.75	5.75	3.55	14.36	4.45
Place of Worship	1	N	0.76	1.85	2.12	3.37	0.31
Place of Worship	15	N	2.69	5.02	3.36	16.16	17.13
Place of Worship	2	N	2.02	4.2	3.01	19.55	0.06
Place of Worship	9	N	2.75	5.75	3.55	14.36	4.45
Place of Worship	7	N	0.49	1.31	0.84	17.55	0.12
City Park	6	N	0	0	0	0	0
City Park	12	N	0	0	0	0	0
City Park	1	N	0	0	0	0	0
City Park	8	N	0	0	0	0	0
City Park	11	N	0	0	0	0	0
City Park	9	N	0	0	0	0	0
City Park	5	N	0	0	0	0	0
City Park	3	N	0	0	0	0	0
City Park	2	N	0	0	0	0	0
City Park	13	N	0	0	0	0	0
City Park	4	N	0	0	0	0	0
City Park	14	N	0	0	0	0	0

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
City Park	15	N	0	0	0	0	0
City Park	7	N	0	0	0	0	0
City Park	10	N	0	0	0	0	0
Golf Course	7	N	0	0	0	0	0
Golf Course	2	N	0	0	0	0	0
Golf Course	14	N	0	0	0	0	0
Golf Course	3	N	0	0	0	0	0
Golf Course	5	N	0	0	0	0	0
Golf Course	9	N	0	0	0	0	0
Golf Course	8	N	0	0	0	0	0
Golf Course	13	N	0	0	0	0	0
Golf Course	10	N	0	0	0	0	0
Golf Course	12	N	0	0	0	0	0
Golf Course	4	N	0	0	0	0	0
Golf Course	11	N	0	0	0	0	0
Golf Course	6	N	0	0	0	0	0
Golf Course	15	N	0	0	0	0	0
Golf Course	1	N	0	0	0	0	0
Recreational Swimming Pool	10	N	0	0	0	0	0
Recreational Swimming Pool	6	N	0	0	0	0	0
Recreational Swimming Pool	4	N	0	0	0	0	0
Recreational Swimming Pool	2	N	0	0	0	0	0
Recreational Swimming Pool	14	N	0	0	0	0	0
Recreational Swimming Pool	15	N	0	0	0	0	0
Recreational Swimming Pool	5	N	0	0	0	0	0
Recreational Swimming Pool	13	N	0	0	0	0	0
Recreational Swimming Pool	7	N	0	0	0	0	0
Recreational Swimming Pool	1	N	0	0	0	0	0
Recreational Swimming Pool	9	N	0	0	0	0	0
Recreational Swimming Pool	8	N	0	0	0	0	0
Recreational Swimming Pool	12	N	0	0	0	0	0
Recreational Swimming Pool	11	N	0	0	0	0	0
Recreational Swimming Pool	3	N	0	0	0	0	0
Racquet Club	3	N	2.39	4.16	3.11	17.92	3.84
Racquet Club	8	N	1.99	3.83	3.42	14.78	6.86
Racquet Club	6	N	4.17	7.2	5.19	24.61	12.42
Racquet Club	15	N	2.69	5.02	3.36	16.16	17.13
Racquet Club	9	N	2.75	5.75	3.55	14.36	4.45
Racquet Club	14	N	0.76	1.85	2.12	3.37	0.31
Racquet Club	4	N	1.81	3.7	3.52	20.74	6.67
Racquet Club	11	N	2.75	5.75	3.55	14.36	4.45
Racquet Club	13	N	1.48	4.27	3.25	4.54	7.25
Racquet Club	1	N	0.76	1.85	2.12	3.37	0.31
Racquet Club	7	N	0.49	1.31	0.84	17.55	0.12
Racquet Club	10	N	2.69	5.02	3.36	16.16	17.13
Racquet Club	5	N	1.48	3.36	3.43	18.78	6.9
Racquet Club	12	N	2.75	5.75	3.55	14.36	4.45
Racquet Club	2	N	2.02	4.2	3.01	19.55	0.06
Health Club	9	N	2.75	5.75	3.55	14.36	4.45
Health Club	2	N	2.02	4.2	3.01	19.55	0.06
Health Club	5	N	1.48	3.36	3.43	18.78	6.9
Health Club	3	N	2.39	4.16	3.11	17.92	3.84
Health Club	6	N	4.17	7.2	5.19	24.61	12.42
Health Club	7	N	0.49	1.31	0.84	17.55	0.12
Health Club	12	N	2.75	5.75	3.55	14.36	4.45
Health Club	8	N	1.99	3.83	3.42	14.78	6.86
Health Club	14	N	0.76	1.85	2.12	3.37	0.31
Health Club	13	N	1.48	4.27	3.25	4.54	7.25
Health Club	15	N	2.69	5.02	3.36	16.16	17.13
Health Club	11	N	2.75	5.75	3.55	14.36	4.45
Health Club	1	N	0.76	1.85	2.12	3.37	0.31
Health Club	10	N	2.69	5.02	3.36	16.16	17.13
Health Club	4	N	1.81	3.7	3.52	20.74	6.67
Movie Theater (No Matinee)	12	N	2.75	5.75	3.55	14.36	4.45
Movie Theater (No Matinee)	7	N	0.49	1.31	0.84	17.55	0.12
Movie Theater (No Matinee)	9	N	2.75	5.75	3.55	14.36	4.45
Movie Theater (No Matinee)	15	N	2.69	5.02	3.36	16.16	17.13
Movie Theater (No Matinee)	1	N	0.76	1.85	2.12	3.37	0.31
Movie Theater (No Matinee)	10	N	2.69	5.02	3.36	16.16	17.13
Movie Theater (No Matinee)	13	N	1.48	4.27	3.25	4.54	7.25

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Movie Theater (No Matinee)	8	N	1.99	3.83	3.42	14.78	6.86
Movie Theater (No Matinee)	11	N	2.75	5.75	3.55	14.36	4.45
Movie Theater (No Matinee)	5	N	1.48	3.36	3.43	18.78	6.9
Movie Theater (No Matinee)	14	N	0.76	1.85	2.12	3.37	0.31
Movie Theater (No Matinee)	4	N	1.81	3.7	3.52	20.74	6.67
Movie Theater (No Matinee)	6	N	4.17	7.2	5.19	24.61	12.42
Movie Theater (No Matinee)	2	N	2.02	4.2	3.01	19.55	0.06
Movie Theater (No Matinee)	3	N	2.39	4.16	3.11	17.92	3.84
Arena	11	N	2.75	5.75	3.55	14.36	4.45
Arena	5	N	1.48	3.36	3.43	18.78	6.9
Arena	1	N	0.76	1.85	2.12	3.37	0.31
Arena	14	N	0.76	1.85	2.12	3.37	0.31
Arena	2	N	2.02	4.2	3.01	19.55	0.06
Arena	4	N	1.81	3.7	3.52	20.74	6.67
Arena	15	N	2.69	5.02	3.36	16.16	17.13
Arena	3	N	2.39	4.16	3.11	17.92	3.84
Arena	9	N	2.75	5.75	3.55	14.36	4.45
Arena	6	N	4.17	7.2	5.19	24.61	12.42
Arena	10	N	2.69	5.02	3.36	16.16	17.13
Arena	13	N	1.48	4.27	3.25	4.54	7.25
Arena	7	N	0.49	1.31	0.84	17.55	0.12
Arena	12	N	2.75	5.75	3.55	14.36	4.45
Arena	8	N	1.99	3.83	3.42	14.78	6.86
Quality Restaurant	8	N	10.64	20.11	8.58	82.67	180.76
Quality Restaurant	10	N	15.13	28.48	8.79	81.74	195.77
Quality Restaurant	6	N	10.75	26.72	6.96	62.79	118.04
Quality Restaurant	7	N	9.53	20.65	5.69	18.61	81.41
Quality Restaurant	1	N	4.89	15.83	5.36	29.1	88.55
Quality Restaurant	3	N	8	16.25	6.94	37.59	174.7
Quality Restaurant	12	N	9.91	28.16	8.84	45.23	187.78
Quality Restaurant	2	N	7.4	17.72	8.49	42.71	68.83
Quality Restaurant	4	N	6.19	22.3	5.8	63.57	147.47
Quality Restaurant	9	N	9.91	28.16	8.84	45.23	187.78
Quality Restaurant	11	N	9.91	28.16	8.84	45.23	187.78
Quality Restaurant	14	N	4.89	15.83	5.36	29.1	88.55
Quality Restaurant	15	N	15.13	28.48	8.79	81.74	195.77
Quality Restaurant	13	N	10.06	23.69	7.61	37.8	138.46
Quality Restaurant	5	N	3.26	20.97	6.01	41.99	128.02
High Turnover (Sit Down Restaurant)	3	N	8	16.25	6.94	37.59	174.7
High Turnover (Sit Down Restaurant)	11	N	9.91	28.16	8.84	45.23	187.78
High Turnover (Sit Down Restaurant)	13	N	10.06	23.69	7.61	37.8	138.46
High Turnover (Sit Down Restaurant)	5	N	3.26	20.97	6.01	41.99	128.02
High Turnover (Sit Down Restaurant)	12	N	9.91	28.16	8.84	45.23	187.78
High Turnover (Sit Down Restaurant)	10	N	15.13	28.48	8.79	81.74	195.77
High Turnover (Sit Down Restaurant)	7	N	9.53	20.65	5.69	18.61	81.41
High Turnover (Sit Down Restaurant)	2	N	7.4	17.72	8.49	42.71	68.83
High Turnover (Sit Down Restaurant)	9	N	9.91	28.16	8.84	45.23	187.78
High Turnover (Sit Down Restaurant)	14	N	4.89	15.83	5.36	29.1	88.55
High Turnover (Sit Down Restaurant)	6	N	10.75	26.72	6.96	62.79	118.04
High Turnover (Sit Down Restaurant)	8	N	10.64	20.11	8.58	82.67	180.76
High Turnover (Sit Down Restaurant)	15	N	15.13	28.48	8.79	81.74	195.77
High Turnover (Sit Down Restaurant)	4	N	6.19	22.3	5.8	63.57	147.47
High Turnover (Sit Down Restaurant)	1	N	4.89	15.83	5.36	29.1	88.55
Fast Food Restaurant with Drive Thru	11	N	9.91	28.16	8.84	45.23	187.78
Fast Food Restaurant with Drive Thru	13	N	10.06	23.69	7.61	37.8	138.46
Fast Food Restaurant with Drive Thru	8	N	10.64	20.11	8.58	82.67	180.76
Fast Food Restaurant with Drive Thru	10	N	15.13	28.48	8.79	81.74	195.77
Fast Food Restaurant with Drive Thru	9	N	9.91	28.16	8.84	45.23	187.78
Fast Food Restaurant with Drive Thru	5	N	3.26	20.97	6.01	41.99	128.02
Fast Food Restaurant with Drive Thru	15	N	15.13	28.48	8.79	81.74	195.77
Fast Food Restaurant with Drive Thru	1	N	4.89	15.83	5.36	29.1	88.55
Fast Food Restaurant with Drive Thru	3	N	8	16.25	6.94	37.59	174.7
Fast Food Restaurant with Drive Thru	14	N	4.89	15.83	5.36	29.1	88.55
Fast Food Restaurant with Drive Thru	6	N	10.75	26.72	6.96	62.79	118.04
Fast Food Restaurant with Drive Thru	4	N	6.19	22.3	5.8	63.57	147.47
Fast Food Restaurant with Drive Thru	2	N	7.4	17.72	8.49	42.71	68.83
Fast Food Restaurant with Drive Thru	7	N	9.53	20.65	5.69	18.61	81.41
Fast Food Restaurant with Drive Thru	12	N	9.91	28.16	8.84	45.23	187.78
Fast Food Restaurant w/o Drive Thru	11	N	9.91	28.16	8.84	45.23	187.78
Fast Food Restaurant w/o Drive Thru	9	N	9.91	28.16	8.84	45.23	187.78

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Fast Food Restaurant w/o Drive Thru	15	N	15.13	28.48	8.79	81.74	195.77
Fast Food Restaurant w/o Drive Thru	13	N	10.06	23.69	7.61	37.8	138.46
Fast Food Restaurant w/o Drive Thru	7	N	9.53	20.65	5.69	18.61	81.41
Fast Food Restaurant w/o Drive Thru	5	N	3.26	20.97	6.01	41.99	128.02
Fast Food Restaurant w/o Drive Thru	8	N	10.64	20.11	8.58	82.67	180.76
Fast Food Restaurant w/o Drive Thru	3	N	8	16.25	6.94	37.59	174.7
Fast Food Restaurant w/o Drive Thru	2	N	7.4	17.72	8.49	42.71	68.83
Fast Food Restaurant w/o Drive Thru	12	N	9.91	28.16	8.84	45.23	187.78
Fast Food Restaurant w/o Drive Thru	4	N	6.19	22.3	5.8	63.57	147.47
Fast Food Restaurant w/o Drive Thru	6	N	10.75	26.72	6.96	62.79	118.04
Fast Food Restaurant w/o Drive Thru	10	N	15.13	28.48	8.79	81.74	195.77
Fast Food Restaurant w/o Drive Thru	1	N	4.89	15.83	5.36	29.1	88.55
Fast Food Restaurant w/o Drive Thru	14	N	4.89	15.83	5.36	29.1	88.55
Hotel	9	N	3.12	2.89	2.49	20.96	4.06
Hotel	7	N	5.55	3.68	4.32	35.04	2.04
Hotel	8	N	3.39	3.24	3.46	30.62	5.15
Hotel	6	N	4.39	3.33	3.3	34.77	5.53
Hotel	3	N	5.05	2.3	1.8	18.93	7.16
Hotel	11	N	3.12	2.89	2.49	20.96	4.06
Hotel	15	N	7.91	6.23	6.13	58.04	4.86
Hotel	2	N	2.29	1.37	3.86	27.85	0.26
Hotel	10	N	7.91	6.23	6.13	58.04	4.86
Hotel	4	N	2.5	3.22	2.72	41.63	4.75
Hotel	13	N	5.84	3.67	5.08	49.75	11.1
Hotel	12	N	3.12	2.89	2.49	20.96	4.06
Hotel	1	N	2.47	2.87	2.97	21.8	0.05
Hotel	5	N	2.67	2.85	3.58	30.92	7.13
Hotel	14	N	2.47	2.87	2.97	21.8	0.05
Motel	8	N	3.39	3.24	3.46	30.62	5.15
Motel	12	N	3.12	2.89	2.49	20.96	4.06
Motel	10	N	7.91	6.23	6.13	58.04	4.86
Motel	7	N	5.55	3.68	4.32	35.04	2.04
Motel	13	N	5.84	3.67	5.08	49.75	11.1
Motel	2	N	2.29	1.37	3.86	27.85	0.26
Motel	3	N	5.05	2.3	1.8	18.93	7.16
Motel	5	N	2.67	2.85	3.58	30.92	7.13
Motel	1	N	2.47	2.87	2.97	21.8	0.05
Motel	11	N	3.12	2.89	2.49	20.96	4.06
Motel	9	N	3.12	2.89	2.49	20.96	4.06
Motel	14	N	2.47	2.87	2.97	21.8	0.05
Motel	6	N	4.39	3.33	3.3	34.77	5.53
Motel	15	N	7.91	6.23	6.13	58.04	4.86
Motel	4	N	2.5	3.22	2.72	41.63	4.75
Parking Lot	5	N	0	0	0.876	0	0
Parking Lot	6	N	0	0	0.876	0	0
Parking Lot	2	N	0	0	0.876	0	0
Parking Lot	15	N	0	0	0.876	0	0
Parking Lot	4	N	0	0	0.876	0	0
Parking Lot	7	N	0	0	0.876	0	0
Parking Lot	13	N	0	0	0.876	0	0
Parking Lot	10	N	0	0	0.876	0	0
Parking Lot	1	N	0	0	0.876	0	0
Parking Lot	9	N	0	0	0.876	0	0
Parking Lot	3	N	0	0	0.876	0	0
Parking Lot	12	N	0	0	0.876	0	0
Parking Lot	14	N	0	0	0.876	0	0
Parking Lot	11	N	0	0	0.876	0	0
Parking Lot	8	N	0	0	0.876	0	0
Unenclosed Parking Structure	3	N	0	0	2.628	0	0
Unenclosed Parking Structure	11	N	0	0	2.628	0	0
Unenclosed Parking Structure	12	N	0	0	2.628	0	0
Unenclosed Parking Structure	5	N	0	0	2.628	0	0
Unenclosed Parking Structure	8	N	0	0	2.628	0	0
Unenclosed Parking Structure	1	N	0	0	2.628	0	0
Unenclosed Parking Structure	2	N	0	0	2.628	0	0
Unenclosed Parking Structure	13	N	0	0	2.628	0	0
Unenclosed Parking Structure	6	N	0	0	2.628	0	0
Unenclosed Parking Structure	15	N	0	0	2.628	0	0
Unenclosed Parking Structure	14	N	0	0	2.628	0	0
Unenclosed Parking Structure	4	N	0	0	2.628	0	0

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Unenclosed Parking Structure	10	N	0	0	2.628	0	0
Unenclosed Parking Structure	7	N	0	0	2.628	0	0
Unenclosed Parking Structure	9	N	0	0	2.628	0	0
Enclosed Parking Structure	3	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	11	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	12	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	5	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	8	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	1	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	2	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	13	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	6	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	15	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	14	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	4	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	10	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	7	N	3.920976	0	2.628	0	0
Enclosed Parking Structure	9	N	3.920976	0	2.628	0	0
Unenclosed Parking with Elevator	3	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	11	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	12	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	5	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	8	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	1	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	2	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	13	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	6	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	15	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	14	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	4	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	10	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	7	N	0	0.19	2.628	0	0
Unenclosed Parking with Elevator	9	N	0	0.19	2.628	0	0
Enclosed Parking with Elevator	3	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	11	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	12	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	5	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	8	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	1	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	2	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	13	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	6	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	15	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	14	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	4	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	10	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	7	N	3.920976	0.19	2.628	0	0
Enclosed Parking with Elevator	9	N	3.920976	0.19	2.628	0	0
Other Asphalt Surfaces	3	N	0	0	0	0	0
Other Asphalt Surfaces	11	N	0	0	0	0	0
Other Asphalt Surfaces	12	N	0	0	0	0	0
Other Asphalt Surfaces	5	N	0	0	0	0	0
Other Asphalt Surfaces	8	N	0	0	0	0	0
Other Asphalt Surfaces	1	N	0	0	0	0	0
Other Asphalt Surfaces	2	N	0	0	0	0	0
Other Asphalt Surfaces	13	N	0	0	0	0	0
Other Asphalt Surfaces	6	N	0	0	0	0	0
Other Asphalt Surfaces	15	N	0	0	0	0	0
Other Asphalt Surfaces	14	N	0	0	0	0	0
Other Asphalt Surfaces	4	N	0	0	0	0	0
Other Asphalt Surfaces	10	N	0	0	0	0	0
Other Asphalt Surfaces	7	N	0	0	0	0	0
Other Asphalt Surfaces	9	N	0	0	0	0	0
Other Non-Asphalt Surfaces	3	N	0	0	0	0	0
Other Non-Asphalt Surfaces	11	N	0	0	0	0	0
Other Non-Asphalt Surfaces	12	N	0	0	0	0	0
Other Non-Asphalt Surfaces	5	N	0	0	0	0	0
Other Non-Asphalt Surfaces	8	N	0	0	0	0	0
Other Non-Asphalt Surfaces	1	N	0	0	0	0	0
Other Non-Asphalt Surfaces	2	N	0	0	0	0	0

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Other Non-Asphalt Surfaces	13	N	0	0	0	0	0
Other Non-Asphalt Surfaces	6	N	0	0	0	0	0
Other Non-Asphalt Surfaces	15	N	0	0	0	0	0
Other Non-Asphalt Surfaces	14	N	0	0	0	0	0
Other Non-Asphalt Surfaces	4	N	0	0	0	0	0
Other Non-Asphalt Surfaces	10	N	0	0	0	0	0
Other Non-Asphalt Surfaces	7	N	0	0	0	0	0
Other Non-Asphalt Surfaces	9	N	0	0	0	0	0
Free-Standing Discount Store	1	N	6.12	2.81	6.41	7.59	0
Free-Standing Discount Store	3	N	2.61	2.3	4.22	9.07	2.08
Free-Standing Discount Store	2	N	4.76	1.98	6.65	11.93	0.36
Free-Standing Discount Store	10	N	5.6	2.44	7.62	2.02	0.3
Free-Standing Discount Store	15	N	5.6	2.44	7.62	2.02	0.3
Free-Standing Discount Store	14	N	6.12	2.81	6.41	7.59	0
Free-Standing Discount Store	12	N	4.9	3.23	7.04	1.21	0.49
Free-Standing Discount Store	13	N	3.89	3.16	6.99	1.2	1.09
Free-Standing Discount Store	11	N	4.9	3.23	7.04	1.21	0.49
Free-Standing Discount Store	5	N	2.74	3.36	5.51	4.1	0.7
Free-Standing Discount Store	4	N	3.37	2.68	5.64	2.49	0
Free-Standing Discount Store	6	N	3.98	2.98	6.01	4.72	0.93
Free-Standing Discount Store	9	N	4.9	3.23	7.04	1.21	0.49
Free-Standing Discount Store	7	N	3.86	2.49	5.12	5.93	0.07
Free-Standing Discount Store	8	N	3.58	2.8	6.42	1	1.05
Free-Standing Discount Superstore	13	N	3.89	3.16	6.99	1.2	1.09
Free-Standing Discount Superstore	2	N	4.76	1.98	6.65	11.93	0.36
Free-Standing Discount Superstore	3	N	2.61	2.3	4.22	9.07	2.08
Free-Standing Discount Superstore	1	N	6.12	2.81	6.41	7.59	0
Free-Standing Discount Superstore	14	N	6.12	2.81	6.41	7.59	0
Free-Standing Discount Superstore	15	N	5.6	2.44	7.62	2.02	0.3
Free-Standing Discount Superstore	4	N	3.37	2.68	5.64	2.49	0
Free-Standing Discount Superstore	12	N	4.9	3.23	7.04	1.21	0.49
Free-Standing Discount Superstore	5	N	2.74	3.36	5.51	4.1	0.7
Free-Standing Discount Superstore	10	N	5.6	2.44	7.62	2.02	0.3
Free-Standing Discount Superstore	6	N	3.98	2.98	6.01	4.72	0.93
Free-Standing Discount Superstore	9	N	4.9	3.23	7.04	1.21	0.49
Free-Standing Discount Superstore	7	N	3.86	2.49	5.12	5.93	0.07
Free-Standing Discount Superstore	8	N	3.58	2.8	6.42	1	1.05
Free-Standing Discount Superstore	11	N	4.9	3.23	7.04	1.21	0.49
Discount Club	3	N	2.61	2.3	4.22	9.07	2.08
Discount Club	1	N	6.12	2.81	6.41	7.59	0
Discount Club	14	N	6.12	2.81	6.41	7.59	0
Discount Club	15	N	5.6	2.44	7.62	2.02	0.3
Discount Club	12	N	4.9	3.23	7.04	1.21	0.49
Discount Club	7	N	3.86	2.49	5.12	5.93	0.07
Discount Club	8	N	3.58	2.8	6.42	1	1.05
Discount Club	10	N	5.6	2.44	7.62	2.02	0.3
Discount Club	6	N	3.98	2.98	6.01	4.72	0.93
Discount Club	5	N	2.74	3.36	5.51	4.1	0.7
Discount Club	11	N	4.9	3.23	7.04	1.21	0.49
Discount Club	13	N	3.89	3.16	6.99	1.2	1.09
Discount Club	9	N	4.9	3.23	7.04	1.21	0.49
Discount Club	2	N	4.76	1.98	6.65	11.93	0.36
Discount Club	4	N	3.37	2.68	5.64	2.49	0
Regional Shopping Center	14	N	6.12	2.81	6.41	7.59	0
Regional Shopping Center	11	N	4.9	3.23	7.04	1.21	0.49
Regional Shopping Center	15	N	5.6	2.44	7.62	2.02	0.3
Regional Shopping Center	1	N	6.12	2.81	6.41	7.59	0
Regional Shopping Center	5	N	2.74	3.36	5.51	4.1	0.7
Regional Shopping Center	4	N	3.37	2.68	5.64	2.49	0
Regional Shopping Center	8	N	3.58	2.8	6.42	1	1.05
Regional Shopping Center	9	N	4.9	3.23	7.04	1.21	0.49
Regional Shopping Center	7	N	3.86	2.49	5.12	5.93	0.07
Regional Shopping Center	3	N	2.61	2.3	4.22	9.07	2.08
Regional Shopping Center	6	N	3.98	2.98	6.01	4.72	0.93
Regional Shopping Center	10	N	5.6	2.44	7.62	2.02	0.3
Regional Shopping Center	12	N	4.9	3.23	7.04	1.21	0.49
Regional Shopping Center	13	N	3.89	3.16	6.99	1.2	1.09
Regional Shopping Center	2	N	4.76	1.98	6.65	11.93	0.36
Electronic Superstore	2	N	4.76	1.98	6.65	11.93	0.36
Electronic Superstore	6	N	3.98	2.98	6.01	4.72	0.93

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Electronic Superstore	12	N	4.9	3.23	7.04	1.21	0.49
Electronic Superstore	14	N	6.12	2.81	6.41	7.59	0
Electronic Superstore	3	N	2.61	2.3	4.22	9.07	2.08
Electronic Superstore	7	N	3.86	2.49	5.12	5.93	0.07
Electronic Superstore	10	N	5.6	2.44	7.62	2.02	0.3
Electronic Superstore	1	N	6.12	2.81	6.41	7.59	0
Electronic Superstore	11	N	4.9	3.23	7.04	1.21	0.49
Electronic Superstore	15	N	5.6	2.44	7.62	2.02	0.3
Electronic Superstore	5	N	2.74	3.36	5.51	4.1	0.7
Electronic Superstore	9	N	4.9	3.23	7.04	1.21	0.49
Electronic Superstore	8	N	3.58	2.8	6.42	1	1.05
Electronic Superstore	13	N	3.89	3.16	6.99	1.2	1.09
Electronic Superstore	4	N	3.37	2.68	5.64	2.49	0
Home Improvement Superstore	8	N	3.58	2.8	6.42	1	1.05
Home Improvement Superstore	11	N	4.9	3.23	7.04	1.21	0.49
Home Improvement Superstore	14	N	6.12	2.81	6.41	7.59	0
Home Improvement Superstore	9	N	4.9	3.23	7.04	1.21	0.49
Home Improvement Superstore	10	N	5.6	2.44	7.62	2.02	0.3
Home Improvement Superstore	6	N	3.98	2.98	6.01	4.72	0.93
Home Improvement Superstore	2	N	4.76	1.98	6.65	11.93	0.36
Home Improvement Superstore	15	N	5.6	2.44	7.62	2.02	0.3
Home Improvement Superstore	4	N	3.37	2.68	5.64	2.49	0
Home Improvement Superstore	12	N	4.9	3.23	7.04	1.21	0.49
Home Improvement Superstore	3	N	2.61	2.3	4.22	9.07	2.08
Home Improvement Superstore	13	N	3.89	3.16	6.99	1.2	1.09
Home Improvement Superstore	5	N	2.74	3.36	5.51	4.1	0.7
Home Improvement Superstore	1	N	6.12	2.81	6.41	7.59	0
Home Improvement Superstore	7	N	3.86	2.49	5.12	5.93	0.07
Strip Mall	2	N	4.76	1.98	6.65	11.93	0.36
Strip Mall	9	N	4.9	3.23	7.04	1.21	0.49
Strip Mall	11	N	4.9	3.23	7.04	1.21	0.49
Strip Mall	12	N	4.9	3.23	7.04	1.21	0.49
Strip Mall	10	N	5.6	2.44	7.62	2.02	0.3
Strip Mall	3	N	2.61	2.3	4.22	9.07	2.08
Strip Mall	7	N	3.86	2.49	5.12	5.93	0.07
Strip Mall	1	N	6.12	2.81	6.41	7.59	0
Strip Mall	8	N	3.58	2.8	6.42	1	1.05
Strip Mall	4	N	3.37	2.68	5.64	2.49	0
Strip Mall	5	N	2.74	3.36	5.51	4.1	0.7
Strip Mall	13	N	3.89	3.16	6.99	1.2	1.09
Strip Mall	6	N	3.98	2.98	6.01	4.72	0.93
Strip Mall	14	N	6.12	2.81	6.41	7.59	0
Strip Mall	15	N	5.6	2.44	7.62	2.02	0.3
Hardware/Paint Store	2	N	4.76	1.98	6.65	11.93	0.36
Hardware/Paint Store	6	N	3.98	2.98	6.01	4.72	0.93
Hardware/Paint Store	13	N	3.89	3.16	6.99	1.2	1.09
Hardware/Paint Store	12	N	4.9	3.23	7.04	1.21	0.49
Hardware/Paint Store	10	N	5.6	2.44	7.62	2.02	0.3
Hardware/Paint Store	11	N	4.9	3.23	7.04	1.21	0.49
Hardware/Paint Store	8	N	3.58	2.8	6.42	1	1.05
Hardware/Paint Store	7	N	3.86	2.49	5.12	5.93	0.07
Hardware/Paint Store	9	N	4.9	3.23	7.04	1.21	0.49
Hardware/Paint Store	5	N	2.74	3.36	5.51	4.1	0.7
Hardware/Paint Store	14	N	6.12	2.81	6.41	7.59	0
Hardware/Paint Store	1	N	6.12	2.81	6.41	7.59	0
Hardware/Paint Store	4	N	3.37	2.68	5.64	2.49	0
Hardware/Paint Store	3	N	2.61	2.3	4.22	9.07	2.08
Hardware/Paint Store	15	N	5.6	2.44	7.62	2.02	0.3
Supermarket	8	N	5.76	25.23	9.7	10.47	10.6
Supermarket	11	N	5.4	25.88	7.89	10.35	12.24
Supermarket	2	N	7.03	26.2	9.26	41.05	0
Supermarket	6	N	6.97	25.85	9.88	16.86	9.38
Supermarket	13	N	3.97	25.54	7.79	10.21	15.42
Supermarket	15	N	7.42	22.82	9.1	13.31	6.61
Supermarket	12	N	5.4	25.88	7.89	10.35	12.24
Supermarket	7	N	4.88	25.36	9.25	8.1	0.95
Supermarket	1	N	2.88	25.04	7.59	25.83	1.18
Supermarket	5	N	3.32	27.24	8.31	25.82	12.69
Supermarket	4	N	4.99	30.13	7.65	17.56	5.79
Supermarket	3	N	4.77	22.51	7.39	15.57	14.03

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Supermarket	9	N	5.4	25.88	7.89	10.35	12.24
Supermarket	14	N	2.88	25.04	7.59	25.83	1.18
Supermarket	10	N	7.42	22.82	9.1	13.31	6.61
Convenience Market (24 hour)	9	N	4.9	3.23	7.04	1.21	0.49
Convenience Market (24 hour)	7	N	3.86	2.49	5.12	5.93	0.07
Convenience Market (24 hour)	8	N	3.58	2.8	6.42	1	1.05
Convenience Market (24 hour)	6	N	3.98	2.98	6.01	4.72	0.93
Convenience Market (24 hour)	12	N	4.9	3.23	7.04	1.21	0.49
Convenience Market (24 hour)	14	N	6.12	2.81	6.41	7.59	0
Convenience Market (24 hour)	13	N	3.89	3.16	6.99	1.2	1.09
Convenience Market (24 hour)	2	N	4.76	1.98	6.65	11.93	0.36
Convenience Market (24 hour)	15	N	5.6	2.44	7.62	2.02	0.3
Convenience Market (24 hour)	3	N	2.61	2.3	4.22	9.07	2.08
Convenience Market (24 hour)	10	N	5.6	2.44	7.62	2.02	0.3
Convenience Market (24 hour)	1	N	6.12	2.81	6.41	7.59	0
Convenience Market (24 hour)	5	N	2.74	3.36	5.51	4.1	0.7
Convenience Market (24 hour)	11	N	4.9	3.23	7.04	1.21	0.49
Convenience Market (24 hour)	4	N	3.37	2.68	5.64	2.49	0
Convenience Market with Gas Pumps	11	N	4.9	3.23	7.04	1.21	0.49
Convenience Market with Gas Pumps	5	N	2.74	3.36	5.51	4.1	0.7
Convenience Market with Gas Pumps	4	N	3.37	2.68	5.64	2.49	0
Convenience Market with Gas Pumps	6	N	3.98	2.98	6.01	4.72	0.93
Convenience Market with Gas Pumps	9	N	4.9	3.23	7.04	1.21	0.49
Convenience Market with Gas Pumps	7	N	3.86	2.49	5.12	5.93	0.07
Convenience Market with Gas Pumps	8	N	3.58	2.8	6.42	1	1.05
Convenience Market with Gas Pumps	12	N	4.9	3.23	7.04	1.21	0.49
Convenience Market with Gas Pumps	13	N	3.89	3.16	6.99	1.2	1.09
Convenience Market with Gas Pumps	2	N	4.76	1.98	6.65	11.93	0.36
Convenience Market with Gas Pumps	3	N	2.61	2.3	4.22	9.07	2.08
Convenience Market with Gas Pumps	1	N	6.12	2.81	6.41	7.59	0
Convenience Market with Gas Pumps	15	N	5.6	2.44	7.62	2.02	0.3
Convenience Market with Gas Pumps	14	N	6.12	2.81	6.41	7.59	0
Convenience Market with Gas Pumps	10	N	5.6	2.44	7.62	2.02	0.3
Automobile Care Center	5	N	1.48	3.36	3.43	18.78	6.9
Automobile Care Center	9	N	2.75	5.75	3.55	14.36	4.45
Automobile Care Center	2	N	2.02	4.2	3.01	19.55	0.06
Automobile Care Center	4	N	1.81	3.7	3.52	20.74	6.67
Automobile Care Center	13	N	1.48	4.27	3.25	4.54	7.25
Automobile Care Center	11	N	2.75	5.75	3.55	14.36	4.45
Automobile Care Center	1	N	0.76	1.85	2.12	3.37	0.31
Automobile Care Center	12	N	2.75	5.75	3.55	14.36	4.45
Automobile Care Center	14	N	0.76	1.85	2.12	3.37	0.31
Automobile Care Center	10	N	2.69	5.02	3.36	16.16	17.13
Automobile Care Center	6	N	4.17	7.2	5.19	24.61	12.42
Automobile Care Center	7	N	0.49	1.31	0.84	17.55	0.12
Automobile Care Center	8	N	1.99	3.83	3.42	14.78	6.86
Automobile Care Center	3	N	2.39	4.16	3.11	17.92	3.84
Automobile Care Center	15	N	2.69	5.02	3.36	16.16	17.13
Gasoline/Service Station	11	N	2.75	5.75	3.55	14.36	4.45
Gasoline/Service Station	1	N	0.76	1.85	2.12	3.37	0.31
Gasoline/Service Station	4	N	1.81	3.7	3.52	20.74	6.67
Gasoline/Service Station	5	N	1.48	3.36	3.43	18.78	6.9
Gasoline/Service Station	6	N	4.17	7.2	5.19	24.61	12.42
Gasoline/Service Station	13	N	1.48	4.27	3.25	4.54	7.25
Gasoline/Service Station	15	N	2.69	5.02	3.36	16.16	17.13
Gasoline/Service Station	2	N	2.02	4.2	3.01	19.55	0.06
Gasoline/Service Station	14	N	0.76	1.85	2.12	3.37	0.31
Gasoline/Service Station	3	N	2.39	4.16	3.11	17.92	3.84
Gasoline/Service Station	7	N	0.49	1.31	0.84	17.55	0.12
Gasoline/Service Station	10	N	2.69	5.02	3.36	16.16	17.13
Gasoline/Service Station	8	N	1.99	3.83	3.42	14.78	6.86
Gasoline/Service Station	9	N	2.75	5.75	3.55	14.36	4.45
Gasoline/Service Station	12	N	2.75	5.75	3.55	14.36	4.45
Bank (with Drive-Through)	15	N	2.69	5.02	3.36	16.16	17.13
Bank (with Drive-Through)	12	N	2.75	5.75	3.55	14.36	4.45
Bank (with Drive-Through)	8	N	1.99	3.83	3.42	14.78	6.86
Bank (with Drive-Through)	6	N	4.17	7.2	5.19	24.61	12.42
Bank (with Drive-Through)	3	N	2.39	4.16	3.11	17.92	3.84
Bank (with Drive-Through)	11	N	2.75	5.75	3.55	14.36	4.45
Bank (with Drive-Through)	2	N	2.02	4.2	3.01	19.55	0.06

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Bank (with Drive-Through)	9	N	2.75	5.75	3.55	14.36	4.45
Bank (with Drive-Through)	10	N	2.69	5.02	3.36	16.16	17.13
Bank (with Drive-Through)	5	N	1.48	3.36	3.43	18.78	6.9
Bank (with Drive-Through)	4	N	1.81	3.7	3.52	20.74	6.67
Bank (with Drive-Through)	14	N	0.76	1.85	2.12	3.37	0.31
Bank (with Drive-Through)	13	N	1.48	4.27	3.25	4.54	7.25
Bank (with Drive-Through)	1	N	0.76	1.85	2.12	3.37	0.31
Bank (with Drive-Through)	7	N	0.49	1.31	0.84	17.55	0.12
General Office Building	13	N	5.69	4.97	4.33	16.83	4.2
General Office Building	11	N	5.62	4.62	4.29	10.54	0.39
General Office Building	5	N	5.01	4.8	4.07	19.28	1.01
General Office Building	8	N	5.76	4.94	4.92	9.04	0.55
General Office Building	3	N	3.2	3.58	3.34	13.44	0.28
General Office Building	6	N	6.08	5.75	4.21	13.07	0.68
General Office Building	15	N	3.75	2.79	4.15	3.65	0
General Office Building	2	N	3.93	3.62	3.62	16.83	0.47
General Office Building	1	N	4.44	3.98	3.93	20.56	0
General Office Building	10	N	3.75	2.79	4.15	3.65	0
General Office Building	12	N	5.62	4.62	4.29	10.54	0.39
General Office Building	9	N	5.62	4.62	4.29	10.54	0.39
General Office Building	4	N	7.46	7.84	4.41	17.16	0.06
General Office Building	14	N	4.44	3.98	3.93	20.56	0
General Office Building	7	N	3.53	3.31	4.28	16.95	1.08
Office Park	15	N	3.75	2.6	4.8	3.07	0
Office Park	12	N	6.86	4.79	4.25	10.1	0.19
Office Park	11	N	6.86	4.79	4.25	10.1	0.19
Office Park	1	N	1.69	2.42	4.19	18.16	0
Office Park	8	N	6.59	5.6	4.98	11.2	0.73
Office Park	10	N	3.75	2.6	4.8	3.07	0
Office Park	14	N	1.69	2.42	4.19	18.16	0
Office Park	5	N	5.22	4.81	3.95	18.35	1.17
Office Park	13	N	7.16	6.01	4.43	27	6.68
Office Park	4	N	8.9	8.4	4.4	22.14	0.08
Office Park	2	N	3.66	4.35	3.64	11.48	0
Office Park	6	N	7.05	6.47	4.54	15.77	0.98
Office Park	7	N	4.84	3.76	5.75	38.81	0.13
Office Park	3	N	4.37	4.49	4.09	23.11	0.82
Office Park	9	N	6.86	4.79	4.25	10.1	0.19
Research & Development	11	N	2.75	5.75	3.55	14.36	4.45
Research & Development	7	N	0.49	1.31	0.84	17.55	0.12
Research & Development	15	N	2.69	5.02	3.36	16.16	17.13
Research & Development	9	N	2.75	5.75	3.55	14.36	4.45
Research & Development	13	N	1.48	4.27	3.25	4.54	7.25
Research & Development	8	N	1.99	3.83	3.42	14.78	6.86
Research & Development	1	N	0.76	1.85	2.12	3.37	0.31
Research & Development	10	N	2.69	5.02	3.36	16.16	17.13
Research & Development	3	N	2.39	4.16	3.11	17.92	3.84
Research & Development	12	N	2.75	5.75	3.55	14.36	4.45
Research & Development	6	N	4.17	7.2	5.19	24.61	12.42
Research & Development	5	N	1.48	3.36	3.43	18.78	6.9
Research & Development	14	N	0.76	1.85	2.12	3.37	0.31
Research & Development	2	N	2.02	4.2	3.01	19.55	0.06
Research & Development	4	N	1.81	3.7	3.52	20.74	6.67
Government Office Building	1	N	4.44	3.98	3.93	20.56	0
Government Office Building	11	N	5.62	4.62	4.29	10.54	0.39
Government Office Building	13	N	5.69	4.97	4.33	16.83	4.2
Government Office Building	7	N	3.53	3.31	4.28	16.95	1.08
Government Office Building	12	N	5.62	4.62	4.29	10.54	0.39
Government Office Building	10	N	3.75	2.79	4.15	3.65	0
Government Office Building	5	N	5.01	4.8	4.07	19.28	1.01
Government Office Building	14	N	4.44	3.98	3.93	20.56	0
Government Office Building	3	N	3.2	3.58	3.34	13.44	0.28
Government Office Building	9	N	5.62	4.62	4.29	10.54	0.39
Government Office Building	8	N	5.76	4.94	4.92	9.04	0.55
Government Office Building	4	N	7.46	7.84	4.41	17.16	0.06
Government Office Building	15	N	3.75	2.79	4.15	3.65	0
Government Office Building	6	N	6.08	5.75	4.21	13.07	0.68
Government Office Building	2	N	3.93	3.62	3.62	16.83	0.47
Government (Civic Center)	1	N	4.44	3.98	3.93	20.56	0
Government (Civic Center)	6	N	6.08	5.75	4.21	13.07	0.68

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Government (Civic Center)	14	N	4.44	3.98	3.93	20.56	0
Government (Civic Center)	13	N	5.69	4.97	4.33	16.83	4.2
Government (Civic Center)	2	N	3.93	3.62	3.62	16.83	0.47
Government (Civic Center)	15	N	3.75	2.79	4.15	3.65	0
Government (Civic Center)	12	N	5.62	4.62	4.29	10.54	0.39
Government (Civic Center)	4	N	7.46	7.84	4.41	17.16	0.06
Government (Civic Center)	9	N	5.62	4.62	4.29	10.54	0.39
Government (Civic Center)	8	N	5.76	4.94	4.92	9.04	0.55
Government (Civic Center)	7	N	3.53	3.31	4.28	16.95	1.08
Government (Civic Center)	10	N	3.75	2.79	4.15	3.65	0
Government (Civic Center)	11	N	5.62	4.62	4.29	10.54	0.39
Government (Civic Center)	3	N	3.2	3.58	3.34	13.44	0.28
Government (Civic Center)	5	N	5.01	4.8	4.07	19.28	1.01
Pharmacy/Drugstore with Drive Thru	7	N	3.86	2.49	5.12	5.93	0.07
Pharmacy/Drugstore with Drive Thru	11	N	4.9	3.23	7.04	1.21	0.49
Pharmacy/Drugstore with Drive Thru	9	N	4.9	3.23	7.04	1.21	0.49
Pharmacy/Drugstore with Drive Thru	14	N	6.12	2.81	6.41	7.59	0
Pharmacy/Drugstore with Drive Thru	10	N	5.6	2.44	7.62	2.02	0.3
Pharmacy/Drugstore with Drive Thru	5	N	2.74	3.36	5.51	4.1	0.7
Pharmacy/Drugstore with Drive Thru	6	N	3.98	2.98	6.01	4.72	0.93
Pharmacy/Drugstore with Drive Thru	13	N	3.89	3.16	6.99	1.2	1.09
Pharmacy/Drugstore with Drive Thru	15	N	5.6	2.44	7.62	2.02	0.3
Pharmacy/Drugstore with Drive Thru	4	N	3.37	2.68	5.64	2.49	0
Pharmacy/Drugstore with Drive Thru	12	N	4.9	3.23	7.04	1.21	0.49
Pharmacy/Drugstore with Drive Thru	2	N	4.76	1.98	6.65	11.93	0.36
Pharmacy/Drugstore with Drive Thru	3	N	2.61	2.3	4.22	9.07	2.08
Pharmacy/Drugstore with Drive Thru	8	N	3.58	2.8	6.42	1	1.05
Pharmacy/Drugstore with Drive Thru	1	N	6.12	2.81	6.41	7.59	0
Pharmacy/Drugstore w/o Drive Thru	9	N	4.9	3.23	7.04	1.21	0.49
Pharmacy/Drugstore w/o Drive Thru	7	N	3.86	2.49	5.12	5.93	0.07
Pharmacy/Drugstore w/o Drive Thru	4	N	3.37	2.68	5.64	2.49	0
Pharmacy/Drugstore w/o Drive Thru	11	N	4.9	3.23	7.04	1.21	0.49
Pharmacy/Drugstore w/o Drive Thru	10	N	5.6	2.44	7.62	2.02	0.3
Pharmacy/Drugstore w/o Drive Thru	5	N	2.74	3.36	5.51	4.1	0.7
Pharmacy/Drugstore w/o Drive Thru	2	N	4.76	1.98	6.65	11.93	0.36
Pharmacy/Drugstore w/o Drive Thru	6	N	3.98	2.98	6.01	4.72	0.93
Pharmacy/Drugstore w/o Drive Thru	14	N	6.12	2.81	6.41	7.59	0
Pharmacy/Drugstore w/o Drive Thru	1	N	6.12	2.81	6.41	7.59	0
Pharmacy/Drugstore w/o Drive Thru	12	N	4.9	3.23	7.04	1.21	0.49
Pharmacy/Drugstore w/o Drive Thru	8	N	3.58	2.8	6.42	1	1.05
Pharmacy/Drugstore w/o Drive Thru	13	N	3.89	3.16	6.99	1.2	1.09
Pharmacy/Drugstore w/o Drive Thru	15	N	5.6	2.44	7.62	2.02	0.3
Pharmacy/Drugstore w/o Drive Thru	3	N	2.61	2.3	4.22	9.07	2.08
Medical Office Building	2	N	3.93	3.62	3.62	16.83	0.47
Medical Office Building	13	N	5.69	4.97	4.33	16.83	4.2
Medical Office Building	1	N	4.44	3.98	3.93	20.56	0
Medical Office Building	9	N	5.62	4.62	4.29	10.54	0.39
Medical Office Building	4	N	7.46	7.84	4.41	17.16	0.06
Medical Office Building	11	N	5.62	4.62	4.29	10.54	0.39
Medical Office Building	15	N	3.75	2.79	4.15	3.65	0
Medical Office Building	12	N	5.62	4.62	4.29	10.54	0.39
Medical Office Building	10	N	3.75	2.79	4.15	3.65	0
Medical Office Building	7	N	3.53	3.31	4.28	16.95	1.08
Medical Office Building	3	N	3.2	3.58	3.34	13.44	0.28
Medical Office Building	6	N	6.08	5.75	4.21	13.07	0.68
Medical Office Building	5	N	5.01	4.8	4.07	19.28	1.01
Medical Office Building	14	N	4.44	3.98	3.93	20.56	0
Medical Office Building	8	N	5.76	4.94	4.92	9.04	0.55
Hospital	7	N	4.36	4.96	4.24	24.73	1.9
Hospital	12	N	10.44	7.55	5.6	55.22	9.82
Hospital	9	N	10.44	7.55	5.6	55.22	9.82
Hospital	8	N	7.35	4.33	4.76	51.4	9.03
Hospital	2	N	5.69	5.64	4.79	60.86	23.87
Hospital	1	N	4.52	5.35	3.65	9.23	0
Hospital	4	N	9.49	6.46	5.09	93.82	16.57
Hospital	10	N	8.75	5.56	4.79	69.84	6.03
Hospital	5	N	6.78	5.52	4.48	85.32	15.8
Hospital	3	N	5.86	3.96	3.89	34.95	7.64
Hospital	15	N	8.75	5.56	4.79	69.84	6.03
Hospital	11	N	10.44	7.55	5.6	55.22	9.82

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Hospital	14	N	4.52	5.35	3.65	9.23	0
Hospital	6	N	9.62	6.17	5.24	58.2	9.61
Hospital	13	N	6.68	5.87	4.76	51.31	6.92
Unrefrigerated Warehouse-No Rail	9	N	0.79	1.34	2.23	0.88	0.03
Unrefrigerated Warehouse-No Rail	14	N	0	0	0	0	0
Unrefrigerated Warehouse-No Rail	7	N	0	0	0	0	0
Unrefrigerated Warehouse-No Rail	15	N	0.45	0.82	1.75	2.11	0.03
Unrefrigerated Warehouse-No Rail	8	N	0.72	1.61	2.16	4.08	0.05
Unrefrigerated Warehouse-No Rail	4	N	0.39	1.07	2.39	3.58	0.07
Unrefrigerated Warehouse-No Rail	1	N	0	0	0	0	0
Unrefrigerated Warehouse-No Rail	11	N	0.79	1.34	2.23	0.88	0.03
Unrefrigerated Warehouse-No Rail	6	N	0.32	1.36	1.76	0.52	0
Unrefrigerated Warehouse-No Rail	3	N	1.27	5.13	3.67	17.92	1.05
Unrefrigerated Warehouse-No Rail	2	N	0.61	1.77	2.7	6.43	0
Unrefrigerated Warehouse-No Rail	13	N	1.07	1.11	1.95	1.64	0.11
Unrefrigerated Warehouse-No Rail	10	N	0.45	0.82	1.75	2.11	0.03
Unrefrigerated Warehouse-No Rail	12	N	0.79	1.34	2.23	0.88	0.03
Unrefrigerated Warehouse-No Rail	5	N	0.29	1.38	2.52	1.24	0.21
Refrigerated Warehouse-Rail	15	N	1.3	36.52	3.4	3.42	48.51
Refrigerated Warehouse-Rail	10	N	1.3	36.52	3.4	3.42	48.51
Refrigerated Warehouse-Rail	5	N	1.03	20.65	2.71	5.18	12.77
Refrigerated Warehouse-Rail	2	N	0.44	15.28	3.55	1.2	0
Refrigerated Warehouse-Rail	13	N	2.53	27.88	4.1	6.68	0.02
Refrigerated Warehouse-Rail	6	N	0.56	13.7	2.17	0.87	0.63
Refrigerated Warehouse-Rail	8	N	0.36	19.26	3.02	0.9	0.06
Refrigerated Warehouse-Rail	9	N	0.51	13.61	3.14	0.99	0.09
Refrigerated Warehouse-Rail	11	N	0.51	13.61	3.14	0.99	0.09
Refrigerated Warehouse-Rail	3	N	0.58	21.99	2.82	0.16	0
Refrigerated Warehouse-Rail	1	N	0.27	11.15	2.77	0	0
Refrigerated Warehouse-Rail	4	N	0.17	7.99	1.7	0.77	3.06
Refrigerated Warehouse-Rail	14	N	0.27	11.15	2.77	0	0
Refrigerated Warehouse-Rail	12	N	0.51	13.61	3.14	0.99	0.09
Refrigerated Warehouse-Rail	7	N	0.7	26.24	2.46	5.56	3.1
General Light Industry	4	N	1.81	3.7	3.52	20.74	6.67
General Light Industry	15	N	2.69	5.02	3.36	16.16	17.13
General Light Industry	14	N	0.76	1.85	2.12	3.37	0.31
General Light Industry	5	N	1.48	3.36	3.43	18.78	6.9
General Light Industry	10	N	2.69	5.02	3.36	16.16	17.13
General Light Industry	13	N	1.48	4.27	3.25	4.54	7.25
General Light Industry	1	N	0.76	1.85	2.12	3.37	0.31
General Light Industry	11	N	2.75	5.75	3.55	14.36	4.45
General Light Industry	6	N	4.17	7.2	5.19	24.61	12.42
General Light Industry	2	N	2.02	4.2	3.01	19.55	0.06
General Light Industry	3	N	2.39	4.16	3.11	17.92	3.84
General Light Industry	12	N	2.75	5.75	3.55	14.36	4.45
General Light Industry	9	N	2.75	5.75	3.55	14.36	4.45
General Light Industry	8	N	1.99	3.83	3.42	14.78	6.86
General Light Industry	7	N	0.49	1.31	0.84	17.55	0.12
General Heavy Industry	1	N	0.76	1.85	2.12	3.37	0.31
General Heavy Industry	13	N	1.48	4.27	3.25	4.54	7.25
General Heavy Industry	15	N	2.69	5.02	3.36	16.16	17.13
General Heavy Industry	4	N	1.81	3.7	3.52	20.74	6.67
General Heavy Industry	14	N	0.76	1.85	2.12	3.37	0.31
General Heavy Industry	2	N	2.02	4.2	3.01	19.55	0.06
General Heavy Industry	12	N	2.75	5.75	3.55	14.36	4.45
General Heavy Industry	11	N	2.75	5.75	3.55	14.36	4.45
General Heavy Industry	6	N	4.17	7.2	5.19	24.61	12.42
General Heavy Industry	8	N	1.99	3.83	3.42	14.78	6.86
General Heavy Industry	3	N	2.39	4.16	3.11	17.92	3.84
General Heavy Industry	5	N	1.48	3.36	3.43	18.78	6.9
General Heavy Industry	7	N	0.49	1.31	0.84	17.55	0.12
General Heavy Industry	10	N	2.69	5.02	3.36	16.16	17.13
General Heavy Industry	9	N	2.75	5.75	3.55	14.36	4.45
Industrial Park	11	N	5.62	4.62	4.29	10.54	0.39
Industrial Park	8	N	5.76	4.94	4.92	9.04	0.55
Industrial Park	7	N	3.53	3.31	4.28	16.95	1.08
Industrial Park	10	N	3.75	2.79	4.15	3.65	0
Industrial Park	14	N	4.44	3.98	3.93	20.56	0
Industrial Park	15	N	3.75	2.79	4.15	3.65	0
Industrial Park	3	N	3.2	3.58	3.34	13.44	0.28

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Industrial Park	13	N	5.69	4.97	4.33	16.83	4.2
Industrial Park	6	N	6.08	5.75	4.21	13.07	0.68
Industrial Park	1	N	4.44	3.98	3.93	20.56	0
Industrial Park	2	N	3.93	3.62	3.62	16.83	0.47
Industrial Park	12	N	5.62	4.62	4.29	10.54	0.39
Industrial Park	5	N	5.01	4.8	4.07	19.28	1.01
Industrial Park	4	N	7.46	7.84	4.41	17.16	0.06
Industrial Park	9	N	5.62	4.62	4.29	10.54	0.39
Manufacturing	13	N	1.48	4.27	3.25	4.54	7.25
Manufacturing	14	N	0.76	1.85	2.12	3.37	0.31
Manufacturing	4	N	1.81	3.7	3.52	20.74	6.67
Manufacturing	3	N	2.39	4.16	3.11	17.92	3.84
Manufacturing	10	N	2.69	5.02	3.36	16.16	17.13
Manufacturing	7	N	0.49	1.31	0.84	17.55	0.12
Manufacturing	8	N	1.99	3.83	3.42	14.78	6.86
Manufacturing	5	N	1.48	3.36	3.43	18.78	6.9
Manufacturing	1	N	0.76	1.85	2.12	3.37	0.31
Manufacturing	11	N	2.75	5.75	3.55	14.36	4.45
Manufacturing	9	N	2.75	5.75	3.55	14.36	4.45
Manufacturing	2	N	2.02	4.2	3.01	19.55	0.06
Manufacturing	6	N	4.17	7.2	5.19	24.61	12.42
Manufacturing	15	N	2.69	5.02	3.36	16.16	17.13
Manufacturing	12	N	2.75	5.75	3.55	14.36	4.45
Condo/Townhouse High Rise	14	N	496.55158	3125.85	1001.1	3925.90832	2951
Condo/Townhouse High Rise	15	N	749.55357	3125.85	1001.1	17654.5297	2951
Condo/Townhouse High Rise	1	Y	618.37059	3125.85	1001.1	4221.4068	2951
Condo/Townhouse High Rise	2	Y	375.02537	3125.85	1001.1	20387.955	2951
Condo/Townhouse High Rise	3	Y	671.81479	3125.85	1001.1	16254.6417	2951
Condo/Townhouse High Rise	4	Y	229.45427	3125.85	1001.1	17767.3209	2951
Condo/Townhouse High Rise	5	Y	169.04567	3125.85	1001.1	22944.3441	2951
Condo/Townhouse High Rise	6	Y	375.02537	3125.85	1001.1	20387.955	2951
Condo/Townhouse High Rise	7	Y	551.08843	3125.85	1001.1	8415.55941	2951
Condo/Townhouse High Rise	8	Y	245.59351	3126.32	1001.1	13843.1981	2951
Condo/Townhouse High Rise	9	Y	336.00202	3126.97	1001.1	12317.2416	2951
Condo/Townhouse High Rise	10	Y	933.44156	3125.85	1001.1	18983.3653	2951
Condo/Townhouse High Rise	11	Y	286.69104	3125.85	1001.1	15240.4453	3046.55
Condo/Townhouse High Rise	12	Y	336.31996	3125.85	1001.1	11138.9384	2974.44
Condo/Townhouse High Rise	13	Y	257.39514	3126.41	1001.1	11601.5936	3001.57
Condo/Townhouse High Rise	14	Y	618.37059	3125.85	1001.1	4221.4068	2951
Condo/Townhouse High Rise	15	Y	933.44156	3125.85	1001.1	18983.3653	2951
Congregate Care (Assisted Living)	1	N	222.68138	2557.38	741.44	2693.04485	1662
Congregate Care (Assisted Living)	2	N	322.47557	2554.47	741.44	8261.24759	1716.22
Congregate Care (Assisted Living)	3	N	427.66156	2553.86	741.44	9942.80422	1662
Congregate Care (Assisted Living)	4	N	226.56568	2558.55	741.44	6391.63527	1735.98
Congregate Care (Assisted Living)	5	N	312.05058	2561.86	741.44	7191.66571	1662
Congregate Care (Assisted Living)	6	N	322.47557	2554.47	741.44	8261.24759	1716.22
Congregate Care (Assisted Living)	7	N	527.22475	2553.86	741.44	12726.3372	1704.22
Congregate Care (Assisted Living)	8	N	181.82029	2555.58	741.44	6951.79613	1662
Congregate Care (Assisted Living)	9	N	246.65582	2553.86	741.44	8201.58595	1718.92
Congregate Care (Assisted Living)	10	N	559.53918	2553.86	741.44	10214.6057	1779.14
Congregate Care (Assisted Living)	11	N	185.96598	2553.86	741.44	5157.79965	1662
Congregate Care (Assisted Living)	12	N	267.11675	2553.86	741.44	5523.82106	1662
Congregate Care (Assisted Living)	13	N	160.76972	2553.86	741.44	3820.46951	1662
Congregate Care (Assisted Living)	14	N	222.68138	2557.38	741.44	2693.04485	1662
Congregate Care (Assisted Living)	15	N	559.53918	2553.86	741.44	10214.6057	1779.14
Congregate Care (Assisted Living)	1	Y	277.31181	2557.38	741.44	2895.74715	1662
Congregate Care (Assisted Living)	2	Y	401.5885	2554.47	741.44	8883.06192	1716.22
Congregate Care (Assisted Living)	3	Y	532.57978	2553.86	741.44	10691.1873	1662
Congregate Care (Assisted Living)	4	Y	282.14904	2558.55	741.44	6872.7261	1735.98
Congregate Care (Assisted Living)	5	Y	388.60595	2561.86	741.44	7732.97388	1662
Congregate Care (Assisted Living)	6	Y	401.5885	2554.47	741.44	8883.06192	1716.22
Congregate Care (Assisted Living)	7	Y	656.56881	2553.86	741.44	13684.2335	1704.22
Congregate Care (Assisted Living)	8	Y	226.42627	2555.58	741.44	7475.0496	1662
Congregate Care (Assisted Living)	9	Y	307.16789	2553.86	741.44	8818.90962	1718.92
Congregate Care (Assisted Living)	10	Y	696.81093	2553.86	741.44	10983.447	1779.14
Congregate Care (Assisted Living)	11	Y	231.58901	2553.86	741.44	5546.02113	1662
Congregate Care (Assisted Living)	12	Y	332.64851	2553.86	741.44	5939.59254	1662
Congregate Care (Assisted Living)	13	Y	200.21136	2553.86	741.44	4108.03173	1662
Congregate Care (Assisted Living)	14	Y	277.31181	2557.38	741.44	2895.74715	1662
Congregate Care (Assisted Living)	15	Y	696.81093	2553.86	741.44	10983.447	1779.14

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Mobile Home Park	1	N	480.74694	3335.73	1038.6	2863.53131	2103
Mobile Home Park	2	N	606.97135	3321.27	1038.6	5302.07733	2103
Mobile Home Park	3	N	774.68296	3329.98	1038.6	13980.9093	2174.22
Mobile Home Park	4	N	539.06608	3321.27	1038.6	14688.2957	2103
Mobile Home Park	5	N	407.38299	3321.27	1038.6	21018.0271	2103
Mobile Home Park	6	N	606.97135	3321.27	1038.6	5302.07733	2103
Mobile Home Park	7	N	661.04148	3322.99	1038.6	16212.4977	2342.76
Mobile Home Park	8	N	601.84092	3321.27	1038.6	17150.2516	2103
Mobile Home Park	9	N	535.98418	3321.27	1038.6	12298.7177	2103
Mobile Home Park	10	N	973.13461	3321.27	1038.6	19139.9163	2103
Mobile Home Park	11	N	509.37158	3321.27	1038.6	1972.5502	2103
Mobile Home Park	12	N	770.28197	3321.27	1038.6	25019.4729	2103
Mobile Home Park	13	N	662.99274	3321.27	1038.6	20078.0309	2103
Mobile Home Park	14	N	480.74694	3335.73	1038.6	2863.53131	2103
Mobile Home Park	15	N	973.13461	3321.27	1038.6	19139.9163	2103
Mobile Home Park	1	Y	598.68859	3335.73	1038.6	3079.06593	2103
Mobile Home Park	2	Y	755.87964	3321.27	1038.6	5701.15842	2103
Mobile Home Park	3	Y	964.73594	3329.98	1038.6	15033.2359	2174.22
Mobile Home Park	4	Y	671.31517	3321.27	1038.6	15793.8663	2103
Mobile Home Park	5	Y	507.32626	3321.27	1038.6	22600.0292	2103
Mobile Home Park	6	Y	755.87964	3321.27	1038.6	5701.15842	2103
Mobile Home Park	7	Y	823.21479	3322.99	1038.6	17432.7932	2342.76
Mobile Home Park	8	Y	749.49056	3321.27	1038.6	18441.1308	2103
Mobile Home Park	9	Y	667.47718	3321.27	1038.6	13224.4276	2103
Mobile Home Park	10	Y	1211.8737	3321.27	1038.6	20580.5552	2103
Mobile Home Park	11	Y	634.33572	3321.27	1038.6	2121.02172	2103
Mobile Home Park	12	Y	959.25526	3321.27	1038.6	26902.659	2103
Mobile Home Park	13	Y	825.64476	3321.27	1038.6	21589.2806	2103
Mobile Home Park	14	Y	598.68859	3335.73	1038.6	3079.06593	2103
Mobile Home Park	15	Y	1211.8737	3321.27	1038.6	20580.5552	2103
Retirement Community	1	N	496.55158	3125.85	1001.1	3925.90832	2951
Retirement Community	2	N	301.14537	3125.85	1001.1	18960.7982	2951
Retirement Community	3	N	539.46728	3125.85	1001.1	15116.8168	2951
Retirement Community	4	N	184.25178	3125.85	1001.1	16523.6084	2951
Retirement Community	5	N	135.74367	3125.85	1001.1	21338.24	2951
Retirement Community	6	N	301.14537	3125.85	1001.1	18960.7982	2951
Retirement Community	7	N	442.52401	3125.85	1001.1	7826.47025	2951
Retirement Community	8	N	197.21159	3126.32	1001.1	12874.1742	2951
Retirement Community	9	N	269.80962	3126.97	1001.1	11455.0347	2951
Retirement Community	10	N	749.55357	3125.85	1001.1	17654.5297	2951
Retirement Community	11	N	230.21291	3125.85	1001.1	14173.6141	3046.55
Retirement Community	12	N	270.06493	3125.85	1001.1	10359.2127	2974.44
Retirement Community	13	N	206.6883	3126.41	1001.1	10789.4821	3001.57
Retirement Community	14	N	496.55158	3125.85	1001.1	3925.90832	2951
Retirement Community	15	N	749.55357	3125.85	1001.1	17654.5297	2951
Retirement Community	1	Y	618.37059	3125.85	1001.1	4221.4068	2951
Retirement Community	2	Y	375.02537	3125.85	1001.1	20387.955	2951
Retirement Community	3	Y	671.81479	3125.85	1001.1	16254.6417	2951
Retirement Community	4	Y	229.45427	3125.85	1001.1	17767.3209	2951
Retirement Community	5	Y	169.04567	3125.85	1001.1	22944.3441	2951
Retirement Community	6	Y	375.02537	3125.85	1001.1	20387.955	2951
Retirement Community	7	Y	551.08843	3125.85	1001.1	8415.55941	2951
Retirement Community	8	Y	245.59351	3126.32	1001.1	13843.1981	2951
Retirement Community	9	Y	336.00202	3126.97	1001.1	12317.2416	2951
Retirement Community	10	Y	933.44156	3125.85	1001.1	18983.3653	2951
Retirement Community	11	Y	286.69104	3125.85	1001.1	15240.4453	3046.55
Retirement Community	12	Y	336.31996	3125.85	1001.1	11138.9384	2974.44
Retirement Community	13	Y	257.39514	3126.41	1001.1	11601.5936	3001.57
Retirement Community	14	Y	618.37059	3125.85	1001.1	4221.4068	2951
Retirement Community	15	Y	933.44156	3125.85	1001.1	18983.3653	2951
Single Family Housing	1	N	530.64278	5105.81	1608.84	11663.1811	6168.12
Single Family Housing	2	N	729.62065	5098.84	1608.84	26218.0119	5933.76
Single Family Housing	3	N	960.8853	5093.98	1608.84	25333.3292	6005.2
Single Family Housing	4	N	368.61369	5095.49	1608.84	29406.1009	5876.86
Single Family Housing	5	N	248.69134	5096.44	1608.84	44827.0822	6192.92
Single Family Housing	6	N	729.62065	5098.84	1608.84	26218.0119	5933.76
Single Family Housing	7	N	763.79827	5099.35	1608.84	23622.3144	6069.6
Single Family Housing	8	N	391.01854	5089.81	1608.84	23064.5017	5819
Single Family Housing	9	N	596.09668	5089.81	1608.84	23944.0203	5856.92
Single Family Housing	10	N	980.99015	5089.81	1608.84	27816.7755	5950.14

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Single Family Housing	11	N	361.41612	5089.81	1608.84	25765.9342	5819
Single Family Housing	12	N	753.66835	5089.81	1608.84	26767.5955	5819
Single Family Housing	13	N	425.61773	5089.81	1608.84	21834.4924	5819
Single Family Housing	14	N	530.64278	5105.81	1608.84	11663.1811	6168.12
Single Family Housing	15	N	980.99015	5089.81	1608.84	27816.7755	5950.14
Single Family Housing	1	Y	686.4719	5105.81	1608.84	12959.0901	6168.12
Single Family Housing	2	Y	943.88182	5098.84	1608.84	29131.1243	5933.76
Single Family Housing	3	Y	1243.0599	5093.98	1608.84	28148.1435	6005.2
Single Family Housing	4	Y	476.86118	5095.49	1608.84	32673.4454	5876.86
Single Family Housing	5	Y	321.7223	5096.44	1608.84	49807.8691	6192.92
Single Family Housing	6	Y	943.88182	5098.84	1608.84	29131.1243	5933.76
Single Family Housing	7	Y	988.09608	5099.35	1608.84	26247.0161	6069.6
Single Family Housing	8	Y	505.84546	5089.81	1608.84	25627.2242	5819
Single Family Housing	9	Y	771.14706	5089.81	1608.84	26604.467	5856.92
Single Family Housing	10	Y	1269.0688	5089.81	1608.84	30907.5283	5950.14
Single Family Housing	11	Y	467.54996	5089.81	1608.84	28628.8158	5819
Single Family Housing	12	Y	974.9914	5089.81	1608.84	29741.7728	5819
Single Family Housing	13	Y	550.60508	5089.81	1608.84	24260.5471	5819
Single Family Housing	14	Y	686.4719	5105.81	1608.84	12959.0901	6168.12
Single Family Housing	15	Y	1269.0688	5089.81	1608.84	30907.5283	5950.14
Unrefrigerated Warehouse-Rail	7	Y	0	0	0	0	0
Unrefrigerated Warehouse-Rail	10	Y	0.48	0.82	1.88	2.48	0.03
Unrefrigerated Warehouse-Rail	13	Y	1.13	1.11	2.09	1.91	0.11
Unrefrigerated Warehouse-Rail	2	Y	0.65	1.77	2.89	7.64	0
Unrefrigerated Warehouse-Rail	3	Y	1.36	5.13	3.94	17.98	1.05
Unrefrigerated Warehouse-Rail	6	Y	0.38	1.36	1.88	0.62	0
Unrefrigerated Warehouse-Rail	11	Y	0.85	1.34	2.38	1.01	0.03
Unrefrigerated Warehouse-Rail	1	Y	0	0	0	0	0
Unrefrigerated Warehouse-Rail	4	Y	0.42	1.07	2.57	4.2	0.07
Unrefrigerated Warehouse-Rail	9	Y	0.85	1.34	2.38	1.01	0.03
Unrefrigerated Warehouse-Rail	15	Y	0.48	0.82	1.88	2.48	0.03
Unrefrigerated Warehouse-Rail	14	Y	0	0	0	0	0
Unrefrigerated Warehouse-Rail	9	N	0.79	1.34	2.23	0.88	0.03
Unrefrigerated Warehouse-Rail	12	Y	0.85	1.34	2.38	1.01	0.03
Unrefrigerated Warehouse-Rail	8	Y	0.77	1.61	2.3	4.83	0.05
Unrefrigerated Warehouse-Rail	5	Y	0.31	1.38	2.69	1.43	0.21
Unrefrigerated Warehouse-Rail	5	N	0.29	1.38	2.52	1.24	0.21
Unrefrigerated Warehouse-Rail	12	N	0.79	1.34	2.23	0.88	0.03
Unrefrigerated Warehouse-Rail	10	N	0.45	0.82	1.75	2.11	0.03
Unrefrigerated Warehouse-Rail	13	N	1.07	1.11	1.95	1.64	0.11
Unrefrigerated Warehouse-Rail	2	N	0.61	1.77	2.7	6.43	0
Unrefrigerated Warehouse-Rail	3	N	1.27	5.13	3.67	17.92	1.05
Unrefrigerated Warehouse-Rail	6	N	0.32	1.36	1.76	0.52	0
Unrefrigerated Warehouse-Rail	11	N	0.79	1.34	2.23	0.88	0.03
Unrefrigerated Warehouse-Rail	1	N	0	0	0	0	0
Unrefrigerated Warehouse-Rail	4	N	0.39	1.07	2.39	3.58	0.07
Unrefrigerated Warehouse-Rail	8	N	0.72	1.61	2.16	4.08	0.05
Unrefrigerated Warehouse-Rail	15	N	0.45	0.82	1.75	2.11	0.03
Unrefrigerated Warehouse-Rail	14	N	0	0	0	0	0
Unrefrigerated Warehouse-Rail	7	N	0	0	0	0	0
Refrigerated Warehouse-No Rail	12	Y	0.55	13.61	3.35	1.08	0.09
Refrigerated Warehouse-No Rail	15	Y	1.41	36.52	3.63	3.42	48.51
Refrigerated Warehouse-No Rail	10	Y	1.41	36.52	3.63	3.42	48.51
Refrigerated Warehouse-No Rail	5	Y	1.08	20.65	2.89	5.79	12.77
Refrigerated Warehouse-No Rail	2	Y	0.46	15.28	3.8	1.32	0
Refrigerated Warehouse-No Rail	13	Y	2.64	27.88	4.39	7.02	0.02
Refrigerated Warehouse-No Rail	6	Y	0.63	13.7	2.33	0.93	0.63
Refrigerated Warehouse-No Rail	8	Y	0.38	19.26	3.22	0.96	0.06
Refrigerated Warehouse-No Rail	9	Y	0.55	13.61	3.35	1.08	0.09
Refrigerated Warehouse-No Rail	11	Y	0.55	13.61	3.35	1.08	0.09
Refrigerated Warehouse-No Rail	3	Y	0.61	21.99	3.04	0.19	0
Refrigerated Warehouse-No Rail	1	Y	0.28	11.15	2.96	0	0
Refrigerated Warehouse-No Rail	14	Y	0.28	11.15	2.96	0	0
Refrigerated Warehouse-No Rail	7	Y	0.72	26.24	2.64	6.54	3.1
Refrigerated Warehouse-No Rail	4	Y	0.19	7.99	1.82	0.8	3.06
Refrigerated Warehouse-No Rail	5	N	1.03	20.65	2.71	5.18	12.77
Refrigerated Warehouse-No Rail	7	N	0.7	26.24	2.46	5.56	3.1
Refrigerated Warehouse-No Rail	10	N	1.3	36.52	3.4	3.42	48.51
Refrigerated Warehouse-No Rail	2	N	0.44	15.28	3.55	1.2	0
Refrigerated Warehouse-No Rail	13	N	2.53	27.88	4.1	6.68	0.02

Table 8.1 Energy Use by Climate Zone and Land Use Type

Land Use Sub Type	Climate Zone	Historical	T24 Electricity	NT24 Electricity	Lighting Electricity	T24 Natural Gas	NT24 Natural Gas
			KWhr per DU or SQFT			kBtu per DU or SQFT	
Refrigerated Warehouse-No Rail	6	N	0.56	13.7	2.17	0.87	0.63
Refrigerated Warehouse-No Rail	8	N	0.36	19.26	3.02	0.9	0.06
Refrigerated Warehouse-No Rail	9	N	0.51	13.61	3.14	0.99	0.09
Refrigerated Warehouse-No Rail	3	N	0.58	21.99	2.82	0.16	0
Refrigerated Warehouse-No Rail	1	N	0.27	11.15	2.77	0	0
Refrigerated Warehouse-No Rail	4	N	0.17	7.99	1.7	0.77	3.06
Refrigerated Warehouse-No Rail	14	N	0.27	11.15	2.77	0	0
Refrigerated Warehouse-No Rail	12	N	0.51	13.61	3.14	0.99	0.09
Refrigerated Warehouse-No Rail	11	N	0.51	13.61	3.14	0.99	0.09
Refrigerated Warehouse-No Rail	15	N	1.3	36.52	3.4	3.42	48.51

Table 8.2 Natural Gas Emission Factors

Land Use Type	TOG, lb/MMBTU	ROG, lb/MMBTU	SO2, lb/MMBTU	NOX, lb/MMBTU	PB, lb/MMBTU	PM10, lb/MMBTU	PM2_5, lb/MMBTU	CO, lb/MMBTU	CO2_NBIO, lb/MMBTU	CH4, lb/MMBTU	N2O, lb/MMBTU
Residential	0.01078431	0.01078431	0.00058824	0.09215686	4.90196E-07	0.00745098	0.00745098	0.03921569	117.647059	0.0022549	0.00215686
Nonresidential	0.01078431	0.01078431	0.00058824	0.09803922	4.90196E-07	0.00745098	0.00745098	0.08235294	117.647059	0.0022549	0.00215686

Table 9.1 Water Use Rates

Land Use Sub Type	Size Metric	Indoor Water, gal/size/year[1]	Outdoor Water, gal/size/year[1]
Apartments High Rise	Dwelling Unit	65,154	41,075
Apartments Low Rise	Dwelling Unit	65,154	41,075
Apartments Mid Rise	Dwelling Unit	65,154	41,075
Arena	1000sqft	430,770	27,496
Arena	Acre	1,346,157	85,925
Automobile Care Center	1000sqft	94,081	57,663
Bank (with Drive-Through)	1000sqft	39,623	24,285
City Park	Acre		1,191,481
Condo/Townhouse	Dwelling Unit	65,154	41,075
Condo/Townhouse High Rise	Dwelling Unit	65,154	41,075
Congregate Care (Assisted Living)	Dwelling Unit	65,154	41,075
Convenience Market (24 hour)	1000sqft	74,073	45,399
Convenience Market with Gas Pumps	1000sqft	74,073	45,399
Convenience Market with Gas Pumps	Pump	10,457	6,409
Day-Care Center	1000sqft	42,890	110,287
Day-Care Center	Student	2,424	6,234
Day-Care Center	Employee	386	993
Discount Club	1000sqft	74,073	45,399
Electronic Superstore	1000sqft	74,073	45,399
Elementary School	1000sqft	28,997	74,564
Elementary School	Student	2,424	6,234
Elementary School	Employee	29,523	75,917
Fast Food Restaurant w/o Drive Thru	1000sqft	303,534	19,374
Fast Food Restaurant with Drive Thru	1000sqft	303,534	19,374
Free-Standing Discount Store	1000sqft	74,073	45,399
Free-Standing Discount Superstore	1000sqft	74,073	45,399
Gasoline/Service Station	1000sqft	94,081	57,663
General Heavy Industry	1000sqft	231,250	
General Light Industry	1000sqft	231,250	
General Office Building	1000sqft	177,734	108,934
Golf Course	Acre		1,191,481
Golf Course	Hole		8,317,850
Government (Civic Center)	1000sqft	198,660	121,759
Government Office Building	1000sqft	198,660	121,759
Hardware/Paint Store	1000sqft	74,073	45,399
health club	1000sqft	59,143	36,249
High School	1000sqft	33,205	85,383
High School	Employee	39,494	101,555
High School	Student	4,405	11,327
High Turnover (Sit Down Restaurant)	1000sqft	303,534	19,374
Home Improvement Superstore	1000sqft	74,073	45,399
Hospital	1000sqft	125,481	23,901
Hospital	Bed	89,814	17,107
Hotel	Room	25,367	2,819
Industrial Park	1000sqft	231,250	
Junior College (2yr)	1000sqft	49,049	76,718
Junior College (2yr)	Employee	58,339	91,248
Junior College (2yr)	Student	2,141	3,349
Junior High School	1000sqft	20,621	53,025
Junior High School	Student	2,424	6,234
Junior High School	Employee	24,527	63,069

Table 9.1 Water Use Rates

Land Use Sub Type	Size Metric	Indoor Water, gal/size/year[1]	Outdoor Water, gal/size/year[1]
Library	1000sqft	31,289	48,939
Library	Employee	29,219	45,702
Manufacturing	1000sqft	231,250	
Medical Office Building	1000sqft	125,481	23,901
Mobile Home Park	Dwelling Unit	65,154	41,075
Motel	Room	25,367	2,819
Movie Theater (No Matinee)	1000sqft	401,601	25,634
Movie Theater (No Matinee)	Screen	1,104,404	70,494
Movie Theater (No Matinee)	Seat	9,036	577
Office Park	1000sqft	177,734	108,934
Parking Lot	Space		
Unenclosed Parking Structure	Space		
Enclosed Parking Structure	Space		
Unenclosed Parking with Elevator	Space		
Enclosed Parking with Elevator	Space		
Parking Lot	1000sqft		
Unenclosed Parking Structure	1000sqft		
Enclosed Parking Structure	1000sqft		
Unenclosed Parking with Elevator	1000sqft		
Enclosed Parking with Elevator	1000sqft		
Other Asphalt Surfaces	1000sqft		
Other Non-Asphalt Surfaces	1000sqft		
Parking Lot	Acre		
Unenclosed Parking Structure	Acre		
Enclosed Parking Structure	Acre		
Unenclosed Parking with Elevator	Acre		
Enclosed Parking with Elevator	Acre		
Other Asphalt Surfaces	Acre		
Other Non-Asphalt Surfaces	Acre		
Pharmacy/Drugstore w/o Drive Thru	1000sqft	70,448	43,178
Pharmacy/Drugstore with Drive Thru	1000sqft	70,448	43,178
Place of Worship	1000sqft	31,289	48,939
Place of Worship	Seat	1,580	2,472
Quality Restaurant	1000sqft	303,534	19,374
Racquet Club	1000sqft	59,143	36,249
Recreational Swimming Pool	1000sqft	59,143	36,249
Refrigerated Warehouse-No Rail	1000sqft	231,250	
Refrigerated Warehouse-Rail	1000sqft	231,250	
Regional Shopping Center	1000sqft	74,073	45,399
Research & Development	1000sqft	491,694	
Retirement Community	Dwelling Unit	65,154	41,075
Single Family Housing	Dwelling Unit	65,154	41,075
Strip Mall	1000sqft	74,073	45,399
Supermarket	1000sqft	123,268	3,812
University/College (4yr)	Employee	8,222	12,860
University/College (4yr)	Student	2,141	3,349
University/College (4yr)	1000sqft	11,649	18,221
Unrefrigerated Warehouse-No Rail	1000sqft	231,250	
Unrefrigerated Warehouse-Rail	1000sqft	231,250	

1. Industrial water use is based on a work-year of 250 days per year.

Table 9.2 Water and Wastewater Electricity Intensity

Location Type	Name	Source	Supply Water	Treat Water	Distribute Water	Wastewater Treatment
			kWhr/ million gallons			
	Great Basin Valleys	1	2117	111	1272	1911
	Lake County	1	2117	111	1272	1911
	Lake Tahoe	1	2117	111	1272	1911
	Mojave Desert	2	9727	111	1272	1911
	Mountain Counties	1	2117	111	1272	1911
	North Central Coast	1	2117	111	1272	1911
	North Coast	1	2117	111	1272	1911
	Northeast Plateau	1	2117	111	1272	1911
	Sacramento Valley	1	2117	111	1272	1911
	Salton Sea	2	9727	111	1272	1911
	San Diego	2	9727	111	1272	1911
	San Francisco Bay Area	1	2117	111	1272	1911
	San Joaquin Valley	1	2117	111	1272	1911
	South Central Coast	1	2117	111	1272	1911
Air Basin	South Coast	2	9727	111	1272	1911
	Amador County APCD	1	2117	111	1272	1911
	Antelope Valley APCD	2	9727	111	1272	1911
	Bay Area AQMD	1	2117	111	1272	1911
	Butte County AQMD	1	2117	111	1272	1911
	Calaveras County AQMD	1	2117	111	1272	1911
	Colusa County APCD	1	2117	111	1272	1911
	El Dorado County APCD	1	2117	111	1272	1911
	Feather River AQMD	1	2117	111	1272	1911
	Glenn County APCD	1	2117	111	1272	1911
	Great Basin UAPCD	1	2117	111	1272	1911
	Imperial County APCD	2	9727	111	1272	1911
	Kern County APCD	2	9727	111	1272	1911
	Lake County AQMD	1	2117	111	1272	1911
	Lassen County APCD	1	2117	111	1272	1911
	Mariposa County APCD	1	2117	111	1272	1911
	Mendocino County AQMD	1	2117	111	1272	1911
	Modoc County APCD	1	2117	111	1272	1911
	Mojave Desert AQMD	2	9727	111	1272	1911
	Monterey Bay Unified APCD	1	2117	111	1272	1911
	North Coast Unified APCD	1	2117	111	1272	1911
	Northern Sierra AQMD	1	2117	111	1272	1911
	Northern Sonoma County APCD	1	2117	111	1272	1911
	Placer County APCD	1	2117	111	1272	1911
	Sacramento Metropolitan AQMD	1	2117	111	1272	1911
	San Diego County APCD	2	9727	111	1272	1911
	San Joaquin Valley Unified APCD	1	2117	111	1272	1911
	San Luis Obispo County APCD	1	2117	111	1272	1911
	Santa Barbara County APCD	1	2117	111	1272	1911
	Shasta County AQMD	1	2117	111	1272	1911
	Siskiyou County APCD	1	2117	111	1272	1911
	South Coast AQMD	2	9727	111	1272	1911
	Tehama County APCD	1	2117	111	1272	1911
	Tuolumne County APCD	1	2117	111	1272	1911
	Ventura County APCD	2	9727	111	1272	1911
Air District	Yolo/Solano AQMD	1	2117	111	1272	1911

Table 9.2 Water and Wastewater Electricity Intensity

Location Type	Name	Source	Supply Water	Treat Water	Distribute Water	Wastewater Treatment
			kWhr/ million gallons			
	Alameda	1	2117	111	1272	1911
	Alpine	1	2117	111	1272	1911
	Amador	1	2117	111	1272	1911
	Butte	1	2117	111	1272	1911
	Calaveras	1	2117	111	1272	1911
	Colusa	1	2117	111	1272	1911
	Contra Costa	1	2117	111	1272	1911
	Del Norte	1	2117	111	1272	1911
	El Dorado-Lake Tahoe	1	2117	111	1272	1911
	El Dorado-Mountain County	1	2117	111	1272	1911
	Fresno	1	2117	111	1272	1911
	Glenn	1	2117	111	1272	1911
	Humboldt	1	2117	111	1272	1911
	Imperial	2	9727	111	1272	1911
	Inyo	2	9727	111	1272	1911
	Kern-Mojave Desert	2	9727	111	1272	1911
	Kern-San Joaquin	1	2117	111	1272	1911
	Kings	1	2117	111	1272	1911
	Lake	1	2117	111	1272	1911
	Lassen	1	2117	111	1272	1911
	Los Angeles-Mojave Desert	2	9727	111	1272	1911
	Los Angeles-South Coast	2	9727	111	1272	1911
	Madera	1	2117	111	1272	1911
	Marin	1	2117	111	1272	1911
	Mariposa	1	2117	111	1272	1911
	Mendocino-Coastal	1	2117	111	1272	1911
	Mendocino-Inland	1	2117	111	1272	1911
	Mendocino-Rural Inland North	1	2117	111	1272	1911
	Mendocino-Rural Inland South	1	2117	111	1272	1911
	Merced	1	2117	111	1272	1911
	Modoc	1	2117	111	1272	1911
	Mono	1	2117	111	1272	1911
	Monterey	1	2117	111	1272	1911
	Napa	1	2117	111	1272	1911
	Nevada	1	2117	111	1272	1911
	Orange	2	9727	111	1272	1911
	Placer-Lake Tahoe	1	2117	111	1272	1911
	Placer-Mountain Counties	1	2117	111	1272	1911
	Placer-Sacramento	1	2117	111	1272	1911
	Plumas	1	2117	111	1272	1911
	Riverside-Mojave Desert MDAQMD	2	9727	111	1272	1911
	Riverside-Mojave Desert SCAQMD	2	9727	111	1272	1911
	Riverside-Salton Sea	2	9727	111	1272	1911
	Riverside-South Coast	2	9727	111	1272	1911
	Sacramento	1	2117	111	1272	1911
	San Benito	1	2117	111	1272	1911
	San Bernardino-Mojave Desert	2	9727	111	1272	1911
	San Bernardino-South Coast	2	9727	111	1272	1911
	San Diego	2	9727	111	1272	1911
	San Francisco	1	2117	111	1272	1911
	San Joaquin	1	2117	111	1272	1911
	San Luis Obispo	1	2117	111	1272	1911
	San Mateo	1	2117	111	1272	1911
	Santa Barbara-North of Santa Ynez	1	2117	111	1272	1911
	Santa Barbara-South of Santa Ynez Range	1	2117	111	1272	1911
	Santa Clara	1	2117	111	1272	1911
	Santa Cruz	1	2117	111	1272	1911
	Shasta	1	2117	111	1272	1911
	Sierra	1	2117	111	1272	1911
	Siskiyou	1	2117	111	1272	1911

Table 9.2 Water and Wastewater Electricity Intensity

Location Type	Name	Source	Supply Water	Treat Water	Distribute Water	Wastewater Treatment
			kWhr/ million gallons			
	Solano-San Francisco	1	2117	111	1272	1911
	Solano-San Joaquin	1	2117	111	1272	1911
	Sonoma-North Coast	1	2117	111	1272	1911
	Sonoma-San Francisco	1	2117	111	1272	1911
	Stanislaus	1	2117	111	1272	1911
	Sutter	1	2117	111	1272	1911
	Tehama	1	2117	111	1272	1911
	Trinity	1	2117	111	1272	1911
	Tulare	1	2117	111	1272	1911
	Tuolumne	1	2117	111	1272	1911
	Ventura	2	9727	111	1272	1911
	Yolo	1	2117	111	1272	1911
Counties	Yuba	1	2117	111	1272	1911
Statewide	Statewide	3	5922	111	1272	1911

Notes:

1. Data is based on the value for Northern California reported in the CEC 2006 Report " Refining Estimates of Water-Related Energy Use in California."

2. Data is based on the value for Southern California reported in the CEC 2006 Report " Refining Estimates of Water-Related Energy Use in California."

3. Data is based on the average of the Northern and Southern California values reported in the CEC 2006 Report " Refining Estimates of Water-Related Energy Use in California."

Table 9.3 Percent of Wastewater Distribution Types

Location Type	Name	Source	Septic Tank	Aerobic	Anaerobic, Facultative Lagoons	Anaerobic, Combustion of Gas	Anaerobic, Cogeneration of Gas
Air Basin	Great Basin Valleys	1	10.33	87.46	2.21	100	0
	Lake County	1	10.33	87.46	2.21	100	0
	Lake Tahoe	1	10.33	87.46	2.21	100	0
	Mojave Desert	1	10.33	87.46	2.21	100	0
	Mountain Counties	1	10.33	87.46	2.21	100	0
	North Central Coast	1	10.33	87.46	2.21	100	0
	North Coast	1	10.33	87.46	2.21	100	0
	Northeast Plateau	1	10.33	87.46	2.21	100	0
	Sacramento Valley	1	10.33	87.46	2.21	100	0
	Salton Sea	1	10.33	87.46	2.21	100	0
	San Diego	1	10.33	87.46	2.21	100	0
	San Diego	1	10.33	87.46	2.21	100	0
	San Francisco Bay Area	1	10.33	87.46	2.21	100	0
	San Joaquin Valley	1	10.33	87.46	2.21	100	0
	South Central Coast	1	10.33	87.46	2.21	100	0
	South Coast	1	10.33	87.46	2.21	100	0
Air District	Amador County APCD	1	10.33	87.46	2.21	100	0
	Antelope Valley APCD	1	10.33	87.46	2.21	100	0
	Bay Area AQMD	1	10.33	87.46	2.21	100	0
	Butte County AQMD	1	10.33	87.46	2.21	100	0
	Calaveras County AQMD	1	10.33	87.46	2.21	100	0
	Colusa County APCD	1	10.33	87.46	2.21	100	0
	El Dorado County APCD	1	10.33	87.46	2.21	100	0
	Feather River AQMD	1	10.33	87.46	2.21	100	0
	Glenn County APCD	1	10.33	87.46	2.21	100	0
	Great Basin UAPCD	1	10.33	87.46	2.21	100	0
	Imperial County APCD	1	10.33	87.46	2.21	100	0
	Kern County APCD	1	10.33	87.46	2.21	100	0
	Lake County AQMD	1	10.33	87.46	2.21	100	0
	Lassen County APCD	1	10.33	87.46	2.21	100	0
	Mariposa County APCD	1	10.33	87.46	2.21	100	0
	Mendocino County AQMD	1	10.33	87.46	2.21	100	0
	Modoc County APCD	1	10.33	87.46	2.21	100	0
	Mojave Desert AQMD	1	10.33	87.46	2.21	100	0
	Monterey Bay Unified APCD	1	10.33	87.46	2.21	100	0
	North Coast Unified APCD	1	10.33	87.46	2.21	100	0
	Northern Sierra AQMD	1	10.33	87.46	2.21	100	0
	Northern Sonoma County APCD	1	10.33	87.46	2.21	100	0
	Placer County APCD	1	10.33	87.46	2.21	100	0
	Sacramento Metropolitan AQMD	2	0	100	0	15	85
	San Diego County APCD	1	10.33	87.46	2.21	100	0
	San Joaquin Valley Unified APCD	1	10.33	87.46	2.21	100	0
	San Luis Obispo County APCD	1	10.33	87.46	2.21	100	0
	Santa Barbara County APCD	2	0	100	0	100	0
	Shasta County AQMD	1	10.33	87.46	2.21	100	0
	Siskiyou County APCD	1	10.33	87.46	2.21	100	0
	South Coast AQMD	1	10.33	87.46	2.21	100	0
	Tehama County APCD	2	67	33	0	100	0
	Tuolumne County APCD	1	10.33	87.46	2.21	100	0
	Ventura County APCD	1	10.33	87.46	2.21	100	0
	Yolo/Solano AQMD	1	10.33	87.46	2.21	100	0
	Alameda	1	10.33	87.46	2.21	100	0
	Alpine	1	10.33	87.46	2.21	100	0
	Amador	1	10.33	87.46	2.21	100	0
	Butte	1	10.33	87.46	2.21	100	0
	Calaveras	1	10.33	87.46	2.21	100	0
	Colusa	1	10.33	87.46	2.21	100	0
	Contra Costa	1	10.33	87.46	2.21	100	0
	Del Norte	1	10.33	87.46	2.21	100	0
	El Dorado-Lake Tahoe	1	10.33	87.46	2.21	100	0
	El Dorado-Mountain County	1	10.33	87.46	2.21	100	0
	Fresno	1	10.33	87.46	2.21	100	0
	Glenn	1	10.33	87.46	2.21	100	0

Table 9.3 Percent of Wastewater Distribution Types

Location Type	Name	Source	Septic Tank	Aerobic	Anaerobic, Facultative Lagoons	Anaerobic, Combustion of Gas	Anaerobic, Cogeneration of Gas
Counties	Humboldt	1	10.33	87.46	2.21	100	0
	Imperial	1	10.33	87.46	2.21	100	0
	Inyo	1	10.33	87.46	2.21	100	0
	Kern-Mojave Desert	1	10.33	87.46	2.21	100	0
	Kern-San Joaquin	1	10.33	87.46	2.21	100	0
	Kings	1	10.33	87.46	2.21	100	0
	Lake	1	10.33	87.46	2.21	100	0
	Lassen	1	10.33	87.46	2.21	100	0
	Los Angeles-Mojave Desert	1	10.33	87.46	2.21	100	0
	Los Angeles-South Coast	1	10.33	87.46	2.21	100	0
	Madera	1	10.33	87.46	2.21	100	0
	Marin	1	10.33	87.46	2.21	100	0
	Mariposa	1	10.33	87.46	2.21	100	0
	Mendocino-Coastal	1	10.33	87.46	2.21	100	0
	Mendocino-Inland	1	10.33	87.46	2.21	100	0
	Mendocino-Rural Inland North	1	10.33	87.46	2.21	100	0
	Mendocino-Rural Inland South	1	10.33	87.46	2.21	100	0
	Merced	1	10.33	87.46	2.21	100	0
	Modoc	1	10.33	87.46	2.21	100	0
	Mono	1	10.33	87.46	2.21	100	0
	Monterey	1	10.33	87.46	2.21	100	0
	Napa	1	10.33	87.46	2.21	100	0
	Nevada	1	10.33	87.46	2.21	100	0
	Orange	1	10.33	87.46	2.21	100	0
	Placer-Lake Tahoe	1	10.33	87.46	2.21	100	0
	Placer-Mountain Counties	1	10.33	87.46	2.21	100	0
	Placer-Sacramento	1	10.33	87.46	2.21	100	0
	Plumas	1	10.33	87.46	2.21	100	0
	Riverside-Mojave Desert MDAQMD	1	10.33	87.46	2.21	100	0
	Riverside-Mojave Desert SCAQMD	1	10.33	87.46	2.21	100	0
	Riverside-Salton Sea	1	10.33	87.46	2.21	100	0
	Riverside-South Coast	1	10.33	87.46	2.21	100	0
	Sacramento	2	0	100	0	15	85
	San Benito	1	10.33	87.46	2.21	100	0
	San Bernardino-Mojave Desert	1	10.33	87.46	2.21	100	0
	San Bernardino-South Coast	1	10.33	87.46	2.21	100	0
	San Francisco	1	10.33	87.46	2.21	100	0
	San Joaquin	1	10.33	87.46	2.21	100	0
	San Luis Obispo	1	10.33	87.46	2.21	100	0
	San Mateo	1	10.33	87.46	2.21	100	0
	Santa Barbara-North of Santa Ynez	2	0	100	0	100	0
	Santa Barbara-South of Santa Ynez Range	2	0	100	0	100	0
	Santa Clara	1	10.33	87.46	2.21	100	0
	Santa Cruz	1	10.33	87.46	2.21	100	0
	Shasta	1	10.33	87.46	2.21	100	0
	Sierra	1	10.33	87.46	2.21	100	0
	Siskiyou	1	10.33	87.46	2.21	100	0
	Solano-San Francisco	1	10.33	87.46	2.21	100	0
	Solano-San Joaquin	1	10.33	87.46	2.21	100	0
	Sonoma-North Coast	1	10.33	87.46	2.21	100	0
	Sonoma-San Francisco	1	10.33	87.46	2.21	100	0
	Stanislaus	1	10.33	87.46	2.21	100	0
	Sutter	1	10.33	87.46	2.21	100	0
	Tehama	2	67	33	0	100	0
	Trinity	1	10.33	87.46	2.21	100	0
	Tulare	1	10.33	87.46	2.21	100	0
	Tuolumne	1	10.33	87.46	2.21	100	0
	Ventura	1	10.33	87.46	2.21	100	0
	Yolo	1	10.33	87.46	2.21	100	0
	Yuba	1	10.33	87.46	2.21	100	0
Statewide	Statewide	1	10.33	87.46	2.21	100	0

Notes:

Table 9.3 Percent of Wastewater Distribution Types

Location Type	Name	Source	Septic Tank	Aerobic	Anaerobic, Facultative Lagoons	Anaerobic, Combustion of Gas	Anaerobic, Cogeneration of Gas

1. The default is based on the ratio of wastewater treatment types used in California GHG emission inventories developed by ARB.
2. The value is based on information provided by the District.

Table 9.4 Wastewater Treatment Direct Emissions

Wastewater Treatment Type	CO2 Biogenic, ton/gal	CO2 Non-Biogenic, ton/gal	CH4, ton/gal	N2O, ton/gal
Septic	0	0	2.50362E-07	8.48121E-10
Aerobic	3.89999E-07	0	1.34234E-09	8.48121E-10
Anaerobic Facultative	3.89999E-07	0	4.01921E-07	8.48121E-10
Digester Burn	0	0	0	0
Digester Cogen	0	0	0	0

Note:
Digester combustion emissions are estimated using water intensity emission factors.

Table 10.1 Solid Waste Disposal Rates

Location Type	Name	Land Use Sub Type	Size Metric	Rate, ton/size/year
Air Basin	Great Basin Valleys	Single Family Housing	Resident	0.25
	Lake County	Single Family Housing	Resident	0.36
	Lake Tahoe	Single Family Housing	Resident	0.31
	Mojave Desert	Single Family Housing	Resident	0.41
	Mountain Counties	Single Family Housing	Resident	0.26
	North Central Coast	Single Family Housing	Resident	0.44
	North Coast	Single Family Housing	Resident	0.40
	Northeast Plateau	Single Family Housing	Resident	0.25
	Sacramento Valley	Single Family Housing	Resident	0.36
	Salton Sea	Single Family Housing	Resident	0.41
	San Diego	Single Family Housing	Resident	0.41
	San Diego	Single Family Housing	Resident	0.41
	San Francisco Bay Area	Single Family Housing	Resident	0.42
	San Joaquin Valley	Single Family Housing	Resident	0.38
	South Central Coast	Single Family Housing	Resident	0.41
	South Coast	Single Family Housing	Resident	0.41
Air District	Amador County APCD	Single Family Housing	Resident	0.25
	Antelope Valley APCD	Single Family Housing	Resident	0.41
	Bay Area AQMD	Single Family Housing	Resident	0.42
	Butte County AQMD	Single Family Housing	Resident	0.36
	Calaveras County AQMD	Single Family Housing	Resident	0.25
	Colusa County APCD	Single Family Housing	Resident	0.36
	El Dorado County APCD	Single Family Housing	Resident	0.25
	Feather River AQMD	Single Family Housing	Resident	0.36
	Glenn County APCD	Single Family Housing	Resident	0.36
	Great Basin UAPCD	Single Family Housing	Resident	0.25
	Imperial County APCD	Single Family Housing	Resident	0.41
	Kern County APCD	Single Family Housing	Resident	0.41
	Lake County AQMD	Single Family Housing	Resident	0.36
	Lassen County APCD	Single Family Housing	Resident	0.25
	Mariposa County APCD	Single Family Housing	Resident	0.25
	Mendocino County AQMD	Single Family Housing	Resident	0.44
	Modoc County APCD	Single Family Housing	Resident	0.25
	Mojave Desert AQMD	Single Family Housing	Resident	0.41
	Monterey Bay Unified APCD	Single Family Housing	Resident	0.44
	North Coast Unified APCD	Single Family Housing	Resident	0.38
	Northern Sierra AQMD	Single Family Housing	Resident	0.25
	Northern Sonoma County APCD	Single Family Housing	Resident	0.42
	Placer County APCD	Single Family Housing	Resident	0.36
	Sacramento Metropolitan AQMD	Single Family Housing	Resident	0.36
	San Diego County APCD	Single Family Housing	Resident	0.41
	San Joaquin Valley Unified APCD	Single Family Housing	Resident	0.38
	San Luis Obispo County APCD	Single Family Housing	Resident	0.41
	Santa Barbara County APCD	Single Family Housing	Resident	0.41
	Shasta County AQMD	Single Family Housing	Resident	0.25
	Siskiyou County APCD	Single Family Housing	Resident	0.25
	South Coast AQMD	Single Family Housing	Resident	0.41
	Tehama County APCD	Single Family Housing	Resident	0.36
	Tuolumne County APCD	Single Family Housing	Resident	0.25
	Ventura County APCD	Single Family Housing	Resident	0.41
	Yolo/Solano AQMD	Single Family Housing	Resident	0.39
	Alameda	Single Family Housing	Resident	0.42
	Alpine	Single Family Housing	Resident	0.25
	Amador	Single Family Housing	Resident	0.25
	Butte	Single Family Housing	Resident	0.36
	Calaveras	Single Family Housing	Resident	0.25
	Colusa	Single Family Housing	Resident	0.36

Table 10.1 Solid Waste Disposal Rates

Location Type	Name	Land Use Sub Type	Size Metric	Rate, ton/size/year
County	Contra Costa	Single Family Housing	Resident	0.42
	Del Norte	Single Family Housing	Resident	0.44
	El Dorado-Lake Tahoe	Single Family Housing	Resident	0.25
	El Dorado-Mountain County	Single Family Housing	Resident	0.25
	Fresno	Single Family Housing	Resident	0.36
	Glenn	Single Family Housing	Resident	0.36
	Humboldt	Single Family Housing	Resident	0.44
	Imperial	Single Family Housing	Resident	0.41
	Inyo	Single Family Housing	Resident	0.25
	Kern-Mojave Desert	Single Family Housing	Resident	0.41
	Kern-San Joaquin	Single Family Housing	Resident	0.41
	Kings	Single Family Housing	Resident	0.36
	Lake	Single Family Housing	Resident	0.36
	Lassen	Single Family Housing	Resident	0.25
	Los Angeles-Mojave Desert	Single Family Housing	Resident	0.41
	Los Angeles-South Coast	Single Family Housing	Resident	0.41
	Madera	Single Family Housing	Resident	0.36
	Marin	Single Family Housing	Resident	0.42
	Mariposa	Single Family Housing	Resident	0.25
	Mendocino-Coastal	Single Family Housing	Resident	0.44
	Mendocino-Inland	Single Family Housing	Resident	0.44
	Mendocino-Rural Inland North	Single Family Housing	Resident	0.44
	Mendocino-Rural Inland South	Single Family Housing	Resident	0.44
	Merced	Single Family Housing	Resident	0.36
	Modoc	Single Family Housing	Resident	0.25
	Mono	Single Family Housing	Resident	0.25
	Monterey	Single Family Housing	Resident	0.44
	Napa	Single Family Housing	Resident	0.42
	Nevada	Single Family Housing	Resident	0.25
	Orange	Single Family Housing	Resident	0.41
	Placer-Lake Tahoe	Single Family Housing	Resident	0.36
	Placer-Mountain Counties	Single Family Housing	Resident	0.36
	Placer-Sacramento	Single Family Housing	Resident	0.36
	Plumas	Single Family Housing	Resident	0.25
	Riverside-Mojave Desert MDAQMD	Single Family Housing	Resident	0.41
	Riverside-Mojave Desert SCAQMD	Single Family Housing	Resident	0.41
	Riverside-Salton Sea	Single Family Housing	Resident	0.41
	Riverside-South Coast	Single Family Housing	Resident	0.41
	Sacramento	Single Family Housing	Resident	0.36
	San Benito	Single Family Housing	Resident	0.44
	San Bernardino-Mojave Desert	Single Family Housing	Resident	0.41
	San Bernardino-South Coast	Single Family Housing	Resident	0.41
	San Francisco	Single Family Housing	Resident	0.42
	San Joaquin	Single Family Housing	Resident	0.36
	San Luis Obispo	Single Family Housing	Resident	0.41
	San Mateo	Single Family Housing	Resident	0.42
	Santa Barbara-North of Santa Ynez	Single Family Housing	Resident	0.41
	Santa Barbara-South of Santa Ynez Range	Single Family Housing	Resident	0.41
	Santa Clara	Single Family Housing	Resident	0.42
	Santa Cruz	Single Family Housing	Resident	0.44
	Shasta	Single Family Housing	Resident	0.25
	Sierra	Single Family Housing	Resident	0.25
	Siskiyou	Single Family Housing	Resident	0.25
	Solano-San Francisco	Single Family Housing	Resident	0.42
	Solano-San Joaquin	Single Family Housing	Resident	0.42
	Sonoma-North Coast	Single Family Housing	Resident	0.42
	Sonoma-San Francisco	Single Family Housing	Resident	0.42

Table 10.1 Solid Waste Disposal Rates

Location Type	Name	Land Use Sub Type	Size Metric	Rate, ton/size/year
	Stanislaus	Single Family Housing	Resident	0.36
	Sutter	Single Family Housing	Resident	0.36
	Tehama	Single Family Housing	Resident	0.36
	Trinity	Single Family Housing	Resident	0.25
	Tulare	Single Family Housing	Resident	0.36
	Tuolumne	Single Family Housing	Resident	0.25
	Ventura	Single Family Housing	Resident	0.41
	Yolo	Single Family Housing	Resident	0.36
	Yuba	Single Family Housing	Resident	0.36
	Statewide	Single Family Housing	Resident	0.36
	Statewide	Apartments High Rise	Dwelling Unit	0.46
	Statewide	Apartments Low Rise	Dwelling Unit	0.46
	Statewide	Apartments Mid Rise	Dwelling Unit	0.46
	Statewide	Arena	100visitors	0.09
	Statewide	Arena	1000sqft	0.03
	Statewide	Arena	Acre	0.09
	Statewide	Automobile Care Center	Employee	0.86
	Statewide	Automobile Care Center	1000sqft	3.82
	Statewide	Bank (with Drive-Through)	1000sqft	0.93
	Statewide	City Park	100visitors	0.09
	Statewide	City Park	Acre	0.09
	Statewide	Condo/Townhouse	Dwelling Unit	0.46
	Statewide	Condo/Townhouse High Rise	Dwelling Unit	0.46
	Statewide	Congregate Care (Assisted Living)	Dwelling Unit	0.91
	Statewide	Convenience Market (24 hour)	Employee	0.86
	Statewide	Convenience Market (24 hour)	1000sqft	3.01
	Statewide	Convenience Market with Gas Pumps	Employee	0.86
	Statewide	Convenience Market with Gas Pumps	1000sqft	3.01
	Statewide	Convenience Market with Gas Pumps	pumps	0.42
	Statewide	Day-Care Center	1000sqft	1.30
	Statewide	Day-Care Center	Employee	0.80
	Statewide	Day-Care Center	Student	0.18
	Statewide	Discount Club	Employee	1.23
	Statewide	Discount Club	1000sqft	4.30
	Statewide	Electronic Superstore	Employee	0.86
	Statewide	Electronic Superstore	1000sqft	3.01
	Statewide	Elementary School	1000sqft	1.30
	Statewide	Elementary School	Employee	0.80
	Statewide	Elementary School	Student	0.18
	Statewide	Fast Food Restaurant w/o Drive Thru	Employee	2.13
	Statewide	Fast Food Restaurant w/o Drive Thru	1000sqft	11.52
	Statewide	Fast Food Restaurant with Drive Thru	Employee	2.13
	Statewide	Fast Food Restaurant with Drive Thru	1000sqft	11.52
	Statewide	Free-Standing Discount Store	Employee	1.23
	Statewide	Free-Standing Discount Store	1000sqft	4.30
	Statewide	Free-Standing Discount Superstore	Employee	1.23
	Statewide	Free-Standing Discount Superstore	1000sqft	4.30
	Statewide	Gasoline/Service Station	Employee	0.86
	Statewide	Gasoline/Service Station	Pump	0.54
	Statewide	Gasoline/Service Station	1000sqft	3.82
	Statewide	General Heavy Industry	Employee	1.15
	Statewide	General Heavy Industry	1000sqft	1.24
	Statewide	General Light Industry	Employee	1.15
	Statewide	General Light Industry	1000sqft	1.24
	Statewide	General Office Building	1000sqft	0.93
	Statewide	Golf Course	100visitors	0.93
	Statewide	Golf Course	Acre	0.93

Table 10.1 Solid Waste Disposal Rates

Location Type	Name	Land Use Sub Type	Size Metric	Rate, ton/size/year
Statewide	Statewide	Golf Course	Employee	0.93
	Statewide	Golf Course	Hole	0.13
	Statewide	Government (Civic Center)	1000sqft	5.70
	Statewide	Government (Civic Center)	100visitors	0.09
	Statewide	Government Office Building	1000sqft	0.93
	Statewide	Hardware/Paint Store	Employee	3.17
	Statewide	Hardware/Paint Store	1000sqft	11.09
	Statewide	Health Club	1000sqft	5.70
	Statewide	Health Club	100visitors	0.09
	Statewide	High School	1000sqft	1.30
	Statewide	High School	Employee	0.80
	Statewide	High School	Student	0.18
	Statewide	High Turnover (Sit Down Restaurant)	Employee	2.20
	Statewide	High Turnover (Sit Down Restaurant)	1000sqft	11.90
	Statewide	Home Improvement Superstore	Employee	3.17
	Statewide	Home Improvement Superstore	1000sqft	11.09
	Statewide	Hospital	Bed	2.92
	Statewide	Hospital	Employee	2.02
	Statewide	Hospital	1000sqft	10.80
	Statewide	Hotel	Employee	1.95
	Statewide	Hotel	Room	0.55
	Statewide	Hotel	1000sqft	10.80
	Statewide	Industrial Park	Employee	1.15
	Statewide	Industrial Park	1000sqft	1.24
	Statewide	Junior College (2yr)	1000sqft	1.30
	Statewide	Junior College (2yr)	Employee	0.80
	Statewide	Junior College (2yr)	Student	0.18
	Statewide	Junior High School	1000sqft	1.30
	Statewide	Junior High School	Employee	0.80
	Statewide	Junior High School	Student	0.18
	Statewide	Library	1000sqft	0.92
	Statewide	Library	Employee	0.86
	Statewide	Manufacturing	Employee	1.15
	Statewide	Manufacturing	1000sqft	1.24
	Statewide	Medical Office Building	Employee	3.09
	Statewide	Medical Office Building	1000sqft	10.80
	Statewide	Mobile Home Park	Dwelling Unit	0.46
	Statewide	Motel	Employee	1.95
	Statewide	Motel	Room	0.55
	Statewide	Motel	1000sqft	10.80
	Statewide	Movie Theater (No Matinee)	1000sqft	5.70
	Statewide	Movie Theater (No Matinee)	100visitors	0.09
	Statewide	Movie Theater (No Matinee)	Screen	15.68
	Statewide	Movie Theater (no matinee)	seats	0.13
	Statewide	Office Park	1000sqft	0.93
	Statewide	Parking Lot	Space	0.00
	Statewide	Unenclosed Parking Structure	Space	0.00
	Statewide	Enclosed Parking Structure	Space	0.00
	Statewide	Unenclosed Parking with Elevator	Space	0.00
	Statewide	Enclosed Parking with Elevator	Space	0.00
	Statewide	Parking Lot	Acre	0.00
	Statewide	Unenclosed Parking Structure	Acre	0.00
	Statewide	Enclosed Parking Structure	Acre	0.00
	Statewide	Unenclosed Parking with Elevator	Acre	0.00
	Statewide	Enclosed Parking with Elevator	Acre	0.00
	Statewide	Parking Lot	1000sqft	0.00
	Statewide	Unenclosed Parking Structure	1000sqft	0.00

Table 10.1 Solid Waste Disposal Rates

Location Type	Name	Land Use Sub Type	Size Metric	Rate, ton/size/year
	Statewide	Enclosed Parking Structure	1000sqft	0.00
	Statewide	Unenclosed Parking with Elevator	1000sqft	0.00
	Statewide	Enclosed Parking with Elevator	1000sqft	0.00
	Statewide	Other Asphalt Surfaces	Acre	0.00
	Statewide	Other Non-Asphalt Surfaces	Acre	0.00
	Statewide	Other Asphalt Surfaces	1000sqft	0.00
	Statewide	Other Non-Asphalt Surfaces	1000sqft	0.00
	Statewide	Pharmacy/Drugstore w/o Drive Thru	Employee	0.86
	Statewide	Pharmacy/Drugstore w/o Drive Thru	1000sqft	3.01
	Statewide	Pharmacy/Drugstore with Drive Thru	Employee	0.86
	Statewide	Pharmacy/Drugstore with Drive Thru	1000sqft	3.01
	Statewide	Place of Worship	1000sqft	5.70
	Statewide	Place of Worship	100visitors	0.09
	Statewide	Place of Worship	Seat	9.00
	Statewide	Quality Restaurant	Employee	2.20
	Statewide	Quality Restaurant	1000sqft	0.91
	Statewide	Racquet Club	1000sqft	5.70
	Statewide	Racquet Club	100visitors	0.09
	Statewide	Recreational Swimming Pool	1000sqft	5.70
	Statewide	Recreational Swimming Pool	100visitors	0.09
	Statewide	Refrigerated Warehouse-No Rail	Employee	1.15
	Statewide	Refrigerated Warehouse-No Rail	1000sqft	0.94
	Statewide	Refrigerated Warehouse-Rail	Employee	1.15
	Statewide	Refrigerated Warehouse-Rail	1000sqft	0.94
	Statewide	Regional Shopping Center	1000sqft	1.05
	Statewide	Research & Development	Employee	7.60
	Statewide	Research & Development	1000sqft	0.08
	Statewide	Retirement Community	Dwelling Unit	0.46
	Statewide	Strip Mall	1000sqft	1.05
	Statewide	Supermarket	Employee	2.38
	Statewide	Supermarket	1000sqft	5.64
	Statewide	University/College (4yr)	Employee	0.8
	Statewide	University/College (4yr)	Student	0.1825
	Statewide	University/College (4yr)	1000sqft	1.3
	Statewide	Unrefrigerated Warehouse-No Rail	Employee	1.15
	Statewide	Unrefrigerated Warehouse-No Rail	1000sqft	0.94
	Statewide	Unrefrigerated Warehouse-Rail	Employee	1.15
	Statewide	Unrefrigerated Warehouse-Rail	1000sqft	0.94

Table 10.2 Support for Solid Waste Emission Factors

MSW Category	Fraction Total Organic Degradable Carbon per Waste Type[a]	Default Decomposable Anaerobic Fraction[b]	Waste Stream Compostion Fraction[c]	Fraction of Carbon Emissions
Newspaper	0.465	0.161	0.013	0.00049
Office Paper	0.398	0.874	0.019	0.00330
Corrugated Boxes	0.405	0.383	0.048	0.00372
Coated paper	0.405	0.21	0.094	0.00400
Food	0.117	0.828	0.155	0.00751
Grass	0.192	0.322	0.025333333	0.00078
Leaves	0.478	0.1	0.012666667	0.00030
Branches	0.279	0.176	0.033	0.00081
Lumber	0.43	0.233	0.145	0.00726
textiles	0.24	0.5	0.054	0.00324
diapers	0.24	0.5	0.043	0.00258
construction demolition	0.04	0.5	0.146	0.00146
medical waste	0.15	0.5	0	0.00000
sludge/manure	0.05	0.5	0.001	0.00001

Generation Fraction	mass carbon	0.03547
	mass CH4	0.04730
	mass CO2	0.13006

Emission Factors

Description	Collection Efficiency	Destruction Fraction	Oxidation Fraction	CO2 Emissions,[d] ton/ton waste	CH4 Emissions,[e] ton/ton waste
No LFG Collection	0	0	0.1	0.143068564	0.042565854
LFG Collect and Combust	0.75	0.98	0.1	0.228909703	0.011350894
Cogen				waste*(0.2289 - 6.3382E-05*UtilityCO2)	0.011350894

a) California Air Resources Board, the California Climate Action Registry, ICLEI-Local Governments for Sustainability and The Climate Registry, Local Government Operations Protocol for the quantification and reporting of greenhouse gas emissions inventories, Version 1.0, September 2008, Table 9.6 Total Organic Degradable Carbon per Waste Type (TDOC).

b) CARB, 2008, Table 9.7 Default Decomposable Anaerobic Fraction (DANF)of the TDOC per waste type

c) California Integrated Waste Management Board, California 2008 Statewide Waste Characterization Study, August 2009, Table ES-3: Composition of California's Overall Disposed Waste Stream by Material Type

d) CO_2 emission factor, ton/ton waste = generation fraction x (collection fraction x destruction fraction x (1 - collection fraction) x oxidation fraction +1) x molecular weight of CO_2/molecular weight of carbon

e) CH_4 emission factor, ton/ton waste = generation fraction x (collection fraction x (1 - destruction fraction) + (1 - collection fraction) x (1 - oxidation fraction)) x molecular weight of CH_4/molecular weight of carbon

Table 11.1 Change in Sequestered GHG Emissions

Vegetation Land Use Type	Vegetation Land Use Subtype	Biogenic CO2 Emissions (MT CO2/Acre)
Forest Land	Scrub	14.3
Forest Land	Trees	111
Cropland	Cropland	6.2
Grassland	Grassland	4.31
Wetlands	Wetlands	0
Others	Others	0

Notes:

1. Based on values indicated in IPCC Guidelines for National Greenhouse Gas Inventories (IPCC Guidelines). Available online at http://www.ipccnggip.iges.or.jp/public/2006gl/vol4.htm

Table 11.2 Sequestration of Trees

Species	CO2 Sequestered (MT/tree/year)
Aspen	0.0352
Soft Maple	0.0433
Mixed Hardwood	0.0367
Hardwood Maple	0.0521
Juniper	0.0121
Cedar/Larch	0.0264
Douglas Fir	0.0447
True Fir/Hemlock	0.0381
Pine	0.0319
Spruce	0.0337
Miscellaneous	0.0354

Notes:

1. Species class-specific sequestration values are provided in Table 8.2 of "2006 IPCC Guidelines for National Greenhouse Gas Inventories,Volume 4". For species that do not appear in Table 8.2, the species was classifed as "miscellaneous" and the average value of all listed data was used.

2. An active growing period of 20 years is assumed for the new trees planted.