Department of Energy
Golden Field Office
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FINDING OF NO SIGNIFICANT IMPACT

SITE-WIDE ENVIRONMENTAL ASSESSMENT
U.S. DEPARTMENT OF ENERGY
NATIONAL RENEWABLE ENERGY LABORATORY
SOUTH TABLE MOUNTAIN CAMPUS
GOLDEN, COLORADO

DOE/EA-1968

AGENCY: U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy (EERE)

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: DOE is proposing an action of site operations and improvements over next five to ten years action to continue management and operation of the National Renewable Energy Laboratory's (NREL's) South Table Mountain (STM) campus and nearby leased facilities in the Denver West Office Park (DWOP) in Golden, Colorado including:

- Research, routine laboratory, and site operation enhancements
- New building construction and modifications of existing buildings
- Infrastructure and utilities upgrades and enhancements

The action described above is hereinafter referred to as the Proposed Action. The purpose of the Proposed Action is to provide enhanced facilities and infrastructure to support DOE's Office of Energy Efficiency and Renewable Energy (EERE) mission in the continued advancement of state-of-the-art renewable energy, distributed energy, and energy efficiency research and development. The renewable energy and energy efficiency industry is advancing at a rapid pace and enhanced resources are needed at NREL to support the evolving needs for testing, research, development, deployment, and demonstration in the growing industry. The proposed improvements at the STM campus and DWOP are needed at NREL for continued development of renewable energy and energy efficiency technologies and practices, advancement of related science and engineering, and transfer of knowledge and innovations to the market.

The Proposed Action could include the following activities:

- Research, Routine Laboratory, and Site Operation Enhancements
    - Renewable energy and energy efficiency research activities in new and modified facilities.
    - Routine laboratory activities in new and modified laboratory, test, and support facilities.
    - Operation and maintenance of new and modified facilities and infrastructure.

- New Building and Modifications to Existing Facilities
    - Science &Technology Facility (S&TF) Photovoltaic Research Modifications
    - Thermochemical Biofuels Research Facility (TBRF)
    - Field Test Laboratory Building (FTLB) Workstation and Lab Space Addition
    - FTLB Modification for Algae and Other Research Organisms for Fuel
    - Outdoor Test Areas and Pads
    - Internal Reconfiguration of the Thermal Test Facility (TTF)
    - Energy Systems Integration Facility (ESIF) Security Enhancements
    - Research Support Facility (RSF) III
    - Renewable Fuels and Lubricants (ReFUEL) Laboratory Relocation
    - Renewable Energy Vehicle Systems (REVS) Facility
    - Waste Handling Facility (WHF) Expansion
    - NREL Sustainability, Infrastructure Transformation, Engineering (SITE) Operations Support Space
    - Metrology Laboratory Relocation
    - High Flux Solar Furnace (HFSF) Upgrade
- Infrastructure and Utilities Upgrades and Enhancements
    - TriGen Central Plant
    - On Campus Renewable Energy Deployment
    - Additional Infrastructure at East Campus
    - On-site Vehicle Fuel Storage

DOE completed Environmental Assessment (EA) DOE/EA-1968 to evaluate the potential environmental impacts of the Proposed Action. The analysis provided in the EA supports DOE's determination that providing federal funding for and the subsequent implementation of the Proposed Action will not significantly affect the quality of the human and natural environment. The EA is hereby incorporated into this FONSI by reference.

DOE places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. As set forth in **Section 2.2** of the EA, DOE and NREL has committed to measures and procedures to avoid, minimize, or mitigate environmental impacts of the operation of the STM campus and DWOP. Any contractors working on the STM campus would also be required to follow these committed measures, which are intended to ensure that the potential for adverse impacts are minimized, if not eliminated. All applicable federal and state statutes and regulations would be followed in implementing the Proposed Action. Site-specific environmental protection and

sustainable policies and the procedures associated with these policies are in place for protecting and enhancing the vegetation, wildlife, and natural resources of the laboratory sites; preventing pollution; complying with environmental requirements; and encouraging continual improvement in environmental protection and sustainability performance.

Context of Potential Impacts

DOE must evaluate the significance of an action in several different contexts, such as society as a whole, the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the impacts in the locale rather than in the world as a whole. Both short- and long-term impacts are relevant.

The Proposed Action consists of operations and improvements at the STM campus and leased facilities in the DWOP. The 327-acre STM campus is located in northern Jefferson County, Colorado, along the southeast side of the South Table Mountain mesa, north of Interstate -70 (I-70) and west of the I-70 and Denver West Boulevard interchange, in Lakewood, Colorado. The DWOP site is located east of the STM campus in the vicinity of the I-70/Denver West Boulevard interchange in Lakewood, Colorado. Land uses adjacent to the STM campus include mesa top open space to the north; multi-family residential, office, and commercial uses to the east; residential and public park land uses to the south; residential uses and open space to the west; and open space and a Colorado State Highway Patrol driver training track to the north. A public multi-use trail is located in an easement on the east side of the STM campus near the Camden Denver West multi-family complex.

Based on the analysis in the EA, adverse impacts of the Proposed Action would range from negligible to minor due to the nature of the proposed activities. The impacts are limited to the local geographic area and are small-scale in nature. In addition, DOE and NREL have committed to implementing the measures listed in **Section 2.2** of the Final EA to minimize or avoid potential environmental impacts. The impact analysis considers the type, context, duration, and intensity of the alternatives on relevant resource areas. The Proposed Action by itself would not cause any significant adverse impacts nationally, regionally, or at the statewide level.

Intensity of Potential Impacts

The following discussion is organized around the ten (10) intensity factors, described in the Council for Environmental Quality NEPA Implementing Regulations, 40 CFR 1508.27, which refer to severity of impact. The intensity of impacts considered is in terms of the following:

1) Impacts that may be both beneficial and adverse:

The impacts of the Proposed Action primarily involve the STM campus where virtually all of the proposed action components will occur. More specifically, the impacts of the Proposed Action would involve temporary facility construction impacts caused by normal construction activities associated with land development and permanent impacts. Impacts associated with the DWOP are limited to

minor and negligible impacts from modified operations within existing buildings occupied by NREL. The Proposed Action's direct impacts would occur over a period of up to 10 years. The primary construction impacts include: increased air pollutant emissions, increased noise, changes to visual and drainage conditions, soil disruption, and vegetation and wildlife habitat disruption and displacement. The Proposed Action will not result in significant irreversible resource commitments or irretrievable losses of wildlife habitats, cultural sites, or historic features.

The EA evaluated adverse impacts of the Proposed Action separately from beneficial impacts, to determine whether such adverse impacts would have been significant in their own right, and no such impacts were found to be significant. In no cases did the analysis in the EA use beneficial impacts to offset the potential significance of any adverse impact. In addition, the EA did not use any long term beneficial impacts to offset the potential significance of any short term adverse impacts.

The primary permanent impacts involve land use changes, increases in vehicle trip generation, increases in air pollutant emissions, increases in site noise, changes to views, loss of soil productivity, displacement of vegetation and wildlife habitat, changes to the context surrounding historic resources, increased use and generation of hazardous materials and increased risks from accidents and intentional destructive acts. The EA defines the potential impacts as minor considering the nature of the proposed infill development relative to existing site conditions, the continuation and increased intensity of current research and development, and NREL's environmental commitments and measures to eliminate, minimize, and reduce identified impacts.

Accordingly, DOE concludes the Proposed Action would result in no significant adverse impacts to land use, traffic and transportation, visual quality and aesthetics, cultural resources, water resources, geology and soils, hazardous materials and waste management, utilities and infrastructure, and socioeconomics and environmental justice, and that the Proposed Action would have beneficial impacts to socioeconomics.

2) The degree to which the proposed action affects public health or safety:

As presented in the EA, the Proposed Action would not have an adverse impact on public health and safety. Public access to the STM campus and DWOP is controlled. All visitors must check in with the security office and provide a government-issued photo identification to obtain a security badge before entering the STM campus or leased-facilities at DWOP. This significantly reduces potential public exposure to NREL activities or operations that may affect their health and safety.

The Proposed Action components would incrementally increase the potential for human health and safety issues to arise at the STM campus and DWOP for workers and contractors. These incremental impacts would be caused by increasing existing and ongoing activities (more people and more processes), and by adding new and more complex activities to the existing mix of activities. Each proposed improvement or modification would be subject to rigorous evaluations, continuous environmental, health, and safety oversight, regulatory compliance requirements, and permitting procedures and approvals before and after the new facilities and activities are approved, constructed, and allowed to operate. Each process and any new chemicals that may be utilized would be

scrutinized by this process as a primary means of reducing human health and safety issues on-site and off-site. All contractors performing activities at the STM campus and DWOP must conform to applicable federal, state, and DOE and NREL site-specific health and safety policies. Given these controls, the potential for substantial human health and safety impacts would be adequately addressed and only a minor increase of potential human health and safety issues proportionate to the increased level of activities, processes, and personnel would be expected.

The Proposed Action components would incrementally add risks proportional to the new activities and operations at the STM campus or DWOP that could be exploited by a saboteur or terrorist. This incremental increase in risk would be considered negligible or minor because it would not measurably change the likelihood of an attack or make an attack measurably more destructive, and appropriate steps have been taken to meet federal requirements and guidelines for federal facility security.

3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:

Several parcels of land of the STM campus are managed to protect the site's unique natural resources. This includes the 177-acre conservation management area on the mesa top, slope, and toe of South Table Mountain that DOE granted a conservation easement to Jefferson County in 1999. The purpose of the easement is to preserve the natural character of the property, including its visual, biological, and recreational resources, especially in relation to the changing land uses adjacent to the STM campus and within the region. Additionally, new building construction near STM campus drainage ways would include appropriate setbacks to conserve drainage-way integrity, wildlife habitat and movement corridors, and flood control. Conservation management areas are managed in accordance with NREL's Natural Resource Conservation Program, which requires a higher level of review before any land disturbance can occur.

Two significant historic architectural resources associated with the former Colorado National Guard Camp George West are located within the STM campus boundary. They are an outdoor amphitheater with footbridge and an ammunition igloo, and are protected in an 11-acre historic preservation area. These resources are discussed in greater detail under intensity factor (8) below. No impacts on archaeological resources are anticipated as a result of the Proposed Action components because none are known to exist near planned improvements.

Based on the analysis provided in the EA, DOE has concluded that the Proposed Action would not cause any adverse impacts on unique characteristics of the geographic area.

4) The degree to which the effects on the quality of the human environment are likely to be highly controversial:

No public comments were received during the draft EA comment period. Input received from a local agency during the scoping process and draft EA comment period did indicate some concern related to preservation of mesa views and visual impacts as well as building height adjacent to conservation

easement and parkland. Per campus master planning documents, mesa top building heights would generally be limited to approximately one story, and other site locations would have a height limitation of five stories. However, no new mesa top building construction is planned as part of this Proposed Action. Building colors and texture would be selected to blend into the existing landscape, to the extent practicable. Lighting standards to achieve required illumination requirements, while reducing off site visibility, would be used. On an as-needed basis, depending on location and complexity, project specific visual modeling and analysis may be conducted to determine the potential impacts to off-site receptors and the general character of the South Table Mountain area.

A full suite of DOE, NREL and contracted specialists (see **Section 6.0**) with expertise and knowledge on all of the Proposed Action activities provided input on the analysis on impacts (see **Section 4.0**) and have not identified any anticipated impacts from proposed activities that are undocumented or unstudied. Therefore, the Proposed Action would not cause highly controversial impacts.

5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks:

There is some uncertainty about the final design of the proposed action components and the nature of the new technology, testing and research to be performed, but the possible impacts from these changes on the human environment are not considered highly uncertain. The potential impacts to the human environment are fully analyzed and supported by previous projects, studies and publications, as referenced in the EA. There is a low probability of highly uncertain impacts or unique or unknown risks resulting from the Proposed Action.

A number of activities to be performed at the STM campus involve some level of risk to workers. The Proposed Action components that could incrementally increase the potential for new accident risks to arise at the STM campus consist of the TBRF, ReFUEL, REVS, and Tri-Gen. NREL implements its Hazard Identification and Control Procedure, along with DOE's ISMS process (see **Section 4.14**). NREL's procedures and policies ensure that NREL operations are "Routine Risk" or "Low Risk" and proper health and safety reviews, practices, and protocols are followed.

The analyses of these potential accident scenarios concluded that the risks are low and remote. These risks would be further mitigated by the safety controls currently in place at the STM and DWOP sites and the rigorous administrative structure in NREL's Integrated Safety Management System. Accordingly, the impacts of the Proposed Action are not highly uncertain, nor do they involve unique or unknown risks.

6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:

The implementation of the Proposed Action is not likely to establish a precedent for future actions with significant impacts. The Proposed Action does not establish a precedent for future actions or represent a decision in principle about a future consideration. Neither scoping nor public comment on

the Draft EA for the Proposed Action raised any disputes pertaining to the appropriate scope of the Proposed Action, connectedness of other actions, or reasonably foreseeable future actions other than those considered. Accordingly, the Proposed Action would not establish a precedent.

7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:

This Site-Wide EA considered past, present, and reasonably foreseeable short-term and long-term future actions at the STM campus and DWOP as part of the Proposed Action. It also considered offsite factors on South Table Mountain and portions of local communities (Jefferson County, Golden, Lakewood), within approximately 1 mile of the STM campus and DWOP boundaries, focusing on connected resource areas such as habitats, watersheds, and viewsheds. Several potentially affected resource areas (see **Section 5.1**) were considered for cumulative impacts including land use, transportation and traffic, air quality, noise, visual quality and aesthetics, water resources, geological resources, soils, vegetation and wildlife, cultural resources, socioeconomic and environmental justice, hazardous materials and waste management, human health and safety, accident risks, and intentional destructive acts. No significant cumulative impacts were anticipated for these resource areas.

As supported by the cumulative impacts analysis, DOE concludes the cumulative impacts of the Proposed Action would not be significant, and the Proposed Action is not related to other actions, that when combined, would have significant impacts.

8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP) or may cause loss or destruction of significant scientific, cultural, or historical resources:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. et seq.), DOE initiated consultations with on the Colorado State Historic Preservation Office (SHPO) and other potential consulting parties on June 4, 2014. In the consultation letter, DOE summarized the results of several earlier cultural resource surveys conducted for the entire STM campus, which did not document any significant archeological resources. In the event of any inadvertent archeological discoveries, the SHPO would be contacted for resolution and further instruction regarding additional studies, and potential avoidance, minimization, or mitigation measures in accordance with the National Historic Preservation Act.

There are two structures associated with the former Colorado National Guard Camp George West on the STM campus that are listed in the National Register of Historic Places, which are an outdoor amphitheater with associated footbridge and an ammunition igloo. These resources are managed in a 11-acre cultural resource management zone in which no development is allowed and protected from direct impacts by the Proposed Action. Therefore, SHPO's primary concern involves indirect visual impacts to the amphitheater and ammunition igloo. These impacts could occur from new development near and within the viewshed of these resources. However, at this time, there is an insufficient level of detail available about the location and design (dimensions, architectural features,

etc.) of proposed facilities near these resources to properly characterize whether impacts would occur or not. As a result, DOE proposed to address Section 106 obligations by initiating future consultations, on a project-by-project basis, when individual components of the Proposed Action are funded or authorized. SHPO concurred with this approach on June 19, 2014. Copies of the consultation letter and the SHPO response are in **Appendix F** of the Final EA.

9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (ESA) of 1973:

On May 30, 2014, DOE initiated informal consultation with the U.S. Fish and Wildlife Service (USFWS), Region 6 Mountain-Prairie Region, for compliance with Section 7 of the ESA, the Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (BGEPA). This informal consultation considered species that could potentially occur at the STM campus and are listed by USFWS as occurring in Jefferson County. DOE determined that there would be no impact to listed species, and those protected by MBTA or BGEPA. The USFWS concurred on June 24, 2014 with DOE's no effect determination that the Proposed Action would not likely impact these federally listed species. Copies of the informal consultation letter and the USFWS response are in **Appendix E** of the Final EA.

Federal water use in Platte River basin within the State of Colorado requires consultation with USFWS for potential impacts to federally listed species and critical habitat in downstream water-depleted regions along the Platte River in Nebraska under the ESA. On June 16, 2006, the USFWS issued a programmatic (Tier 1) biological opinion (PBO) for the Platte River Recovery Implementation Program (PRRIP) and water-related activities affecting flow volume and timing in the central and lower reaches of the Platte River in Nebraska. The action area for the PBO included the Platte River basin upstream of the confluence with the Loup River in Nebraska, and the main stem of the Platte River downstream of the Loup River confluence.

Individual water projects undergoing ESA consultation are required to offset the effects of these depletions on the ESA listed species. With the PRRIP in place, streamlined procedures are available for project proponents to seek ESA coverage under the Program umbrella. The South Platte Water Related Activities Program, Inc. (SPWRAP) is a Colorado nonprofit corporation established by Colorado water users for the purpose of representing water users' interests and partnering with the State of Colorado to implement the PRRIP in central Nebraska. All federal water-related activities are reviewed by the USFWS to determine if they meet two criteria: (1) that the activities comply with the definition of existing water-related activities and/or (2) that the proposed new water-related activities are covered by the applicable state's or the federal depletions plan.

On May 21, 2014, DOE initiated formal consultation with the USFWS and submitted a streamlined biological assessment addressing the effects of DOE's water depletions on Platte River species in Nebraska. Water use at the STM campus was determined to be greater than 0.1 acre-feet per year (*de minimus* threshold) and is considered an adverse effect to Platte River species in Nebraska. Colorado water flow depletion presents the potential to impact the whooping crane, interior least tern, piping

plover, pallid sturgeon, western prairie fringed orchid, and whooping crane critical habitat in the central and lower Platte River in Nebraska. The USFWS issued a site-specific (Tier 2) biological opinion to DOE on June 24, 2014. The USFWS determined that the flow-related adverse effects of the Proposed Action are consistent with those evaluated in the Tier 1 programmatic biological opinion for the Platte River species and whooping crane critical habitat and that these effects on flows are being addressed in conformance with the Colorado Plan for Future Depletions of the PRRIP. Therefore, no further consultations or actions are required. Copies of the formal consultation letter, DOE's biological assessment and the USFWS's biological opinion are found in **Appendix E** of the Final EA. Based on analysis provided in the EA and consultation with the USFWS, DOE has concluded that the Proposed Action will not adversely affect endangered or threatened species or any critical habitat.

10) Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the human environment:

The Proposed Action does not violate any federal, state, or local law or requirement imposed for the protection of the environment. DOE and NREL (and/or their contractors) have committed to policies, procedures, and best management practices (BMPs) to avoid or mitigate any potential impacts concerning vegetation, soil erosion, sedimentation, air quality, water quality, wildlife and cultural resources. The Proposed Action and BMPs are consistent with applicable federal, state, and local laws and requirements for the protection of the environment and with agency policy and direction.

Implementation of the Proposed Action may involve permits, notifications, and registrations required by federal, state, or local laws and ordinances. Additional project-specific permits may be associated with the Proposed Action. Both current and potential permits, notifications, and registrations are listed in **Appendix C** of the Final EA.

Conclusion:

Based on the EA and the above considerations, DOE finds that the proposed action is not a major action that constitutes a significant effect on the human environment. This finding and decision is based on the consideration of DOE's NEPA implementing regulations (10 CFR Part 1021) and the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the context and the intensity of impacts analyzed in the EA. Accordingly, the proposed action does not require the preparation of an environmental impact statement.

For questions about this FONSI or the Final EA, please contact:

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FOR Carol J. Battershell
Manager