



DOE/EA-1440-S-I

MITIGATION ACTION PLAN COMPLETION REPORT

THE SUPPLEMENT TO FINAL SITE-WIDE ENVIRONMENTAL ASSESSMENT FOR THE NATIONAL RENEWABLE ENERGY LABORATORY'S SOUTH TABLE MOUNTAIN COMPLEX

PREPARED TO ACCOMPANY DOE/EA-1440-S-I

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1.0 INTRODUCTION

This report presents the U.S. Department of Energy's (DOE's) completion of the May 2008 Mitigation Action Plan (MAP) for the *Supplement to the Final Site-Wide Environmental Assessment of the National Renewable Energy Laboratory's South Table Mountain Complex* (DOE/EA-1440-S-I) (DOE 2008a and 2008b). Since May 2008, DOE and the National Renewable Energy Laboratory (NREL) have implemented various traffic mitigation measures and routinely monitored traffic at the NREL South Table Mountain (STM) campus in Golden, Colorado in accordance with the MAP. With the completion and occupancy of the new Research Support Facility (RSF) and Energy Systems Integration Facility (ESIF) and with offsite traffic impacts maintained below threshold levels, implementation of the MAP is hereby complete. NREL and DOE will continue to implement current traffic control measures and conduct informal traffic monitoring as part of standard operations and sustainability initiatives.

1.1 Background

In May 2008, the U.S. Department of Energy (DOE) issued DOE/EA-1440-S-I and prepared a Finding of No Significant Impact (FONSI) for three site development projects planned at the NREL's STM campus:

- Construction of the RSF, a new office building or multi-building complex;
- Installation of Phase I of planned site infrastructure improvements (Phase I of full site development); and
- Upgrades to the Thermochemical User Facility (TCUF), TCUF high bay area, and addition of Thermochemical Biorefinery Pilot Plant.

Through this environmental review process, DOE determined that there were potential traffic impacts from these projects that required mitigation to assure that the impacts would not become significant. To establish conditions for issuing the FONSI as required by 10 CFR 1021.322(b)(1), DOE prepared the MAP in May 2008 to meet the requirements of 10 CFR 1021.331.

The potential traffic impacts requiring mitigation were due to the transfer of approximately 800 employees from leased offsite office space in the Denver West Office Park (DWOP) to DOE-owned space in the RSF located on the STM campus.

1.2 Purpose of the Mitigation Action Plan Completion Report

The purpose of this report is to document the completion of traffic mitigation measures and traffic monitoring conducted in accordance with the MAP. The agency actions that could have adverse traffic impacts, as discussed above, have been completed. Through adaption of traffic mitigation measures, DOE and NREL were successful in preventing traffic impacts of the proposed action from becoming significant. This report describes the status of traffic mitigation measures that have been implemented per the MAP and discusses the traffic monitoring that has occurred that demonstrates their effectiveness.

1.3 Traffic Monitoring and Assessment Terminology

Throughout this document measurement of traffic levels are expressed in the form of a standard traffic assessment method used by traffic engineers known as Level of Service (LOS). LOS is defined in terms of the average total vehicle delay of all traffic movements through an intersection, which considers traffic movement from all four directions of a standard intersection. In a signalized intersection controlled by stoplights, LOS is defined in terms of the average total vehicle delay of all traffic movements through an intersection. For an unsignalized, or stop-sign controlled intersection, LOS considers vehicle delay results for each movement direction which must yield to conflicting traffic at the intersection.

LOS is comprised of six categories represented by the letters A through F, with A being the best and F the worst. LOS “A” represents conditions with minimal delay, while LOS “F” represents conditions with much longer delays. **Table 1** shows the LOS threshold classifications for signalized intersections. Traffic engineers consider LOS A through D to be acceptable and LOS E and F to be unacceptable. Vehicle delay can help quantify several difficult to measure factors, such as driver discomfort, frustration, and lost travel time, and is influenced by many variables, such as traffic signal phasing, traffic signal length, and traffic volumes with respect to the intersection’s capacity.

Table 1. LOS Threshold Definitions¹

LOS Threshold	Average Control Delay (Seconds Per Vehicle)	Description
A	≤ 10	Operations with low control delay. This LOS occurs when progression is extremely favorable and most vehicles arrive in the green phase of the traffic signal. Many vehicles do not have to stop at all at the signal.
B	> 10 - 20	This level generally occurs with good progressions and signal cycle lengths are short. More vehicles stop than for LOS A, causing higher levels of average delay.
C	> 20 - 35	Stable flow operations (acceptable delays). Progression is fair and signal cycle lengths are longer. Individual signal cycle failures may begin to appear at this level. Individual cycle failure occurs when a given green light phase does not serve queued vehicles, and overflow occurs. The number of vehicles stopping is greater, though many vehicles still pass through without stopping.
D	> 35 - 55	Approaching unstable flow (tolerable delay). At LOS D, the influence of congestion becomes more noticeable, and occasionally vehicles are waiting through more than one signal cycle before proceeding. Individual cycle failures are more frequent occurrences.
E	> 55 - 80	Unstable flow (intolerable delay). Vehicle progression is poor, cycle lengths are long, and the intersection has a high flow rate to capacity ratio. Individual cycle failures are frequent occurrences.
F	> 80	Forced flow (jammed). This level is considered unacceptable to most drivers. Progression is very poor, cycle lengths are long, and there are many individual cycle failures. Often occurs with oversaturation, which is when vehicle arrival rates exceed the capacity of the intersection.

¹ From the *Highway Capacity Manual* (National Academies of Science, Transportation Research Board, Special Report 209, 2000)

1.4 Structure of the Mitigation Action Plan Completion Report

This MAP Completion Report summarizes the impacts identified in detail in DOE/EA-1440-S-I and why a MAP was required, (Section 2); identifies the current status of the agency action, the build-out of the STM campus, (Section 3); describes the status of implementation and effectiveness of the various mitigation measures identified in the MAP, (Section 4); describes the traffic monitoring that demonstrates that traffic mitigation metrics have been met; and provides a determination that implementation of the MAP is complete (Section 5).

2.0 POTENTIAL TRAFFIC IMPACTS WITHOUT IMPLEMENTATION OF THE MITIGATION ACTION PLAN

This section summarizes the traffic impacts evaluated in DOE/EA-1440-S-I and why implementation of a MAP was required to prevent unacceptable traffic impacts. Refer to DOE/EA-1440-S-I for a more detailed description of these proposed actions and their impacts.

In 2007, prior to the construction and occupancy of the RSF, approximately 500 NREL workers were housed at the STM campus and another 730 DOE and NREL workers were in nearby leased office space within the DWOP. Most of the workers access the two locations via the Denver West Marriot Boulevard exit off of Interstate 70 (I-70). STM campus workers then travel northwest to Denver West Parkway, turning west to enter the site. DWOP workers turn south to Cole Boulevard, then east into several buildings in the DWOP leased by DOE and NREL.

Projected daily and peak rush hour vehicle-trip rates for adding approximately 800 additional employees to the STM campus, including relocating employees from DWOP to the campus as well as new hires, were estimated in the DOE/EA-1440-S-I using existing 24-hour traffic data that was counted at the STM campus entry points. The traffic analyses considered not only the direct trips made by employees to and from the site, but also the indirect traffic from such other activities as deliveries and visitors. The traffic analysis concluded that the increased STM campus employment would result in an increase in daily trips from the 2007 levels of 1,934 trips to a 5,530 trips in 2010.

The analyses in the DOE/EA-1440-S-I demonstrated that without mitigation traffic flows from the STM campus would result in a substantial increase in delay (by a factor of about 2 or more) if no major access improvements were provided or traffic flows were not mitigated by other means. For the Denver West Parkway/Denver West Marriot Boulevard intersection without improvements or other mitigation measures, these delays were predicted to be near or above the LOS E threshold, which is an unacceptable operating condition. Traffic lines or queues from the STM campus were predicted to be greater than 224 meters (735 feet) or about 37 cars, possibly beyond the Denver West Parkway and Denver West Drive intersection, resulting in LOS F conditions where extreme delays would be experienced, taking multiple cycles of the signal to get through the intersection.

3.0 CURRENT STATUS OF STM CAMPUS BUILD-OUT

Beginning in January 2009, NREL initiated the construction of several planned facilities to expand NREL's capabilities and accelerate progress toward national goals. These projects were anticipated to

increase the population on the STM campus from about 600 to more than 2,000. The individual projects that are in progress or completed to date and their status are noted in **Table 2**.

Table 2. Status of South Table Mountain Campus New Construction Facilities

Description	Type	Gross Sq. Ft.	Initiated	Status
Research Support Facility I	Office	220,000	January 2009	Completed in June 2010
Research Support Facility II	Office	138,000	May 2010	Completed in October 2011
Integrated Biorefinery Research Facility I	Laboratory	27,000	June 2009	Completed in July 2010
Integrated Biorefinery Research Facility II	Laboratory	15,700	August 2010	Completed in June 2011
Cafeteria	Support	12,000	April 2011	Completed in May 2012
Security Posts (Site Entrance Building and West Gate)	Support	1,200	February 2011	Completed in February 2012
Ingress/Egress Parking Structure	Parking Garage – 1,800 spaces	575,000	February 2011	Completed in February 2012
Energy Systems Integration Facility	Laboratory	182,500	April 2011	Completed in November 2012
South Parking Lot	Surface Parking Lot – 300 spaces	96,000	February 2010	Completed in June 2010
RSF Visitor’s Parking Lot	Surface Parking Lot – 100 spaces	32,000	April 2010	Completed in October 2010

4.0 IMPLEMENTATION STATUS OF MITIGATION MEASURES

This section describes the status and effectiveness of the specific mitigation actions identified in Section 3.0 of the MAP, and if additional mitigation actions are required. Mitigating actions are defined as those measures that have been implemented by DOE and NREL to assure that the proposed actions of DOE/EA-1440-S-I do not result in significant traffic impacts. Mitigation measures are presented in this section in two separate categories: Near-term commitments from the MAP; and long-term commitments from the MAP.

4.1 Near-Term Commitments from the MAP

The MAP required the implementation of at least a “medium” level of traffic demand management (TDM) measures by DOE and NREL, with an anticipated reduction in vehicle trips of 24 percent. The MAP identified the following specific measures to be initiated by 2010 or the full occupancy of the RSF, unless otherwise specified.

4.1.1 Commit One Half a Full Time Equivalent Employee

NREL and DOE committed in the MAP to the allocation of a one half (0.5) a full time equivalent employee by the first quarter of fiscal year 2009 to manage and monitor the implementation of the traffic mitigation measures. The intent of this measure is to oversee the implementation of the outlined mitigation measures as necessary, ensure that they are effective, monitor traffic conditions, and verify that the specified mitigation success metrics are being met. In September 2009 NREL hired a Traffic / Transportation Project Manager, who currently remains in this position in addition to supporting other Sustainable NREL and NREL Sustainability, Infrastructure Transformation, Engineering (SITE) Operations initiatives. This mitigation measure has been successful and will continue to be implemented as part of NREL’s traffic and transportation management program.

4.1.2 Employ Alternative Workweek Strategies

NREL and DOE committed to establishing alternative workweek strategies to spread out the arrival and departure times of vehicle trips and reduce overall vehicle trips on a given workday. The MAP specified two types of alternative workweek strategies, flextime and telecommuting, to reduce number of vehicle trips during peak travel times.

Flextime is the implementation of an alternative work schedule (AWS) that is intended to spread out employee arrival and departure times to avoid congested travel periods. The MAP set a goal, based upon traffic modeling, to shift at least 9 percent of the workforce leaving the site at 4:00 PM instead of 5:00 PM, shift an additional 2 percent of the workforce to leave at 3:00 PM, and the flexibility to adjust these targets based upon the observed traffic monitoring metrics. The 2014 commuter survey indicates that 42 percent of the STM campus staff works an AWS schedule, which is up from 3 percent in 2011.

Telecommuting is where employees work from home instead of coming to the STM campus to work. The goal put forth by the MAP was to have 25 percent of the workforce teleworking one day per week or more, spread relatively evenly across all five work days (approximately 5 percent of employees per day). Data from the 2014 commuter survey shows that approximately 33 percent of the STM campus staff telecommutes one day per week, up from 19 percent in 2011.

Based upon the traffic monitoring results discussed in Sections 5.2 and 5.3, these measures have been effective and will continue to be implemented as part of NREL’s traffic and transportation management program. It is anticipated that staff participation in these alternative workweek strategies will continue to improve as these programs continue to mature.

4.1.3 Expand Shuttle Service to Existing Regional RTD Hubs

DOE and NREL committed to establish an employee shuttle service to regional mass transit hubs operated by the Regional Transportation District (RTD) to encourage employees to utilize mass transit commuting options instead of personal vehicles by making regional mass transit hubs more accessible. The number of shuttles available would be adjusted based on monitoring, as well as changes to RTD routes and schedules.

In June 2010, NREL and DOE initiated new shuttle services to two RTD hubs at the Applewood Transfer Center and Federal Center Park-n-Ride, and these shuttle services are in operation to date. In April 2011, a new shuttle service to RTD bus stop on South Golden Road and Kilmer Street to collect passengers from RTD's GS bus route from Boulder was introduced. This shuttle route was discontinued in May 2012 when NREL's new south entrance was opened and RTD rerouted the GS bus route to come up Research Road and stop at the new south entrance building. The NREL and DOE shuttle service was adjusted again when RTD launched the new West Line of the light rail in April 2013. The 2014 commuter survey data shows an increase in transit use as a percentage of daily commute trips from 6 percent in 2007 to 7 percent in 2011 to 14 percent in 2014. Based upon the traffic monitoring results discussed in Sections 5.2 and 5.3, these measures have been effective and will remain in effect as part of NREL's traffic and transportation management program.

4.1.4 Offer Financial Incentives for Transportation Alternatives

To encourage employees to utilize transportation alternatives, such as mass transit or vanpools, DOE and NREL committed to offer employees various financial incentives, such as RTD EcoPasses and daily alternative transportation financial incentives, to increase usage of transportation alternatives. RTD EcoPasses are an annual transit pass for employees that provide unlimited rides on Local, Express, and Regional bus routes and light rail service anywhere within RTD's system. NREL began offering employees EcoPasses in June 1997 and continues to do so. The 2014 commuter survey data shows an increase in transit use as a percentage of daily commute trips from 6 percent in 2007 to 7 percent in 2011 to 14 percent in 2014. The MAP also proposed offering employees a \$1.00 per day incentive, such as cash, credits toward prizes, gift certificates, etc., for each day they choose to use a transportation alternative. While this incentive was not implemented, in April 2010 NREL began offering vanpool vouchers paying up to \$125 of monthly vanpool fares. A comparison of 2007, 2011, and 2014 commute survey results show use of carpools and vanpools as a percentage of daily commute trips staying between 6 to 8 percent. Based upon the traffic monitoring results discussed in Sections 5.2 and 5.3, these measures have been effective and will remain in effect as part of NREL's traffic and transportation management program.

4.1.5 Expand Use of Carpools and Vanpools

To reduce the number of single person commuter vehicles and the overall number of vehicle trips, the MAP established actions to increase the use of carpools and vanpools by STM campus employees. These actions included providing onsite carpool matching services for employees, holding events or registrations for employees who express an interest in carpooling and live in similar areas or zip codes, and establishing a minimum of two vanpools servicing NREL employees.

In June 2010, NREL established the RideShare Connections SharePoint site, an internal electronic rideshare (carpool or vanpool) bulletin board where staff can look for others interested in ridesharing or post their own information. Also in June 2010, NREL implemented preferred parking spaces, located closest to building entrances, for staff using carpool or vanpool to commute to the STM campus to further encourage ridesharing. Additionally, at least four times a year, NREL and DOE coordinate or participate in targeted promotions and events providing information on carpool and vanpool services and options to employees. As discussed in Section 4.1.4, the 2007, 2011, and 2014 commute survey data shows the use of carpools and vanpools as a percentage of daily commute trips staying between 6 to 8 percent. Based upon the traffic monitoring results discussed in Sections 5.2 and 5.3, these measures have been effective and will remain in effect as part of NREL's traffic and transportation management program.

4.1.6 Encourage Pedestrian and Bicycle Commuting

DOE and NREL committed in the MAP to develop enhanced physical facilities and amenities to encourage pedestrian and bicycle commuting as the STM campus is developed. Potential types of improvements identified included sidewalks directly connecting shuttle drop-off locations and building entrances, bike racks, bike lockers, and onsite locker rooms and showers for use by employees.

DOE and NREL incorporated bicycle lanes and enhanced sidewalk connections in site construction projects, including the RSF, the STM parking garage, Research Road (the new south site access road to the STM campus), and STM infrastructure projects. Additionally, these construction projects incorporated the addition of over 300 bicycle racks across the STM campus. Starting in November 2009, NREL began to add bicycle racks to NREL shuttle vehicles enabling staff to bring their bikes on shuttles and installing bicycle repair stations at major buildings enabling staff to perform minor repairs like fixing a flat or tuning brakes. A comparison of 2007, 2011 and 2014 commuter surveys shows increase in bicycling and walking as a percentage of daily commute trips from 3 percent in 2007 to 4 percent in 2011 to 5 percent in 2014. Based upon the traffic monitoring results discussed in Sections 5.2 and 5.3, these measures have been effective and will remain in effect as part of NREL's traffic and transportation management program.

4.1.7 Greater Utilization of West Gate and Quaker Street

Traffic studies conducted in 2007 to support DOE/EA-1440-S-I showed that only about 2 percent of STM campus employees utilized the west site access gate at Quaker Street for ingress and egress. These studies determined that an expanded use of this access point by as many as 20 percent of the employees would not exceed the capacity of the roadway or degrade the LOS at the intersection of Quaker Street and South Golden Road. Therefore, the MAP committed DOE and NREL to increase utilization of the west access gate with the goal of up to 20 percent employee utilization.

Prior to December 2011 only designated employees or employees working in certain buildings were allowed to utilize the west access gate. Since then, NREL and DOE have opened access to the west gate to all badged employees. Also in 2011, DOE and NREL began improvements to the STM west access gate to improve its capability and security. These improvements were completed in February 2012. Average daily staff badge swipes at the west access gate entrance/exit card readers were around 130 per

day prior to December 2011. When the gate was opened to all staff, the number jumped to about 300 card swipes per day, a 43% increase in use. Use of the STM west access gate as a percentage of total campus peak afternoon traffic increased from 2 percent in 2013 to 3 percent in 2014. DOE and NREL will continue to encourage badged staff to utilize the west access gate and monitor the traffic flow on Quaker Street, as well as the Quaker Street and South Golden Road intersection to ensure no unacceptable traffic conditions occur.

4.1.8 Implement Infrastructure Improvements

To further improve the capacity of the Denver West Parkway/Denver West Marriott Boulevard intersection to handle increased eastbound rush hour STM campus traffic and prevent an unacceptable LOS of E or F at the intersection, DOE and NREL committed in the MAP to pursue funding and approvals for the addition of a second right turn lane for eastbound Denver West Parkway.

Since 2008, DOE and NREL obtained funding for this project, developed the appropriate plans, obtained the pertinent approvals from local jurisdictions with authority, and entered into an agreement with the affected landowner and tenant. Construction of the second right turn lane for eastbound Denver West Parkway began in May 2013 and was completed in July 2013. The successful construction of the second right turn lane for Denver West Parkway adds additional capacity to the intersection and reduces the impact of STM campus traffic to traffic flow at the intersection.

4.1.9 Enact Flow Controls Corrective Measures

The MAP included traffic flow control mitigation measures that could be used as a last resort in the event that mitigated peak rush hour traffic levels degrade the offsite traffic flows to unacceptable levels even with other short-term mitigation commitments implemented. In this scenario, DOE and NREL would implement controls over the rate at which employees depart the STM campus. Under this mitigation approach a system (e.g. gate or signal) would be used to space employee departures and limit the peak hourly flows. Given the success of the combination of short-term and long-term traffic mitigation commitments that have been deployed, this mitigation method was never required to be implemented.

4.2 Long-Term Commitments from the MAP

In addition to the short-term commitments, the MAP also discussed potential long-term traffic mitigation commitments that would be implemented beyond 2010. These measures included establishing new site access and implementing off-site parking options.

4.2.1 New Site Access

To prevent the deterioration of the Denver West Parkway/Denver West Marriott Boulevard intersection as well as the I-70 and Denver West Marriott Boulevard interchange after the campus build out, the MAP committed DOE and NREL management to investigate an alternative access point to the STM campus, most likely along South Golden Road. Through the National Environmental Policy Act (NEPA) process, discussions with land owners, and negotiations with local and state agencies, it was determined that the preferred second full service access road to the STM campus would be an extension of Moss Street north of South Golden Road to the NREL property boundary. Construction, including the installation of a

roundabout on South Golden Road, commenced in August 2011 and the STM south access gate was opened in February 2012. It is estimated that 36 percent of vehicles commuting to the STM campus in 2014 utilized this entrance, thereby reducing the traffic impacts on the Denver West Parkway/Denver West Marriott Boulevard intersection. No additional access construction or improvements are anticipated.

4.2.2 Off-Site Parking Options

The MAP specified if necessary to further reduce the number of vehicles commuting to the STM campus, DOE and NREL would evaluate options for parking some employees at off-site locations and utilizing shuttle buses to bring employees onsite. Given the success of the combination of short-term and long-term traffic mitigation commitments that have been deployed, this mitigation method was never required to be implemented. It should be noted that NREL did briefly utilize off-site parking until the new parking garage structure was opened in February 2012, but this was due to a lack of an adequate number of on-site parking spaces and not as a traffic volume reduction measure.

5.0 TRAFFIC MITIGATION MONITORING

DOE and NREL committed in the MAP to conduct periodic traffic monitoring to gauge the effectiveness of the traffic mitigation measurements implemented, as well as ensure traffic impacts were kept at less than significant levels. These periodic traffic measurements, described in Sections 5.2 and 5.3, were compared to the traffic mitigation success measurements outlined in the MAP, which are described in Section 5.1 below.

5.1 Traffic Mitigation Success Metrics

To confirm that the mitigation measures are reducing or eliminating impacts to insignificant levels, DOE and NREL utilize measurement tools or “metrics” to determine what constitutes successful mitigation. The MAP defined two types of traffic mitigation success metrics, both based on LOS.

The first traffic success metric is to maintain a LOS of D or better at the intersections affected by STM campus traffic, such as Denver West Parkway/Denver West Marriott Boulevard, Quaker Street/South Golden Road, and the Moss Street/South Golden Road/Research Road roundabout. This success metric remains unchanged from the MAP, but an additional monitoring point at the Moss Street/South Golden Road/Research Road Roundabout was added in 2012.

The second traffic success metric is the number of eastbound afternoon peak hour vehicle trips that the Denver West Parkway/Denver West Marriott Boulevard intersection can support without degrading the LOS to unacceptable levels. Prior to the completion of the additional eastbound right turn lane on Denver West Parkway, the maximum acceptable eastbound afternoon peak rush hour flow was 387 vehicle-trips per hour. With the additional right lane becoming operational in July 2013, this metric increased to 522 vehicle-trips per hour per the MAP to correspond with the increased traffic capacity of the intersection.

5.2 2012 Formal LOS Traffic Analysis

A formal traffic assessment and LOS analysis was conducted between December 2011 and March 2012 (Baseline 2012). The results of the analysis indicated that the background (non-NREL) traffic in the area

had not increased as much as was projected in the initial MAP traffic studies. Therefore, the NREL traffic thresholds could be increased while still maintaining the LOS thresholds at two affected intersections identified in the MAP.

The LOS analysis conducted for both the Denver West Parkway/Denver West Marriott Boulevard and the Quaker Street/South Golden Road intersections indicated that both intersections are both operating at LOS A during morning peak hour and LOS B during the afternoon peak hour, well below the LOS D or better threshold identified in the MAP. The existing LOS is much lower than projected in the 2007 traffic study due to lower than anticipated background traffic volumes. Moreover, the traffic assessment concluded that with the completion of the additional eastbound Denver West Parkway right turn lane and the STM south access gate, NREL and DOE could add another 1,000 employees to the campus and still maintain a LOS B during the afternoon peak hour at the Denver West Parkway/Denver West Marriott Boulevard intersection.

5.3 Informal Traffic Analyses

As part of NREL's traffic management program, periodic informal monitoring is conducted several times a year. This informal monitoring typically consists of visual traffic counts or site access badge-swipe data. **Table 3** shows the results of the traffic counts at the east, west and south entrances to the STM campus from 2012 to 2014 during the peak PM rush hour.

Except for the April 2012 results, afternoon peak hour traffic levels at the east gate have remained below the respective MAP thresholds, 387 vehicle-trips per hour before July 2013 and the revised threshold of 522 vehicle-trips per hour after July 2013 when the additional right turn lane on eastbound Denver West Parkway became operational. Traffic results from August 2013 through August 2014 were consistently less than the revised MAP threshold of 522 vehicle-trips per hour. Additionally, the PM peak hour traffic volume continued to be below MAP thresholds even with the permanent relocation of approximately 250 DOE staff members to the STM campus from off-site leased office space in the fall of 2013.

Table 3. STM Campus Afternoon Peak Traffic Counts

Gate	PM Peak Hour Vehicles (In and Out-Bound)									MAP Thresholds	
	April 2012	August 2012	Dec 2012	April 2013	August 2013	Nov 2013	May 2014	August 2014	Average	Pre-July 2013	July 2013 and On
STM East Gate (Denver West Parkway/Denver West Marriott Boulevard)	441	278	285	285	294	343	349	319	324	387	522
STM West Gate (Quaker Street/South Golden Road)	61	19	10	0	18	13	17	14	19	N/A ¹	N/A ¹
STM South Gate (South Golden Road/Research Road)		170	167	183	213	282	205	178	200	N/A ¹	N/A ¹

Notes:

N/A = Not Applicable

¹ While the MAP established numeric afternoon peak traffic thresholds for the STM east gate, it did not establish specific numeric traffic thresholds at the STM west and south gates beyond maintaining a LOS of D or better at the affected intersections.

6.0 CONCLUSION

With the completion of the DOE campus development and employee relocation actions that could have adverse traffic impacts and the implementation of selected traffic mitigation measures specified in the MAP, DOE and NREL were successful in preventing traffic impacts of the proposed action from becoming significant. With the completion and occupancy of the new NREL STM campus facilities and having successfully kept offsite traffic impacts below threshold levels, DOE has determined that the implementation of the MAP is complete.

DOE and NREL will continue to monitor traffic as part of an active traffic and transportation management program. This monitoring would continue to occur at least semiannually using monitoring methods such as formal traffic engineering studies, visual traffic counts, extrapolated from existing site access data, or other suitable means. A narrative describing the traffic management and monitoring will continue to be published in the publically available annual NREL Environmental Performance Report, which is the Annual Site Environmental Report (ASER) per DOE Order 231.1B.

7.0 REFERENCES

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