



U.S. DEPARTMENT OF
ENERGY

Alternative Fuel Use by Federal Dual Fueled Vehicles, Fiscal Years 2011 and 2012

**Report to Congress
September 2015**

**United States Department of Energy
Washington, DC 20585**

Message from the Assistant Secretary

Section 701 of the Energy Policy Act of 2005¹ requires Federal agencies to operate dual fueled vehicles on alternative fuel unless the Department of Energy (DOE) determines that a vehicle qualifies for a waiver from this requirement. For reference, dual fueled vehicles are those that, generally speaking, are capable of operating on alternative fuel and on gasoline or diesel. Alternative fuel² includes such fuels as E85, B100 biodiesel, natural gas, liquefied petroleum gas, electricity, and hydrogen.

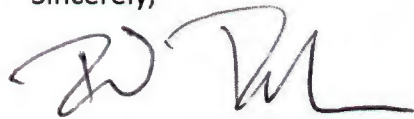
DOE is required to report to Congress on the extent to which the requirements of section 701 are being achieved by Federal motor vehicle fleets. This report provides information on the number of waivers granted by DOE and the alternative fuel consumed by Federal vehicles during fiscal years 2011 and 2012.

This report is being provided to the following Members of Congress:

- **The Honorable Joseph R. Biden, Jr.**
President of the Senate
- **The Honorable John A. Boehner**
Speaker of the House of Representatives
- **The Honorable Fred Upton**
Chairman, House Committee on Energy and Commerce
- **The Honorable Frank Pallone, Jr.**
Ranking Member, House Committee on Energy and Commerce
- **The Honorable Lisa Murkowski**
Chair, Senate Committee on Energy and Natural Resources
- **The Honorable Maria Cantwell**
Ranking Member, Senate Committee on Energy and Natural Resources

If you have any questions or need additional information, please contact me or Mr. Brad Crowell, Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,



Dr. David T. Danielson
Office of Energy Efficiency and Renewable Energy

¹ Pub. L. No 109-58, § 701 (Aug. 8, 2005) (codified at 42 U.S.C. § 6374(a)(3)(E)).

² See 42 U.S.C. § 6374(g)(2).

Executive Summary

Section 701 of the Energy Policy Act of 2005³ requires Federal agencies to operate dual fueled vehicles on alternative fuel unless the Department of Energy (DOE) determines that a vehicle qualifies for a waiver from this requirement. DOE grants waivers to dual fueled vehicles where alternative fuel is not reasonably available or where alternative fuel is unreasonably more expensive than gasoline.⁴

Federal motor vehicle fleets operated 146,318 dual fueled vehicles in fiscal year (FY) 2012. DOE granted waivers to 45 percent, or 66,246, of these vehicles, almost exclusively because alternative fuel was not reasonably available to the vehicles. The remaining 55 percent, or 80,072 dual fueled vehicles, were required by section 701 to operate on alternative fuel.

In FY 2012, Federal fleets consumed 9.9 million gasoline gallon equivalents (GGE) of alternative fuel in non-waivered, dual fueled vehicles, and a total of 14.5 million GGE of alternative fuel in all vehicles (primarily dual fueled vehicles, dedicated vehicles that can operate only on alternative fuel, and diesel vehicles operating on biodiesel). The 14.5 million GGE of alternative fuel consumed by Federal vehicles represents a reduction in petroleum consumption of equal magnitude. Between FY 2005 and FY 2012, Federal fleets increased their alternative fuel consumption by 197 percent.⁵

Across the entire Federal fleet, an estimated 19 percent and 22 percent of the fuel used in non-waivered, dual fueled vehicles was alternative fuel in FY 2011 and FY 2012, respectively.

DOE is taking multiple actions to help Federal fleets increase their utilization of alternative fuel. These actions include providing fleets with a Web-based fuel consumption dashboard; providing a Web-based tool for locating alternative fueling stations; encouraging retail development of additional alternative fueling stations by providing the locations of vehicles receiving waivers; and holding workshops to develop new alternative fueling infrastructure.

³ Pub. L. No 109-58, § 701 (Aug. 8, 2005) (codified at 42 U.S.C. § 6374(a)(3)(E)).

⁴ See 42 U.S.C. § 6374(a)(3)(E)(i).

⁵ E.O. 13423 requires agencies to increase fleet alternative fuel consumption 77.2 percent by FY 2011 and 94.9 percent by FY 2012, relative to an FY 2005 baseline.



ALTERNATIVE FUEL USE BY FEDERAL MOTOR VEHICLE FLEETS, FISCAL YEARS 2011 AND 2012

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I. Findings

Section 701 of the Energy Policy Act of 2005⁶ requires Federal agencies to operate dual fueled vehicles on alternative fuel unless the Department of Energy (DOE) determines that a vehicle qualifies for a waiver from this requirement. For reference, dual fueled vehicles are those that, generally speaking, are capable of operating on alternative fuel and on gasoline or diesel. Alternative fuel⁷ includes such fuels as E85, B100 biodiesel, natural gas, liquefied petroleum gas, electricity, and hydrogen.

DOE is required to report to Congress on the extent to which the requirements of section 701 are being achieved by Federal motor vehicle fleets. This report provides information on the number of waivers granted by DOE and the alternative fuel consumed by Federal vehicles during fiscal years (FY) 2011 and 2012.

DOE grants waivers to dual fueled vehicles located where the alternative fuel is not reasonably available or where the alternative fuel is unreasonably more expensive than gasoline.⁸ In FY 2012, Federal fleets operated 146,318 dual fueled vehicles subject to the requirements of section 701. DOE granted waivers to 45 percent, or 66,246, of these vehicles, almost exclusively because alternative fuel was not reasonably available to the vehicles. The remaining 55 percent, or 80,072 dual fueled vehicles, were required by section 701 to operate on alternative fuel.

In FY 2012, Federal fleets consumed 9.9 million gasoline gallon equivalents (GGE) of alternative fuel in non-waivered, dual fueled vehicles, and a total of 14.5 million GGE of alternative fuel in all vehicles (primarily dual fueled vehicles, dedicated vehicles that can operate only on alternative fuel, and diesel vehicles operating on biodiesel). The 14.5 million GGE of alternative fuel consumed by Federal vehicles represents a reduction in petroleum consumption of equal magnitude. Between FY 2005 and FY 2012, Federal fleets increased their alternative fuel consumption by 197 percent.⁹

Across the entire Federal fleet, an estimated 19 percent and 22 percent of the fuel used in non-waivered, dual fueled vehicles was alternative fuel in FY 2011 and FY 2012, respectively. Each agency's individual performance is shown in Table A for FY 2012 and Table B for FY 2011. The Federal fleet's performance between FY 2008 and FY 2012 on key alternative fuel metrics is

⁶ Pub. L. No. 109-58, § 701 (Aug. 8, 2005) (codified at 42 U.S.C. § 6374(a)(3)(E)).

⁷ See 42 U.S.C. § 6374(g)(2).

⁸ See 42 U.S.C. § 6374(a)(3)(E)(i). Also note that for fiscal years 2011 and 2012, certain types of dual fueled vehicles (e.g., law enforcement motor vehicles, emergency response motor vehicles, and military tactical vehicles) were considered exempt from the statutory requirement and were not accounted for in the statistics stated in this report.

⁹ E.O. 13423 requires agencies to increase fleet alternative fuel consumption 77.2 percent by FY 2011 and 94.9 percent by FY 2012, relative to an FY 2005 baseline.

shown in Table C (FY 2008 was the first year for which the systems were in place for DOE to grant waivers and measure compliance with the requirements of section 701).

Increasing the rate of alternative fuel utilization in non-waivered vehicles is the Federal fleet's best, most immediate opportunity for reducing petroleum consumption (i.e., it does not require new vehicles or new alternative fuel infrastructure).

In FY 2012, DOE's Federal Energy Management Program took a step toward realizing this potential by providing agencies with a Web-based dashboard that utilizes fuel transaction data to provide monthly tracking of alternative fuel consumption by each major organization within an agency.¹⁰ The dashboard also tracks each organization's missed opportunities to use alternative fuel instead of petroleum when the alternative fuel was available nearby. Fourteen agencies are currently using the dashboard to increase their alternative fuel utilization and reduce petroleum consumption.

DOE also provides the on-line Alternative Fueling Station Locator, which maps the location of every alternative fueling station across the country, enabling fleet managers and vehicle operators to find alternative fueling stations nearby.¹¹

In addition to increasing alternative fuel utilization in the 55 percent of dual fueled vehicles that do not receive waivers, the Federal fleet could increase its alternative fuel consumption significantly if the other 45 percent of dual fueled vehicles that currently receive waivers could access alternative fuel. It is estimated that this could amount to an additional 37 million GGE of alternative fuel consumption.

To encourage the development of alternative fuel infrastructure by retail fueling stations in proximity to Federal fleets, the Federal Energy Management Program publishes on its website the locations of all vehicles currently receiving waivers.¹² This helps alternative fuel providers and retail fueling station owners make informed decisions about the business case for installing alternative fuel infrastructure in proximity to waived vehicles, eliminating the need for waivers.

DOE has used this waiver information in conjunction with holding 15 workshops in major metropolitan areas over the past three years. These workshops bring together fleet operators, fuel providers, and fuel retailers to develop solutions to the challenges faced by fleets and fuel retailers regarding development of alternative fuel infrastructure. Federal fleets can serve an important role as anchor fleets, providing the critical mass of demand for alternative fuel that can make the business case for fuel retailers to install new infrastructure. The new infrastructure resulting from these workshops also benefits the public, enabling more people to adopt alternative fuel vehicles and fuel them at the new alternative fueling stations.

¹⁰ See <https://federalfleets.energy.gov/FleetDASH/>.

¹¹ See <http://www.afdc.energy.gov/locator/stations/>.

¹² See http://federalfleets.energy.gov/performance_data#wavers.

II. Table A: Fiscal Year 2012 Federal Fleet Alternative Fuel Consumption in Non-Waivered, Dual Fueled Vehicles

Federal Agency	Dual Fueled Vehicles Subject to the Requirements of Section 701 of EPA Act 2005 ^b	Waivers Granted	Non-Waivered, Dual Fueled Vehicles	Alternative Fuel Consumption in Non-Waivered, Dual Fueled Vehicles (GGE) ^{c, d}	Annual Alternative Fuel Consumption per Non-waivered, Dual Fueled Vehicle (GGE)	Agency Average Annual Total Fuel Consumption per Vehicle (GGE)	Percentage Alternative Fuel Use in Non-Waivered, Dual Fueled Vehicles (%) ^a
	A	B	C = A - B	D	E = D / C	F	G = E / F
Corps of Engineers, Civil Works	3,256	2,113	1,143	26,801	23	624	4
Court Services and Offender Supervision Agency	42	32	10	4,931	493	227	See note e
Department of Agriculture	11,761	4,195	7,566	1,832,509	242	518	47
Department of Commerce	816	165	651	68,466	105	534	20
Department of Defense	51,188	25,903	25,285	3,450,553	136	461	30
Department of Education	64	0	64	1,157	18	533	3
Department of Energy	5,082	857	4,225	1,001,583	237	467	51
Department of Health and Human Services	1,931	522	1,409	68,833	49	386	13
Department of Homeland Security	5,996	3,199	2,797	211,097	75	645	12
Department of Housing and Urban Development	70	0	70	3,035	43	326	13
Department of the Interior	6,347	2,861	3,486	636,417	183	510	36
Department of Justice	527	53	474	31,204	66	393	17
Department of Labor	2,440	298	2,142	158,786	74	619	12
Department of State	276	87	189	25,330	134	533	25
Department of Transportation	3,189	1,504	1,685	258,514	153	515	30
Department of Treasury	250	180	70	21,571	308	393	78
Department of Veterans Affairs	7,877	3,329	4,548	1,130,556	249	547	45
Environmental Protection Agency	380	169	211	46,223	219	481	45
General Services Administration	557	219	338	10,036	30	341	9
National Aeronautics and Space Administration	1,486	204	1,282	222,089	173	300	58
National Science Foundation	36	0	36	288	8	430	2
Nuclear Regulatory Commission	18	0	18	6,174	343	277	See note f
Office of Personnel Management	794	0	794	6,248	8	432	2
Smithsonian Institution	89	27	62	24,233	391	366	See note g
Social Security Administration	370	69	301	50,707	168	573	29
Tennessee Valley Authority	596	0	596	4,571	8	750	1
United States Postal Service	40,880	20,260	20,620	586,811	28	614	5
Federal Government	146,318	66,246	80,072	9,888,723	123	550	22

Data source: Agency-reported data in the Federal Automotive Statistical Tool (FAST).

^a The percentage of time that an agency operates its non-waivered, dual fueled vehicles on alternative fuel (column G), is calculated by dividing the agency's average alternative fuel consumption per non-waivered, dual fueled vehicle (column E) by the agency's average total fuel consumption per vehicle (column F). An agency's average total fuel consumption per vehicle (column F) is used as a proxy for average total fuel consumption in non-waivered, dual fueled vehicles, because agencies do not report fuel consumption in dual fueled vehicles separately from fuel consumption in other vehicles. Column F is calculated by dividing consumption of all types of fuel for which dual fueled vehicles exist that could use those fuels (i.e., gasoline, E85, compressed natural gas (CNG), liquefied natural gas (LNG), and liquefied petroleum gas (LPG)) by the number of vehicles (both dual fueled and dedicated) that could use those fuels.

^b Column A does not include certain types of dual fueled vehicles, including law enforcement motor vehicles, emergency response motor vehicles, and military tactical vehicles.

^c GGE is a gasoline gallon equivalent, or the volume of fuel having the same energy content as a gallon of gasoline.

^d Column D includes consumption of all types of alternative fuel for which dual fueled vehicles exist that could use those alternative fuels (i.e., E85, CNG, LNG, and LPG).

^e The percentage alternative fuel use in non-waivered, dual fueled vehicles for the Court Services and Offender Supervision Agency is calculated to be over 100 percent (218 percent). This number is understood to be impacted by the physical concentration of this fleet in the District of Columbia where, because of advanced notice that a highly-utilized alternative fuel station would close in late 2011, DOE granted waivers to vehicles for which this station was the closest public alternative fuel station available to them. However, because this fleet made special arrangements to access the alternative fuel at a private station, the waived vehicles achieved unanticipated alternative fuel consumption.

^f The percentage alternative fuel use in non-waivered, dual fueled vehicles for the Nuclear Regulatory Commission is calculated to be over 100 percent (124 percent). This number is understood to be impacted by the influence of two factors on the agency's calculated average annual total fuel consumption per vehicle (column F). First, dual fueled vehicles comprise a large share of the agency's fleet (18 of 41 total vehicles), causing the average fuel consumption per vehicle to be weighted heavily toward the fuel consumption of the dual fueled vehicles. Second, although just three heavy-duty diesel vehicles out of 41 total vehicles account for one-third of the agency's total fuel consumption, the calculation of average fuel consumption per vehicle does not give these three vehicles corresponding extra weight in the average.

^g The percentage alternative fuel use in non-waivered, dual fueled vehicles for the Smithsonian Institution is calculated to be over 100 percent (107 percent). This number is understood to be impacted by significant alternative fuel consumption by dedicated CNG vehicles, which account for one-third of the agency's alternative fuel consumption. Although the alternative fuel consumed by dedicated alternative fuel vehicles is accounted for in column D, dedicated alternative fuel vehicles are not accounted for in column C. As a result, the calculated alternative fuel consumption per non-waivered, dual fueled vehicle (column E) is shifted upward and the percentage alternative fuel use in non-waivered, dual fueled vehicles is calculated to be over 100 percent.

III. Table B: Fiscal Year 2011 Federal Fleet Alternative Fuel Consumption in Non-Waivered, Dual Fueled Vehicles

Federal Agency	Dual Fueled Vehicles Subject to the Requirements of Section 701 of EPA Act 2005 ^b	Waivers Granted	Non-Waivered, Dual Fueled Vehicles	Alternative Fuel Consumption in Non-Waivered, Dual Fueled Vehicles (GGE) ^{c,d}	Annual Alternative Fuel Consumption per Non-waivered, Dual Fueled Vehicle (GGE)	Agency Average Annual Total Fuel Consumption per Vehicle (GGE)	Percentage Alternative Fuel Use in Non-Waivered, Dual Fueled Vehicles (%) ^e
	A	B	C = A - B	D	E = D / C	F	G = E / F
Corps of Engineers, Civil Works	3,099	1,814	1,285	20,630	16	677	2
Court Services and Offender Supervision Agency	50	12	38	3,408	90	210	43
Department of Agriculture	11,221	6,712	4,509	381,051	85	492	17
Department of Commerce	758	220	538	41,913	78	543	14
Department of Defense	53,479	26,961	26,518	2,851,140	108	475	23
Department of Education	61	0	61	4,346	71	577	12
Department of Energy	4,952	1,112	3,840	1,114,951	290	493	59
Department of Health and Human Services	1,750	772	978	59,389	61	397	15
Department of Homeland Security	5,068	1,477	3,591	247,965	69	641	11
Department of Housing and Urban Development	69	0	69	13,817	200	302	66
Department of the Interior	4,984	2,038	2,946	576,405	196	532	37
Department of Justice	538	36	502	533,126	See note e	717	See note e
Department of Labor	2,111	308	1,803	170,782	95	720	13
Department of State	247	70	177	23,581	133	484	28
Department of Transportation	3,005	1,535	1,470	62,179	42	565	7
Department of Treasury	321	165	156	31,334	201	395	51
Department of Veterans Affairs	6,976	3,524	3,452	914,802	265	599	44
Environmental Protection Agency	329	167	162	48,300	298	495	60
General Services Administration	646	302	344	13,202	38	356	11
National Aeronautics and Space Administration	1,534	276	1,258	203,637	162	334	48
National Science Foundation	31	0	31	127	4	416	1
Nuclear Regulatory Commission	26	0	26	7,065	272	257	See note f
Office of Personnel Management	864	0	864	6,773	8	444	2
Smithsonian Institution	94	0	94	36,825	392	441	89
Social Security Administration	355	75	280	88,588	316	672	47
Tennessee Valley Authority	446	0	446	1,604	4	965	0
United States Postal Service	43,984	23,533	20,451	532,050	26	632	4
Federal Government	146,998	71,109	75,889	7,988,990	105	566	19

Data source: Agency-reported data in the Federal Automotive Statistical Tool (FAST).

^a The percentage of time that an agency operates its non-waivered, dual fueled vehicles on alternative fuel (column G), is calculated by dividing the agency's average alternative fuel consumption per non-waivered, dual fueled vehicle (column E) by the agency's average total fuel consumption per vehicle (column F). An agency's average total fuel consumption per vehicle (column F) is used as a proxy for average total fuel consumption in non-waivered, dual fueled vehicles, because agencies do not report fuel consumption in dual fueled vehicles separately from fuel consumption in other vehicles. Column F is calculated by dividing consumption of all types of fuel for which dual fueled vehicles exist that could use those fuels (i.e., gasoline, E85, compressed natural gas (CNG), liquefied natural gas (LNG), and liquefied petroleum gas (LPG)) by the number of vehicles (both dual fueled and dedicated) that could use those fuels.

^b Column A does not include certain types of dual fueled vehicles, including law enforcement motor vehicles, emergency response motor vehicles, and military tactical vehicles.

^c GGE is a gasoline gallon equivalent, or the volume of fuel having the same energy content as a gallon of gasoline.

^d Column D includes consumption of all types of alternative fuel for which dual fueled vehicles exist that could use those alternative fuels (i.e., E85, CNG, LNG, and LPG).

^e The percentage alternative fuel use in non-waivered, dual fueled vehicles for the Department of Justice is calculated to be over 100 percent (148 percent, with annual alternative fuel consumption of 1,062 GGE per non-waivered, dual fueled vehicle). These numbers are understood to include alternative fuel consumption by law enforcement vehicles, in addition to alternative fuel consumption by the 502 non-waivered, dual fueled vehicles. Although law enforcement vehicles are exempt from the requirements of section 701, these vehicles may voluntarily consume alternative fuel, and this additional consumption may impact the calculated percentage alternative fuel use in non-waivered, dual fueled vehicles.

^f The percentage alternative fuel use in non-waivered, dual fueled vehicles for the Nuclear Regulatory Commission is calculated to be over 100 percent (106 percent). This number is understood to be impacted by the influence of two factors on the agency's calculated average annual total fuel consumption per vehicle (column F). First, dual fueled vehicles comprise a large share of the agency's fleet (26 of 43 total vehicles), causing the average fuel consumption per vehicle to be weighted heavily toward the fuel consumption of the dual fueled vehicles. Second, although just three heavy-duty diesel vehicles out of 43 total vehicles account for one-third of the agency's total fuel consumption, the calculation of average fuel consumption per vehicle does not give these three vehicles corresponding extra weight in the average.

IV. Table C: Federal Fleet Performance on Key Alternative Fuel Metrics, Fiscal Years 2008 – 2012

	Fiscal Year				
	2008 ^a	2009	2010	2011	2012
Non-Waivered, Dual Fueled Vehicles	51,910	67,005	68,897	75,889	80,072
Percentage Alternative Fuel Use in Non-Waivered, Dual Fueled Vehicles (%)	26 ^b	23	20	19	22
Alternative Fuel Consumption in Non-Waivered, Dual Fueled Vehicles (GGE) ^c	7,447,920	8,594,153	7,548,881	7,988,990	9,888,723
Alternative Fuel Consumption in All ^d Vehicles (GGE)	8,947,801	10,093,398	10,538,475	11,759,794	14,488,408

Data source: Agency-reported data in the Federal Automotive Statistical Tool (FAST).

^a Fiscal year 2008 was the first year for which the systems were in place for DOE to grant waivers and measure compliance with the requirements of section 701 of EAct 2005.

^b The 2008 percentage alternative fuel use in non-waivered, dual fueled vehicles differs from the percentage stated in the 2008 report to Congress due to improvements in calculation methodology since that time.

^c GGE is a gasoline gallon equivalent, or the volume of fuel having the same energy content as a gallon of gasoline.

^d The set of all vehicles consuming alternative fuel is composed primarily of dual fueled vehicles, dedicated vehicles that can operate only on alternative fuel, and diesel vehicles operating on biodiesel.