DOE/EA-1440-S-1

MITIGATION ACTION PLAN FOR THE SUPPLEMENT TO FINAL SITE-WIDE ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT FOR THE NATIONAL RENEWABLE ENERGY LABORATORY'S SOUTH TABLE MOUNTAIN COMPLEX

Construction and Operation of:

- *Research Support Facilities,*
- *Infrastructure Improvements (Phase I),*
- *Upgrades to the Thermochemical User Facility and Addition of the Thermochemical Biorefinery Pilot Plant*

PREPARED TO ACCOMPANY DOE/EA-1440-S-1

Concurrence:

Christine A. Phoebe
Deputy Manager
U.S. Department of Energy - Golden Field Office

5/12/08

William S. Glover
Deputy Director and Chief Operating Officer
National Renewable Energy Laboratory

May 2008

U.S. Department of Energy
Golden Field Office
National Renewable Energy Laboratory
1617 Cole Boulevard
Golden, Colorado 80401

TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 Purpose of the Mitigation Action Plan 1

1.2 Structure of the Mitigation Action Plan 2

2.0 RESEARCH SUPPORT FACILITIES TRAFFIC REQUIRING MITIGATION 2

3.0 RESEARCH SUPPORT FACILITIES TRAFFIC MITIGATING ACTIONS 2

3.1 Near-Term Commitments 3

3.1.1 Traffic Demand Management (TDM) Mitigating Actions 3

3.1.2 Quaker Street Utilization 4

3.1.3 Infrastructure Improvements 5

3.1.4 Flow Controls Corrective Measures 5

3.2 Long-Term Commitments 5

3.2.1 New Site Access 5

3.2.2 Off-site Parking Options 5

4.0 RESEARCH SUPPORT FACILITIES TRAFFIC MITIGATION SUCCESS METRICS 5

5.0 RESEARCH SUPPORT FACILITIES TRAFFIC MONITORING MEASURES 6

1.0 INTRODUCTION

DOE has issued a Supplemental Environmental Assessment (SEA), DOE/EA-1440-S-1, and has prepared a Finding of No Significant Impact (FONSI) for three site development projects at the National Renewable Energy Laboratory's (NREL) South Table Mountain (STM) site at Golden, Colorado:

- Construction of the Research Support Facilities (RSF), a new office building or multi-building office complex;
- Installation of Phase 1 of planned Site Infrastructure Improvements (Phase 1 of Full Site Development);
- Upgrades to the Thermochemical User Facility (TCUF), TCUF High Bay area, and addition of the Thermochemical Biorefinery Pilot Plant (TBPP).

The EA for this project was completed in compliance with the National Environmental Policy Act (NEPA), as required by 40 CFR 1508.18. The SEA and FONSI are available at http://www.eere.energy.gov/golden/Reading_Room.aspx.

Through the environmental review process, DOE determined that there are potential environmental impacts from these projects that require mitigation to assure that the impacts would not become significant. Therefore, DOE prepared this Mitigation Action Plan (MAP) to establish conditions for issuing the FONSI as required by 10 CFR 1021.322, which stipulates:

> *(b) In addition to the requirements found at 40 CFR 1508.13, a DOE FONSI shall include the following:*
>
> > *(1) Any commitments to mitigations that are essential to render the impacts of the proposed action not significant, beyond those mitigations that are integral elements of the proposed action, and a reference to the Mitigation Action Plan prepared under 1021.331 of this part;*

The potential impacts requiring mitigation relate to traffic impacts which would result from the transfer of approximately 800 employees that are currently housed in leased offsite space in the Denver West Office Park (DWOP) located south of Interstate 70, to DOE owned space in the RSF which will be built on the STM site. This Mitigation Action Plan outlines the implementation of mitigation measures for the identified potential impacts.

1.1 Purpose of the Mitigation Action Plan

The purpose of this MAP is to specify the methods for implementing mitigation measures that address the potential environmental impacts identified in DOE EA 1440-S-1. The development of these measures and an implementation plan is a necessary condition for the FONSI as described by DOE policy 1021.331(b), "Mitigation action plans", as follows:

> *(b) In certain circumstances, as specified in Sec. 1021.322(b)(2), DOE shall also prepare a Mitigation Action Plan for commitments to mitigations that are essential to render the impacts of the proposed action not significant. The Mitigation Action Plan shall address all commitments to such necessary mitigations and explain how mitigation will be planned and implemented. The Mitigation Action Plan shall be prepared before the FONSI is issued and shall be referenced therein.*

1.2 Structure of the Mitigation Action Plan

This MAP summarizes the impacts indentified in detail in the SEA that might result if not mitigated, (Section 2); identifies the mitigation measures that will be taken as conditions of DOE's FONSI, (Section 3); defines the metrics by which the success or failure of the mitigation measures will be determined, (Section 4); and describes the techniques by which the success or failure of the mitigation measures will be monitored (Section 5).

2.0 RESEARCH SUPPORT FACILITIES TRAFFIC REQUIRING MITIGATION

This section summarizes the key aspects of the RSF evaluated in the SEA which determined that unacceptable impacts could occur if not adequately mitigated. The reader is referred to the SEA for a more detailed description of these proposed actions and their impacts.

The proposed RSF will be an on-site office building or multi-building office complex which will house approximately 800 employees. Currently, approximately 500 NREL workers are housed at the STM site and another 730 DOE and NREL workers are in leased office space south of I-70 and the STM site in the DWOP. Most of the workers access the two locations via the I-70 and Denver West Marriot Boulevard exit. STM site workers then travel northwest to Denver West Parkway, turning west to enter the STM site. DWOP workers turn south to Cole Boulevard, then east into several buildings in the DWOP.

Projected daily and peak rush hour vehicle-trip rates for the relocated 800 employees from DWOP to the STM site were estimated in the SEA using existing 24-hour traffic data that was counted at the STM 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. These additional trips become a multiplying factor applied to the estimated number of employees to predict total vehicle trips. Overall, the estimated trip rates accounted for all site-related trips (employees, deliveries, visitors, etc.).

Under the Proposed Action employment levels at the STM site would increase from the 2007 level of approximately 500 workers to 1,430 workers in 2010 due to the relocation of approximately 800 existing employees from the DWOP to the STM site and some new hires. This increased STM employment would result in an increase in daily trips from the current levels of 1,934 trips to a projected 5,530 trips in 2010.

The analyses in the SEA demonstrate that without mitigation the flows from the STM approach 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 (DWP/DWMB) intersection without improvements or other mitigation measures, these delays are predicted to be near or above the level-of service (LOS) E threshold, which is an unacceptable operating condition. Traffic lines or queues from the STM site are predicted to be 224 meters (735 feet) or more (about 37 cars), possibly beyond the 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.

The mitigation measures that will be employed by DOE and NREL to prevent this degradation in traffic flow are detailed in this MAP.

3.0 RESEARCH SUPPORT FACILITIES TRAFFIC MITIGATING ACTIONS

Mitigating actions are those measures that will be implemented by DOE and NREL to assure that that planned actions do not result in significant impacts. For the traffic resulting from the transfer of staff to

the RSF, a distinct traffic management program will be implemented by DOE and NREL beginning no later than 1st quarter FY 09, with implementation complete prior to RSF occupancy. In this document, "employees" refers to both DOE Golden Field Office (DOE-GO) and NREL employees. "Management" refers to both DOE-GO and NREL management.

Based on the *Traffic Impact Analysis* (December 2007), the projected peak hour vehicle trips must be reduced to avoid the degradation of traffic flows at Denver West Parkway/Denver West Marriot Boulevard (DWP/DWMB) intersection. DOE and NREL will jointly implement the following measures to achieve the necessary traffic volume reductions in order to mitigate traffic impacts:

- TDM measures at the "medium" level, at a minimum (See Sec. 3.2.1),
- Expanded use of the Quaker Street entrance (See Sec. 3.2.2),
- Infrastructure Improvements to the DWP/DWMB Intersection will be pursued (See Sec. 3.2.3).
- One half (0.5) a full time equivalent (FTE) employee to manage the Traffic Mitigation Program
- Implement flow control measures, as necessary to maintain the number of vehicles exiting the site to acceptable levels

Based on the analyses in the traffic and mitigation studies, these measures are designed to prevent the degradation of traffic flow to unacceptable LOS and still accommodate the projected 1,430 employees that would occupy the STM site in 2010 and could accommodate up to 1,800 employees. If the modeled projections for these mitigation measures prove to be in error, and traffic impacts are not adequately mitigated, DOE and NREL may expand its TDM participation, and/or pursue off-site parking for some employees.

Recognizing that the long-term development of the STM site would lead to additional employees beyond the 2010 projection of 1,430, and, therefore, additional traffic as quantified in the recent traffic studies, DOE and NREL will begin investigating the long-term commitments discussed in Section 3.2.

3.1 Near-Term Commitments

Management will implement the following traffic mitigation measures by 2010, prior to RSF occupancy (unless otherwise specified).

3.1.1 Traffic Demand Management (TDM) Mitigating Actions

Based on the analyses in the Traffic Mitigation Plan, at least a "medium" level of TDM will be implemented by DOE and NREL, with an anticipated reduction in trips of 24 percent. The following specific TDM measures will be initiated before staff move into the RSF:

- To manage and monitor the implementation of these measures for both NREL and DOE, management will commit one half (0.5) a full time equivalent (FTE) employee starting 1st quarter FY 09.
- Alternative workweek strategies
  - Flextime - An alternative work schedule is intended to spread out employee arrival and departure times to avoid congested travel periods. Most policies specify a core period in the middle of the workday, such as 10 a.m. to 3 p.m., when all employees are required to be present. According to the targets developed through modeling, DOE and NREL will shift at least 9 percent of the workforce to leaving the worksite at 4:00 PM (instead of 5 PM) and

shift an additional 2 percent of the workforce to leave at 3:00 PM. Based on the monitoring described in Sec. 5.0, these targets will be adjusted.

- Telecommuting, where employees work from home, will be adopted by DOE and NREL. The goal will be to have 25 percent of the workforce teleworking one day per week or more, spread relatively evenly across all five work days (approximately 5% of employees per day).

- Expanded shuttle service to existing regional RTD hubs. DOE and NREL will establish service that provides a minimum of three vehicle shuttle service (as indicated by current modeling) coordinated with AM arrival and PM departure of RTD routes at Colorado Mills (16, 16L, GS), Hogback Park-n-Ride (I-70 and Morrison exit), and potentially Cold Spring Park-n-Ride. The number of shuttles will be adjusted based on monitoring.
- Financial Incentives
  - RTD Eco-passes shall be made available to all employees
  - Employees will be provided a $1.00 per day incentive (cash, credits toward prizes, gift certificates, etc.) for each day they choose to use a transportation alternative.
- Expanded use of carpools and vanpools. DOE and NREL will
  - Provide onsite carpool matching services for employees,
  - Hold events or registrations for employees who express an interest in carpooling and live in similar areas or zip codes, and
  - Establish a minimum of two vanpools servicing NREL employees
- To encourage pedestrian and bicycle commuting, enhanced physical facilities and amenities, such as sidewalks directly connecting shuttle drop-off locations and building entrances, bike racks, bike lockers, and on-site locker rooms and showers for use by employees, will be established as the site is developed.

Additionally, because these TDM measures will take some time to integrate into the STM site operations, DOE and NREL will begin the implementation of TDM measures while the RSF is being constructed so that full deployment can be achieved before the relocation to the STM site occurs. The effectiveness of these TDM measures in reducing traffic volume will be evaluated according to the monitoring described in Sec. 5.0 so that DOE and NREL can determine whether additional measures need to be applied.

If additional traffic reductions are required, DOE and NREL could initiate a "high" or "very high" level of TDM measures to increase the reduction in vehicle-trips. Under these increased TDM programs the types of activities described above for "medium" TDM would continue with an increase in the level of staff participation.

3.1.2 Quaker Street Utilization

Currently only about 2 percent of STM site employees utilize the west site access gate at Quaker Street. The SEA and supporting traffic studies, have 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 with South Golden Road. DOE and NREL will work with the employees to identify those individuals whose commute would be best served by utilizing the Quaker Street access gate with a goal of up to about 20 percent employee utilization.

3.1.3 Infrastructure Improvements

The traffic studies indicate that both near-term (next few years - 2010) and longer-term (full STM site build out – beyond 2010) traffic impacts could be reduced by modifications to the DWP/DWMB intersection and an additional access road to the STM site. Modification of the DWP/DWMB intersection to create a second, east bound right turn lane would alleviate traffic back ups from east bound STM traffic during the evening rush hour and prevent the unacceptable degradation of the LOS to E or F during the next several years of STM site expansion. Management will pursue funding and approvals to implement this option as part of its near-term mitigation measures.

3.1.4 Flow Controls Corrective Measures

In the event that mitigated peak rush hour traffic levels degrade the off-site traffic flows to unacceptable levels, DOE and NREL will implement controls over the rate at which employees depart the STM site. Under this mitigation approach a system (e.g gate or signal) would be used to space employee departures and limit the peak hourly flows to the metrics identified in Section 4.2.

3.2 Long-Term Commitments

The following measure will be investigated by Management to address longer-term traffic mitigation. Potential mitigation beyond 2010 would be reviewed as necessary in future NEPA documents.

3.2.1 New Site Access

If funding continues to support the full build out of NREL at the STM site there could be sufficient employee growth to challenge the existing highway infrastructure that provides access to the STM site. Management will investigate an alternative access point to the STM site, most likely along South Golden Road. To implement the development of an additional access road to the STM site, will require discussions with land owners, negotiations with local and perhaps state agencies, and the solicitation of funding from state, federal, or other sources. While this mitigation measure is not needed in the near-term, it has been included in this MAP because of the long lead time of the actions required to be completed prior to its implementation. Therefore, in parallel with the ongoing efforts to plan for the full build out of the STM site, DOE and NREL will begin the process of discussions, negotiations, and funding requests for this infrastructure improvement.

3.2.2 Off-site Parking Options

As an additional means to reduce STM traffic, DOE and NREL will evaluate options for parking some employees at off-site locations and utilizing shuttle buses to bring employees to the STM site. As a part of evaluating such options, the effects of relocating traffic to another site would be assessed to confirm that such an action would not cause significant traffic impacts at an off-site location.

4.0 RESEARCH SUPPORT FACILITIES TRAFFIC MITIGATION SUCCESS METRICS

To confirm that the mitigation measures are reducing or eliminating impacts to insignificant levels, DOE and NREL will utilize measurement tools or "metrics" to determine what constitutes success. The RSF traffic, quantitative limits have been identified through traffic flow modeling, which establish the upper limits on traffic volumes which can be supported by the current infrastructure without degrading traffic flows to unacceptable levels.

The Traffic Study modeling projects that with modification the Denver West Parkway / Denver West Marriot Boulevard intersection will be able to accommodate about 522 vehicle-trips per hour during peak rush hours and that this level of traffic flow would result in an LOS of D or better. However, if the intersection improvements are not made the maximum acceptable flow is projected to be 387 vehicle-trips per hour during peak rush hours. Therefore, a peak rush hour traffic flow of less than 522 vehicle-trips per hour if the intersection has been improved, or less than 387 vehicle-trips per hour through this intersection if not improved, and an LOS of D or better will be the metrics by which the success of traffic mitigation will be measured.

5.0 RESEARCH SUPPORT FACILITIES TRAFFIC MONITORING MEASURES

To confirm that mitigation measures defined in Section 3 are effectively reducing impacts to insignificant levels, DOE and NREL will monitor RSF traffic to determine performance against mitigation success metrics. At some time in the future, the metrics and monitoring plan for traffic may be modified based on actual performance.

Upon occupation of the RSF, DOE and NREL will monitor traffic flow to and from the STM site two times per year at a minimum to confirm that either the 522 vehicle-trips per hour during peak rush hour or the 387 vehicle-trips per hour (whichever is applicable at the time of monitoring) criterion is not exceeded. The final traffic monitoring plan will be determined by the Transportation Program Coordinator. In addition to monitoring traffic flow from the site, DOE and NREL will monitor the Denver West Parkway/Denver West Marriott Boulevard intersection and the Quaker Street/South Golden Road intersection to confirm that the LOS has not degraded to an unacceptable LOS E or LOS F. A report on the implementation and effectiveness of the STM traffic mitigation measures will be published in the NREL Annual Site Environmental Report.