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

RECIPIENT: University of Massachusetts Amherst **STATE:** MA

PROJECT TITLE : A Biomimetic Ultrasonic Whistle for Use as a Bat Deterrent on Wind Turbines

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA 0001181	DE-EE0007032	GFO-0007032-001	

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.)
B3.3 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.
B3.6 Small-scale research and development, laboratory operations, and pilot projects	Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the University of Massachusetts Amherst to design a series of biomimetic whistles which produce pulses of high-intensity, frequency-modulated ultrasound, when placed on a turbine blade, and which successfully deter bats from approaching the sound source.

The proposed project activities would include design, development, fabrication and lab and field testing of biomimetic whistles operating at frequencies ranging from 25-55 kHz. Design, development, and fabrication would be completed at the fluid-structure interactions lab at the University of Massachusetts (UMass) in Amherst, MA. Lab testing of whistles would occur at the Biological Sciences building on campus at Texas Agricultural & Mechanical University (Texas A&M) and would involve the capture and study of approximately 50 Mexican free-tailed bats, 50 little brown bats, 50 eastern pipistrelles and 50 big brown bats. There would be no federally listed bats used as part of this activity. All lab testing would be conducted in a bat vivarium that is Institutional Animal Care and Use Committee- (IACUC-) approved, U.S. Department of Agriculture- (U.S.D.A.-) inspected and Association for Assessment and Accreditation of Laboratory Animal Care- (AAALAC-) accredited. Lab testing would take place in existing facilities designed for this type of research; therefore, no new construction would be necessary and no ground disturbance is anticipated.

These proposed in-lab bat studies would necessitate mist-netting up to 200 individual bats, following standard mist-netting techniques, as they leave their roosts on the stadium and in the parking garages on campus at Texas A&M University. The roosts themselves would not be disturbed and all bats would be handled in accordance with American Society of Mammologists standards. Bats would then be identified to species, aged as adult or juvenile based on ossification of the wing bones, sexed, and weighed as well as screened for white-nose syndrome. This activity requires a Texas Parks and Wildlife scientific collecting permit and an approval letter from the IACUC for use of animals in a behavioral study, both of which have already been obtained and have been documented in the Project Management Center (SPR-1104-610) and (AUP IACUC 2015-0118). The facility and proposed activities would be overseen by the Texas A&M University Comparative Medicine Program and veterinary care is provided by the campus veterinarians. Individuals handling bats are at risk of contracting rabies if bitten by an infected bat; therefore, all

personnel handling bats would be required to take rabies vaccinations prior to beginning the project. Biological waste from bats in the captive colony at Texas A&M University will be disposed of using the sanitation procedures specified for the IACUC-approved, USDA-inspected and AAALAC-accredited bat vivarium.

Field testing would consist of two studies. The first would investigate bat avoidance to pulsed ultrasonic sounds as they leave their roosts on the stadium and parking garages at Texas A&M and would not involve any capture of wildlife. High-speed videography and three-dimensional microphone arrays would be used to evaluate the pulse generator's impact on flight trajectories as bats emerge from their roosts after sunset. This testing would be conducted on an existing population of naturally-occurring Mexican free-tailed bats which have made their home in the A&M stadium.

There are no threatened/endangered species of bats or other mammals within range of the Texas A&M field study; however, there are five threatened/endangered bird species that may occur within range of the test site. They are identified as follows: Least Tern, Piping Plover, Red Knot, Sprague's Pipit, and Whooping Crane. These five species are migratory, coastal birds with no potential habitat in the test area. Furthermore, this testing would only occur for a period of 1-2 weeks during March, April or May and would not last more than one hour per evening. Due to the analysis above, DOE has determined that the federally listed species identified are highly unlikely to occur in the project area during experiments, and that there would be no effect to the species as a result of the proposed project.

The second study would involve the application of the developed biomimetic whistles to the blades of an established, small-scale wind turbine for up to one week at UMass's experimental wind turbine facility in Holyoke, MA. There are no threatened/endangered birds within range of UMass's experimental wind turbine facility in Holyoke, MA; however, the Northern Long-eared bat is a threatened mammal that has been known to exist within range of the test site. On September 2, 2015 DOE initiated informal consultation with the New England Field Office of the U.S. Fish and Wildlife Service (FWS) regarding the threatened Northern Long-eared bat. DOE determined that the activity may affect but would not likely adversely affect the Northern Long-eared bat. On September 3, 2015 FWS, via email, concurred with DOE's determination of "not likely to adversely affect".

Based on review of the project information and the above analysis, DOE has determined the proposed project would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that this project is consistent with actions outlined in DOE categorical exclusions A9 "Information gathering, analysis, and dissemination", B3.3 "Research related to conservation of fish, wildlife, and cultural resources", B3.6 "Small-scale research and development, laboratory operations, and pilot projects", and B3.11 "Outdoor tests and experiments on materials and equipment components" 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 Program
This NEPA determination does not require a tailored NEPA provision.
Review completed by Rebecca McCord 08/17/2015.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Lori Gray / Lori Gray / Date: 9/14/2015

NEPA Compliance Officer

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.