

PMC-ND

(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION



RECIPIENT: NREL

STATE: CO

PROJECT TITLE : Laufer Wind Group NWTC Structure Lighting Tests; NREL Tracking No. 13-014

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-AC36-08GO28308	NREL-13-014	GO28308

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

B1.31 Installation or relocation of machinery and equipment	Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.
B5.15 Small-scale renewable energy research and development and pilot projects	Small-scale renewable energy research and development projects and small-scale pilot projects, provided that the projects are located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.
DOE/EA 1378 (NREL NWTC)	Final Site-Wide Environmental Assessment of the National Renewable Energy Laboratory's National Wind Technology Center
A9 Information gathering, analysis, and dissemination	Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
B3.3 Research related to conservation of fish, wildlife, and cultural resources	Field and laboratory research, inventory, and information collection activities that are directly related to the conservation of fish and wildlife resources or to the protection of cultural resources, provided that such activities would not have the potential to cause significant impacts on fish and wildlife habitat or populations or to cultural resources.

Rationale for determination:

NREL is working with the Laufer Wind Group (Laufer), to perform prototype testing of a proposed radar-activated lighting system at the National Renewable Energy Laboratory's (NREL's) National Wind Technology Center (NWTC), located southeast of the intersection of Colorado Highway (CO) 93 and CO-128, in Jefferson County, Colorado. The NWTC is a federally-owned facility that consists of 305 acres and is primarily used for wind energy research, development, and testing.

Specifically, Laufer has partnered with NWTC to test and demonstrate an Aircraft Detection Sight Solution (ADSS). The ADSS is a proposed radar-activated lighting system for the potential installation at wind farms. The system is designed to balance Federal Aviation Administration (FAA) obstruction lighting requirements placed on wind farms, with the nuisance light concerns of local communities – one of the key impediments to wind energy development in the United States. Laufer has proposed to temporarily install the ADSS at the NWTC to test and demonstrate the effectiveness of this system for the FAA. The ADSS system includes a Laufer Wind Mounting Pedestal, Obstruction Light Controller Unit (OLCU) and FAA Light as shown on the Prototype OLCU Installation Sheet, attached as a Supporting Document in the PMC.

ADSS SYSTEM

The ADSS system is intended to be used with a facility's existing lighting system. The ADSS would be placed where the FAA lighting exists on the Row 4 utility-scale megawatt (MW) turbines and meteorological tower(s). A Prototype OLCU Installation Sheet describes the installation and removal plan and is attached as a Supporting Document in the PMC.

At NWTC, the ADSS system would be installed at the following locations:

- General Electric (GE) Turbine nacelle;
- Alstom Turbine nacelle;
- Meteorological Tower M3; and,
- An additional fourth location (either the Siemens, Gamesa, or Site 4.4 meteorological tower).

To complete the installation, the existing FAA light and power cable would be removed and stored until the prototype testing is complete for the GE turbine, since FAA lighting is not required at this location. For the other locations, the system would be installed in parallel with the NREL system as a second light on the turbine and/or meteorological tower, and would not disturb the current FAA lighting requirements.

RADAR UNITS AND SYSTEM CONTROLS

Laufer would deploy a total of three radar units along the perimeter of the NWTC facility. Radars are controlled by a central computer, which in turn relays on/off commands to wind turbine obstruction lights via wired local area network (LAN), or through a wireless network. The radar units would be placed on man-lifts and raised several feet off the ground. These radar/man-lift locations would be stationed on paved or gravel surfaces when possible, but may be placed off-road, if needed. The time of deployment would be less than three months. The location of three radar units would be within the Row 4 area and are shown on the Laufer Wind Radar Locations map that is attached as a Supporting Document in the PMC. The LAN or wireless network command and data center would be located at the Site 1.9 Data Shed.

PROJECT SCHEDULE

The system would be deployed in two phases:

Phase 1 would include the installation of one ADSS system at the GE Turbine, installation of one radar unit, and performing radar clutter analysis. NWTC technicians would install the system with Laufer oversight. The radar clutter analysis would be needed to determine the existence or "clutter" of the surrounding landscape and infrastructure. This must be determined before objects (e.g. aircraft) outside of normal background clutter levels at the NWTC can be identified. This test and installation would take one week. Laufer would like to conduct the radar clutter analysis in June 2013. Installation of a LAN or wireless network at the Site 1.9 data shed would be performed at this time.

Phase 2 would include the installation of the other three ADSS systems and the deployment of the other two radar units in August 2013. The installation at other locations would be similar to the installation as described in the attached Prototype OLCU Installation Sheet. Once installations are complete, the system would be tested for three months. Laufer's team would be onsite during testing to monitor the response of the system; as well as, located in the testing airplane. Laufer's team would coordinate the testing with the FAA to send notifications to pilots during the exercise. After the testing, the FAA would visit NWTC and would be provided a briefing of the system and demonstration of its effectiveness. This project will be used to help the FAA finalize and validate their standard for radar-activated lighting systems in the U.S. Upon completion of the prototype testing, all installed equipment will be removed from the wind turbines and meteorological tower(s) and restored back to their original condition. This includes the installation of the original FAA light and power cable that was previously removed to allow for the ADSS system.

A U.S. EPA General Construction Permit for stormwater is not required for this project since there is not ground disturbance. No grading or clearing would be required for this project. All equipment (radar, lighting or man-lifts) would be located on paved or graveled surfaces, if practical. If equipment was installed off of paved or graveled surfaces, the area would be surveyed before any equipment would be placed in the area for ground-nesting birds. The survey would be completed by NREL's EHS Office before these activities are initiated, per NREL policy, between the months of March 15 and September 1. Prior to the removal of any equipment, at the end of the project, the same survey procedure would be followed.

Per agency consultations conducted during the Site-Wide Environmental Assessment for the NWTC (DOE/EA-1378), no cultural resources, threatened or endangered species, wetlands, floodplains, or prime farmlands would be impacted by this proposed project. This proposed project is being conducted with the cooperation of the FAA on existing towers and is a temporary activity; therefore, an FAA permit application is not required for this project. NREL, Laufer and any contractors would follow all federal, state, local safety and security regulations.

The proposed action was analyzed as part of the proposed action in the May 2002 Final Site-Wide Environmental Assessment of NREL's NWTC (DOE/EA-1378). A Finding of No Significant Impact determination for DOE/EA-1378 was issued in May 2002. As this proposed project was analyzed as part of the proposed action in DOE/EA-1378 and with no extraordinary circumstances identified, the May 2002 FONSI determination applies to this proposed action.

Phase 3 – The scope of work has been expanded to include researching the ability to track birds in the vicinity of large wind turbines using radar. If this technology proves feasible, it could be deployed at existing and future wind farms to identify birds flying in the area using radar and inform wind turbine operators of their location. Measures could be taken to reduce bird strikes by managing the wind farms accordingly.

To accomplish this goal, Laufer would collect radar data on birds and tune their tracking computer algorithms to identify birds. NREL biologists would observe and report locations of wild birds to Laufer to assist in research. However, using a trained falcon would reduce the algorithm development time. Flights of trained birds would be in partnership with licensed hawkers and falconers and under the direct supervision of the bird trainers. Telemetry or GPS carried by the bird would be "off-the-shelf" equipment and would follow current scientific standards for payload to weight ratios of the birds. Flights would provide the ideal testing environment for the radar system as the telemetry would be able to record the real-time position of the birds. With this information, computer algorithm developers would be able to look at a much smaller cross-section of their data to locate the bird and then test different identification algorithms. Flights would occur on the NWTC property and potentially on the adjacent Rocky Flats National Wildlife Refuge to the east of the NWTC. This work would be conducted under the authorization of a safe work permit that would be issued by the NREL Safety Manager and approved by NWTC management. NREL staff trained in outdoor safety precautions in the vicinity of onsite turbines would host personnel. NREL and DOE are required to coordinate with the USFWS for access to the Rocky Flats Wildlife Refuge to the east of the NWTC, under permit 1018-0102.

DOE has determined that this phase of the proposed action would be consistent with the actions contained in DOE categorical exclusions:

- A9 "Information Gathering, Analysis and Dissemination;" and,
- B3.3 "Research related to conservation of fish, wildlife, and cultural resources."

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

This EF2a was completed by Amy VanDercook on 5/30/13 and updated on 10/21/2014

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:

Electronically
Signed By: Lori Gray
NEPA Compliance Officer

Date: 10/21/2014

FIELD OFFICE MANAGER DETERMINATION

Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature:

Field Office Manager

Date: