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PMC-ND

(1.08.09.13)

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

RECIPIENT: Alstom Power Inc **STATE:** VA

PROJECT TITLE : Cost Of Energy reduction for offshore Tension Leg Platform (TLP) wind turbine systems throughadvanced control strategies for energy yield improvement, load mitigation and stabilization

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-EE0005494	GFO-0005494-002	GO5494

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.
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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Alstom Power Incorporated (Alstom) to design and test new control strategies for utility scale wind turbines that would reduce the levelized cost of energy (LCOE) through increased energy yield, particularly in an offshore environment. No new turbines will be constructed for the execution of this project.

DOE completed a previous NEPA review for activities defined for Budget Period 1 (BP1), originally defined as Tasks 1-11, redefined in the Budget Period 2 (BP2) Statement of Project Objectives (SOPO) as Tasks 1-17 (GFO-0005494-00, CX A9 01/19/2012). A crosswalk comparison of the BP1 SOPO and the BP2 SOPO shows that the redefined tasks (from 1-11 to 1-17) remained within the bounds of the original NEPA determination. BP1 tasks were limited to information gathering and analysis. This NEPA determination applies to BP2 only.
After the completion of BP1 DOE issued a "go" decision to move forward to BP 2.

Budget Period 2:

Task 18 – CART3 Testing
Task 19 – Preview Controller Testing on ECO110
Task 20 – Yaw Controller Field Testing on ECO86 at NIRE
Task 21 – Advanced Controls testing on PelaStar TM supported Haliade
Task 22 – MARIN Tank Testing of Wave Forecasting Algorithms
Task 23 – Integrated TLP Design and Control
Task 24 – Wave Forecasting Techniques
Task 25 – Offshore Atmospheric Characterization and Controls
Task 26 – Baseline LCOE Evaluation for Supported PelaStar TM Haliade150 in US Waters
Task 27 – LCOE Reduction and Controls Innovations
Task 28 – Project Management
Tasks 18-22 include information gathering and analysis as well as field testing on previously existing turbines.

The work in Task 18 and 19 includes information gathering and analysis as well as field testing using LIDAR on two existing turbines (the CART3 and the ECO110). All field testing in Task 18 and 19 will occur at the National Wind Technology Center (NWTC) in Jefferson County, Colorado. Testing will last for approximately one year.

The work in Task 20 includes information gathering and analysis as well as field testing using a spinner anemometer on an existing ECO86 turbine located at the National Institute for Renewable Energy (NIRE) Reese Technology Center in Lubbock, Texas. Testing will last for approximately one year.

The work in Task 21 includes information gathering and analysis to develop advanced controller strategies as well as field testing the advanced controller strategies using LIDAR. Field testing may occur at the Energy Technology Institute (ETI) in Cornwall, UK. Testing would occur on an existing Haliade150 model turbine located at ETI, approximately 16 kilometers off the coast of Cornwall. Two alternative sites have been identified for testing should the Cornwall site not be available. These include the existing Belwind site located approximately 46km off the coast of Zeebrugge, Belgium, and the existing LeCarnet site in LeCarnet, France. Regardless of site, field testing will utilize an existing turbine. The LIDAR unit which will be installed on the existing turbine will be small in size (approximately 1 meter square on a 1 meter tall tripod), especially when compared to the size of the existing turbine. The LIDAR will be installed on the nacelle of an existing turbine, down wind from the blades. The existing turbine will be on a tower approximately 100 meters tall with a rotor diameter of approximately 150 meters. Testing will last for approximately one year. It is anticipated that three trips to the field site would be needed; one to install the unit, one for calibration if necessary, and one to remove the unit.

The work in Task 22 includes information gathering and analysis to develop wave forecasting as well as field testing at the Marine Research Institute Netherlands (MARIN) wave basin. All testing will occur in a controlled wave basin laboratory environment. Testing will involve the use of a 1/50th scale model floating platform. The scale model is preexisting and has been previously utilized at the MARIN facility. The model includes sensors and data collection systems. The testing will be used to validate forecasting algorithms developed in earlier subtasks within this task. All testing will be in MARINS interior wave basin laboratory which is 35.60 meters wide by 44.35 meters long. Testing will last for approximately two weeks.

Tasks 23 – 28 are limited to information gathering and analysis.

For all tasks identified in BP 2, no new construction, permits, licenses, authorizations, or modifications to existing facilities will be required to conduct the work in these tasks. All equipment installed for field testing will be installed on previously existing turbines, on a temporary basis and will not materially affect any of the turbines operational envelopes or functions. The equipment installed on the existing turbines will not have a significant impact to human health and/or environment.

For all work conducted at DOE laboratories, project activities may be subject to additional NEPA review by the cognizant NEPA Compliance Officer for the lab and will be required to meet the labs health and safety requirements.

All solid waste generated by the projects would be disposed of appropriately and would comply with all required standards for disposal of solid wastes.

No additional affects to resources or additional concerns were found to exist during this review.

Based on review of the project information and the above analysis, DOE has determined the research, development and testing activities in BP2 would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusion A9 "information gathering, data analysis and computer modeling," B3.1 "site characterization and environmental monitoring", B5.15 "small scale renewable energy research and development and pilot projects", and is 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 :

Review completed by Roak Parker 7/30/14
This NEPA determination does not require a tailored NEPA provision

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 7/31/2014

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.

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

Field Office Manager's Signature: _____ Date: _____

Field Office Manager