

PMC-ND

(1.08.09.13)

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



RECIPIENT: Frontier Wind

STATE: CA

PROJECT TITLE : Rotor-mounted Bat Impact Mitigation System

**Funding Opportunity Announcement Number**  
DE-FOA-0001181

**Procurement Instrument Number**  
DE-EE0007034

**NEPA Control Number**  
GFO-0007034-001

**CID Number**

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:

**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.)

**B3.1 Site characterization and environmental monitoring** Site characterization and environmental monitoring (including, but not limited to, siting, construction, modification, operation, and dismantlement and removal or otherwise proper closure (such as of a well) of characterization and monitoring devices, and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis). Such activities would be designed in conformance with applicable requirements and use best management practices to limit the potential effects of any resultant ground disturbance. Covered activities include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. (This class of actions excludes activities in aquatic environments. See B3.16 of this appendix for such activities.) Specific activities include, but are not limited to: (a) Geological, geophysical (such as gravity, magnetic, electrical, seismic, radar, and temperature gradient), geochemical, and engineering surveys and mapping, and the establishment of survey marks. Seismic techniques would not include large-scale reflection or refraction testing; (b) Installation and operation of field instruments (such as stream-gauging stations or flow-measuring devices, telemetry systems, geochemical monitoring tools, and geophysical exploration tools); (c) Drilling of wells for sampling or monitoring of groundwater or the vadose (unsaturated) zone, well logging, and installation of water-level recording devices in wells; (d) Aquifer and underground reservoir response testing; (e) Installation and operation of ambient air monitoring equipment; (f) Sampling and characterization of water, soil, rock, or contaminants (such as drilling using truck- or mobile-scale equipment, and modification, use, and plugging of boreholes); (g) Sampling and characterization of water effluents, air emissions, or solid waste streams; (h) Installation and operation of meteorological towers and associated activities (such as assessment of potential wind energy resources); (i) Sampling of flora or fauna; and (j) Archeological, historic, and cultural resource identification in compliance with 36 CFR part 800 and 43 CFR part 7.

**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:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Frontier Wind to design and develop an ultrasonic transmission system to prevent fatal bat interactions with wind turbines, assess the effectiveness of the installed system, create processes for retrofitting operational turbines and installing on new wind turbines during manufacturing or construction, and create system controller settings optimized for a range of bat species.



Task 1 activities would include completing a bat fatality and activity literature review and summary report for the Hatchet Ridge Wind Farm, gathering wind turbine design information to establish potential ultrasonic deterrence system installation locations, develop the ultrasonic deterrence system specifications, and plan ultrasonic system testing. Administrative, research, design and planning activities would be performed by a third party consultant and by Frontier Wind at their offices in Rocklin, CA.

Task 2 activities would include completing the ultrasonic deterrence system design and developing the integration specifications for the Hatchet Ridge turbines. This task would also involve procuring, fabricating, assembling and laboratory testing of the ultrasonic deterrence systems. Laboratory testing would occur at the Frontier Wind offices in Rocklin, CA. This is an existing facility with established safety and waste disposal practices.

Task 3 activities would include installing the ultrasonic deterrence system into sixteen turbines at Hatchet Ridge as well as successfully commissioning the system in the field. Sixteen existing turbines would have the ultrasonic deterrence system installed in the turbine blades by a third party wind turbine service company using a basket truck or crane. Five to fifteen, one-to-two-inch diameter holes would be drilled into each blade to allow for installation of the system. A lightweight wiring harness would be installed inside each blade to power the ultrasonic transmitters. Frontier Wind would then perform the steps necessary to connect the ultrasonic deterrence systems to the turbine power system. There would be a certain number of control turbines chosen for monitoring to verify the effectiveness of the ultrasonic deterrence system.

Task 4 activities would include validation of acoustic performance of the ultrasonic deterrence system and a third party assessment of the system's impacts on bat fatalities. An acoustics specialist would use a microphone attached to a boom truck located at the specified distance given the specified range of frequencies to make observations of the ultrasonic deterrence on the non-rotating turbine blades. Frontier Wind would monitor the technical performance and reliability of the system. A third party environmental and statistical consultant would conduct fatality monitoring activities daily during a seven week period between July 15 and Oct 15 for the sixteen retrofitted turbines as well as the control turbines. Task 4 activities would occur at the Hatchet Ridge Wind Farm near Burney, CA.

Task 5 activities would include a benefits evaluation for which results of the field testing data would be analyzed and improvements to the ultrasonic deterrence system would be identified. Reporting and analysis activities would occur at the Frontier Wind offices in Rocklin, CA.

The ultrasonic deterrence system would be installed inside the blades of existing, operating turbines at an established wind energy generating facility, therefore, there are not expected to be any visual impacts as a result of the proposed project beyond what already exists at the site. The Hatchet Ridge site was monitored for avian and bat fatalities through regular searches for carcasses from 2010-2013 Mortality surveys proposed for this project would consist of walking transects around the turbine and are not expected to result in adverse effects to the environment. The crane or truck used for system installation may cause temporary, minor ground disturbance in the previously disturbed area directly below the turbine. Frontier Wind would establish an on-site staging area to perform the site work in a previously disturbed area. Existing roads would be used to access the turbines identified by the project. Due to the previously disturbed nature of the sites, use of existing roads, and temporary nature of installation activities this aspect of the proposed project would not result in adverse effects to threatened and endangered species, wetlands, or cultural resources.

The proposed deterrence system would contain ultrasonic transmitters that produce a frequency of sound that is audible to bats and some birds. The operational frequencies of the system would be outside of the human audible range. The target frequency is between 20 and 100 kilohertz, with an intensity of at or above 65 dbA, based on a 20-meter distance from the rotor blades. The wind turbine blades are typically greater than 20 meters from the ground so it is expected that any receptors on the ground would experience less than 65 dbA. As a point of reference, 60 dbA is similar to conversation in a restaurant, ambient noise in an office setting, or an air conditioning unit at a 100-ft. distance. This system would be operational from one hour before dusk to one hour after dawn during the migratory period of the bats which generally occurs from June through August of 2016 and 2017. The deterrence system would be expected to have a positive impact on bats, and there are no federally listed bat species in the vicinity of the project. Federally listed species that could potentially occur in the area include Northern Spotted Owl and West Coast Distinct Population Segment (WCDPS) of Fisher. Northern Spotted Owls are known to use a variety of habitat for nesting, roosting and foraging, but have been shown to prefer the architecture in forests between 150 and 200 years of age. The proposed project site on Hatchet Ridge was part of the 1992 Fountain Fire so the current stand of trees at and near the site is around 15 to 20 years old, minimizing the potential for preferred habitat. Northern Spotted Owls generally nest between February and June, and testing of the proposed deterrence system would occur from June through August. Owls generally have a hearing range between .2 and 12 kilohertz, and the proposed deterrence system would produce noise at frequencies between 20 and 100 kilohertz. The northern most wind turbine at the Hatchet Ridge Wind Farm, where the proposed project would occur, is approximately two miles south of designated critical habitat for Northern Spotted Owl. The WCDPS of fisher are generally found in late-successional conifer forests with a high percentage of canopy closure, abundant large woody debris, large snags and



cavity trees, and understory vegetation. Mature and Late-successional coniferous or mixed forests that contain key habitat and structural components provide the most suitable fisher habitat because they provide abundant potential den sites and preferred prey species. Again, the proposed project site on Hatchet Ridge was part of the 1992 Fountain Fire so the current stand of trees at and near the site is around 15 to 20 years old minimizing the potential for preferred habitat. Fishers search for prey in forested stands, avoiding openings. The wind turbines at the Hatchet Ridge Wind Site are characterized by a large, sparsely vegetated pad directly under the turbine minimizing the potential for the fisher to use the area that would have the highest noise impacts from the proposed deterrence system. The breeding season for fisher begins in late February and lasts until mid-April. Birth occurs nearly one year later, just prior to mating. The testing of the proposed deterrence system would occur from June through August. Due to the temporary nature of the project and the factors described above, DOE has determined that there would be no effect to Northern Spotted Owls or the WCDPS of fisher as a result of the proposed project.

Based on review of the project information and the above analysis, DOE has determined that the proposed activities would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that the proposed project is consistent with actions outlined in DOE categorical exclusions A9 "Information gathering, analysis, and dissemination", B3.1 "Environmental monitoring" and B3.3 "Research related to conservation of fish, wildlife, and cultural resources", and is therefore categorically excluded from further NEPA review.

**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 :

Wind Energy Technologies Office  
This NEPA determination does not require a tailored NEPA provision.  
Review completed by Logan Sholar on 7/13/2015

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature:   
NEPA Compliance Officer

Date: 7/16/2015

**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: \_\_\_\_\_

