



Department of Energy
Golden Field Office
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FINDING OF NO SIGNIFICANT IMPACT

SITE-WIDE ENVIRONMENTAL ASSESSMENT OF THE DEPARTMENT OF ENERGY'S NATIONAL WIND TECHNOLOGY CENTER, GOLDEN, COLORADO AT THE NATIONAL RENEWABLE ENERGY LABORATORY

DOE/EA-1914

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 to continue management and operation of the National Wind Technology Center (NWTC) site in Golden, Colorado at the National Renewable Energy Laboratory (NREL), and to potentially implement the following improvements:

- Increase and enhance research and support capabilities by constructing new facilities, modifying existing facilities, upgrading infrastructure, and performing site maintenance activities in the Research and Support Facilities areas (Zone 1 and Zone 2)
- Increase site use and density by adding wind turbines, meteorological towers and associated infrastructure, and grid storage test equipment at existing and proposed field test sites (Zone 2)
- Expand NWTC's power capacity to 50 megawatts (MW)

The action described above is hereinafter referred to as the Proposed Action. The purpose of the Proposed Action is to support DOE's mission in the research and development (R&D) of energy efficiency and renewable energy technologies by providing enhanced facilities and infrastructure to adequately support state-of-the-art wind energy research and testing. The need for the Proposed Action is to support DOE's need to research and test renewable energy and distributed energy systems. In addition, the Proposed Action would provide additional resources to support DOE R&D needs and requests from industry partners for testing, research, development, deployment, and demonstration in a rapidly growing industry.

The Proposed Action could include the following activities:

- Constructing new buildings and facilities
 - Wind Turbine Component Research and Testing Facility
 - Grid Storage Test Equipment on existing test pads
 - Staging and Maintenance Warehouse

- Modifying existing buildings
 - NWTC Administration Building addition
 - Structural Testing Laboratory addition
 - Distributed Energy Resources Test Facility upgrades
 - 2.5 Megawatt (MW) Dynamometer upgrades
 - Cool roof upgrades
 - Other modifications to existing buildings and facilities
- Upgrading infrastructure
 - Connecting the drinking water system to a municipal water supply
 - Installing a water tank to provide a reliable source for fire suppression
 - Upgrading on-site sewage treatment systems
 - Paving and widening onsite access roads
 - Routing new or upgrading existing data and telecommunications systems
- Routine activities for new or modified buildings and infrastructure
 - Routine technical tasks for research activities
 - Routine tasks for site maintenance
- Installing additional wind turbines, meteorological towers, and field test sites
 - Up to three utility-scale wind turbines (1 to 5 MW)
 - Up to four additional mid-scale wind turbines (from 100 watt to 1 MW)
 - Up to 11 additional small wind turbines (from 1 watt to 100 kilowatts)
- Upgrading on-site electrical infrastructure to provide for additional power capacity, up to 50 MW
 - Constructing an on-site electrical substation
 - Installing the on-site portions of a transmission line interconnect with the local utility

DOE completed Environmental Assessment (EA) DOE/EA-1914 to evaluate the potential environmental impacts of the Proposed Action. The analysis provided in the EA supports DOE's determination that 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 4.6 of the EA, DOE and NREL have committed to incorporating additional measures and procedures to avoid, minimize, or mitigate environmental impacts during operation of the NWTC. Any contractors working on the NWTC would also be required to follow these committed measures, which are intended to ensure that the potential for adverse impacts to natural and cultural resources 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 (human, national), 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 is located in northwest Jefferson County, approximately 16 miles northwest of Denver. The 305-acre site is near the intersection of Colorado State Highways 93 and 128, between the cities of Boulder and Golden, and is approximately 15 miles north of the NREL South Table Mountain campus. The Jefferson/Boulder county line is the site's northern boundary line. The NWTC facility is surrounded primarily by open space and grazing land. The Rocky Flats National Wildlife Refuge borders the site on the south and east. The nearest residence is approximately 2,200 feet to the west of the site. There are no other residences within a four-mile radius of the NWTC. Two trailheads that access City of Boulder Open Space and Mountain Parks lands are located approximately 4,000 feet north and 5,000 feet northwest of the NWTC.

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 4.6 of the EA to minimize or avoid potential environmental impacts. The Proposed Action itself would not cause any significant or cumulative adverse impacts nationally, regionally, locally, 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: As discussed in the EA, DOE analyzed and considered the beneficial and adverse impacts to relevant resource areas. An adverse impact is defined as a change that moves the resource away from a desired condition or detracts from its appearance or condition, while a beneficial impact would result in a positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

The analysis found that the Proposed Action would result in no 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. Short-term, minor, adverse impacts on the noise environment would be expected due to heavy equipment noise generated during the construction of new facilities and wind turbines; however, operation of the new facilities and wind turbines would not have an adverse impact on the ambient noise environment and would comply with local noise ordinances for off-site

human receptors. Localized short-term, minor impacts on air quality would occur during construction activities due to fugitive dust and vehicle emissions, but would not impact regional air quality. Total annual CO₂ emissions from all activities in the Proposed Action would range from 9 to 22 percent of the threshold greenhouse gas emissions in the Council of Environmental Quality's (CEQ) guidance and would, therefore, not have an adverse effect on climate change.

Short- and long-term, minor, adverse impacts on vegetation would likely occur for construction of new facilities in previously undisturbed areas due to loss of vegetative cover and plant abundance. These impacts would be minimized by revegetating in accordance with NREL's stormwater pollution prevention procedures for construction activities at the NWTC. Long-term negligible impacts on wildlife would be expected from implementing the Proposed Action due to loss of foraging, nesting, and burrowing habitat within the project area. Based on surveys conducted at the NWTC, long- and short-term, direct, negligible adverse impacts on avian and bat population are anticipated from implementing the Proposed Action. Impacts on vegetation and wildlife at the NWTC would be minimized by Best Management Practices (BMPs) established in NREL's Natural Resource Conservation Program.

Beneficial impacts to the onsite transportation network would result from paving the gravel roads that provide access to the field test sites. Connection of the NWTC to a municipal water supply and construction of upgrades to the on-site sanitary sewer facilities would result in long-term, beneficial impacts on these systems at the NWTC by providing a reliable water source and adequate treatment capacity. Likewise, long-term, beneficial impacts would be expected as improvements in the electrical system would provide a modern electrical system to support expanded research and development activities at the NWTC. Additionally, long-term beneficial impacts to personnel and public safety are anticipated by providing improved water supply and water pressure for fire suppression. Short-term and long-term beneficial impacts to the socioeconomic climate would be realized from the proposed construction activities and the increase in payroll tax revenues, purchase of materials, and purchase of goods and services from a larger permanent workforce.

The Proposed Action would not result in significant irreversible resource commitments. Minor irretrievable impacts would occur as a result of construction, facility operation, and maintenance activities. Nonrenewable fossil fuels would be irretrievably lost through the use of gasoline and diesel fuel used to power worker vehicles and construction equipment during construction activities.

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.

Accordingly, DOE concludes the Proposed Action will not have any significant adverse impacts and that the Proposed Action would have beneficial impacts to utilities and infrastructure, health and safety, and socioeconomics.

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

The Proposed Action would not have an adverse affect on public health or safety. The NWTC is fenced around its entire perimeter and the only point of access is the security gate at the northeast corner of the site. Any visitors to the NWTC must check in at the security gate and provide government-issued photo identification to obtain a security badge before entering the site. All contractors performing construction activities at the site must conform to applicable federal, state, and DOE and NREL site-specific health and safety policies.

The Proposed Action would not offer any credible targets of opportunity for terrorists or saboteurs to inflict major adverse impacts to public health or safety, nor would the Proposed Action render the NWTC site as a whole any more susceptible to such intentional destructive acts that could further affect public safety.

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:

Seven parcels of land accounting for approximately 22 percent of the NWTC have been designated as conservation management areas to protect the site's unique natural resources. These include two groundwater seep wetlands along hillsides, a seasonal pond, two headwater wetlands along ephemeral drainages, remnant tallgrass prairie within mesic mixed grassland, a prairie dog re-location area, areas designated as ancient soils, and an area designated as critical habitat for the Preble's meadow jumping mouse. 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. The NWTC is surrounded by parklands, including dedicated City of Boulder Open Space and Mountain Parks lands to the north, Jefferson County open space to the west, and the Rocky Flats National Wildlife Refuge to the east and south. A visual impacts analysis was conducted as part of the EA that compared photographs of the existing turbines and meteorological towers taken from several vantage points, including the closest trails and trailheads, with visual simulations of the proposed additional turbines and meteorological towers from the same vantage points. Eleven cultural sites are located within the viewshed of the NWTC and are discussed under intensity factor (8) below.

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:

The analysis in the EA demonstrated that the impacts of the Proposed Action on the natural and human environment would be negligible to minor. Input received from federal, state, and local agencies and from the public during the scoping process and EA public comment period did reveal some concern about potential impacts to wildlife; however, biological surveys conducted at the NWTC over the past several years have indicated a relative abundance of wildlife species and only

minor impacts to typical population levels in the region due to onsite activities. Accordingly, the impacts of the Proposed Action are not highly controversial.

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

A number of activities to be performed at the NWTC involve some level of risk to workers. DOE performed an analysis to identify those events relating to life safety and property protection that would represent the upper boundary of risk that would be presented by activities proposed for the facility. DOE assessed risks for several potential accident scenarios, including:

- Wind turbine blade failure with the partial or complete loss of one or more turbine blades
- Ice throw from turbine blades during cold weather / icing conditions
- Accidents from utility-scale energy storage systems, such as those systems using batteries or flywheels
- Loss of integrity of hydrogen generation and storage systems.

The analyses of these potential accident scenarios concluded that the risks are low and the chances of system failure are extremely remote. These risks would be further mitigated by the safety controls currently in place at the NWTC 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 comments 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 NWTC as part of the Proposed Action. It also considered offsite factors and reasonably foreseeable offsite projects in a cumulative impacts scenario for analysis that included the adjacent Rocky Flats National Wildlife Refuge, transportation and infrastructure improvements, mining and reclamation activities, and transmission line upgrades. Five potentially affected resource areas were considered for cumulative impacts: land use, traffic and transportation, visual quality and

aesthetics, biological resources, and utilities and infrastructure. 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. 470 et seq.), DOE initiated consultation with six representatives of four tribes on July 17, 2013. The tribes were requested to provide information on properties of traditional religious and cultural significance within the vicinity of the Proposed Action and any comments or concerns they might have regarding the potential for the Proposed Action to affect those properties. No responses were received.

On August 21, 2013, DOE initiated consultation with the State Historic Preservation Office (SHPO). In the consultation letter, DOE summarized the results of earlier cultural resource surveys conducted at the NWTC and a more recent survey that identified a 6.5-acre area in the northwest portion of the site with a higher potential for prehistoric archaeological resources. DOE determined that the area would not be affected, because no actions are proposed for the identified area. In the event of any inadvertent archaeological 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.

DOE also provided the SHPO with the results of a viewshed analysis for historic properties within a two-mile radius of the highest visible feature at the NWTC. Eleven cultural resource sites were identified within the viewshed, one of which was listed on the National Register of Historic Places. This site, the former Rocky Flats Plant, has been demolished and the land restored to prairie grassland. The SHPO in a letter dated September 9, 2013, concurred with DOE's determination that the Proposed Action would result in no adverse effect on historic properties.

Accordingly, DOE concludes the Proposed Action will have no adverse effect on districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places.

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 October 22, 2013, 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 Endangered Species Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. The USFWS in their January 15, 2014 response letter concurred with DOE's finding that the Proposed Action would not adversely affect the federally threatened Preble's meadow jumping mouse. The

USFWS also concurred with DOE's determination that the Proposed Action would have no effect on the federally threatened Ute ladies'-tresses orchid, Colorado butterfly plant, or Pawnee montane skipper. The January 15, 2014 response letter also provided guidance for wind energy projects, including USFWS recommendations for migratory birds, bald and golden eagles, and the Region 6 Outline for a Bird and Bat Conservation Strategy for Wind Energy Projects. Copies of the informal consultation letter and the USFWS response are found in **Appendix F** of the Final EA.

The USFWS requested that DOE initiate formal consultation for water-related activities under the Proposed Action which could affect federally listed species or critical habitat in downstream water-depleted regions along the Platte River in Nebraska. Water-related projects that need a federal authorization, funding, or are carried out by a federal agency require consultation with the USFWS 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 water-related activities requiring federal approval will be 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.

DOE initiated formal consultation with the USFWS and submitted a streamlined biological assessment on January 15, 2014. Water use at the NWTC was determined to be greater than 0.1 acre-feet per year (*de minimus* for consultation) and is considered an adverse effect to Platte River species in Nebraska. The USFWS issued a site-specific (Tier 2) biological opinion to DOE on April 25, 2014. The USFWS determined that the Proposed Action meets the above criteria and, therefore, the Tier 2 biological opinion can tier from the June 16, 2006 PBO. Specifically, the USFWS determined that the flow-related adverse effects of the Proposed Action are consistent with those evaluated in the Tier 1 PBO for the whooping crane, interior least tern, piping plover, pallid sturgeon, western prairie fringed orchid, 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. Copies of the formal consultation letters, including DOE's biological assessment and the USFWS's biological opinion, are found in **Appendix F** 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 an endangered or threatened species or any critical habitat on the NWTC site and that adverse effects to downstream species on the South Platte River due to water depletion are addressed by operation of the Colorado Plan for Future Depletions, as part of the PRRIP and the City of Boulder's membership in the SPWRAP program.

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 have committed to implementing BMPs to avoid or mitigate any potential impacts concerning soils and erosion control, vegetation, and wildlife. 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 E** 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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