

PMC-ND

(1.08.09.13)

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

**RECIPIENT:**Dehlsen Associates, LLC**STATE:** CA**PROJECT TITLE** : System Agnostic Switched Reluctance Linear Generator for WECs

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001182	DE-EE0007175	GFO-0007175-002	

**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.)

**A11 Technical advice and assistance to organizations** Technical advice and planning assistance to international, national, state, and local organizations.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Dehlsen Associates, LLC to develop a Power Take Off (PTO) system in the 20-80 kilowatt range with the ability to integrate into a variety of Wave Energy Conversion (WEC) system platforms.

The proposed project consists of two Budget Periods (BP). BP1 consists primarily of design and analysis work, while BP2 includes fabrication, testing and commissioning. This NEPA review applies to BP 1 activities only, as described in the Statement of Project Objectives (SOPO), and associated with the Tasks and Subtasks listed below. There will be a Go/No-Go decision at the conclusion of BP 1 to determine if the project can move forward to BP 2. BP1 Tasks and Subtasks include:

Task 1.0: Universal Module Definition

Task 2.0: Control Development

Subtask 2.1: Control Strategy Definition

Subtask 2.2: Test Case Computation

Task 3.0: PTO MTLSRM Development

Subtask 3.1: Machine Calculation and Design

Subtask 3.2: Machine Fabrication Plan

Subtask 3.4: Power Converter Design

Subtask 3.5: Power Converter Fabrication Plan

Task 4.0: WEC Emulation

Subtask 4.1: WEC Emulator Definition

Subtask 4.2: WEC Emulator Fabrication and Testing Plan

Task 6.0: MHK Risk and Reliability Analysis

At this time, all of the BP 2 Tasks and Subtasks listed below are prohibited until additional NEPA review for the associated activities has been completed.



Task 2.0: Control Development  
Subtask 2.3: Lab Software Integration

Task 3.0: PTO MTLSRM Development  
Subtask 3.3: Machine Fabrication  
Subtask 3.6: Power Converter Fabrication  
Subtask 3.7: Machine and Converter Commissioning

Task 4.0: WEC Emulation  
Subtask 4.3: WEC Emulator Fabrication  
Subtask 4.4: WEC Emulator Commissioning

Task 5.0: Testing  
Subtask 5.1: Controls Integration Testing  
Subtask 5.2: Performance and Grid Integration Testing  
Subtask 5.3: Accelerated Life Testing  
Subtask 5.4: Results and Conclusions

Task 7.0: Impact Analysis  
Subtask 7.1: Component Rating per Unit Cost  
Subtask 7.2: Reduction in Failure Rate  
Subtask 7.3: LCOE Calculations

Task 8.0: Reporting

The proposed BP1 project activities would include the project management, report writing, analytical studies, numerical modeling, writing of controller code, and electrical and mechanical design for the PTO for broad-class, point absorber WEC systems. Dehlsen Associates would partner with Oregon State University in Corvallis, OR, Helios Engineering in Foster City, CA, Time Variable Systems in Garden City, NJ, Wedge Global in Boston, MA, and National Renewable Energy Labs (NREL) in Golden, CO to accomplish these proposed activities. The proposed BP1 activities would use no physical materials beyond basic office supplies and hardware.

Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

Based on review of the project information and the above analysis, DOE has determined the proposed activities associated with BP1 would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that these activities are consistent with actions outlined in DOE categorical exclusions A9 "Information gathering, analysis, and dissemination" and A11 "Technical advice and assistance to organizations" and is therefore categorically excluded from further NEPA review.

#### NEPA PROVISION

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:

All Budget Period 2 Tasks and Subtasks as listed below.

Task 2.0: Control Development  
Subtask 2.3: Lab Software Integration  
Task 3.0: PTO MTLSRM Development  
Subtask 3.3: Machine Fabrication  
Subtask 3.6: Power Converter Fabrication  
Subtask 3.7: Machine and Converter Commissioning  
Task 4.0: WEC Emulation

Subtask 4.3: WEC Emulator Fabrication  
Subtask 4.4: WEC Emulator Commissioning  
Task 5.0: Testing  
Subtask 5.1: Controls Integration Testing  
Subtask 5.2: Performance and Grid Integration Testing  
Subtask 5.3: Accelerated Life Testing  
Subtask 5.4: Results and Conclusions  
Task 7.0: Impact Analysis  
Subtask 7.1: Component Rating per Unit Cost  
Subtask 7.2: Reduction in Failure Rate  
Subtask 7.3: LCOE Calculations  
Task 8.0: Reporting

This restriction does not preclude you from:  
All Budget Period 1 Tasks and Subtasks as listed below.

Task 1.0: Universal Module Definition  
Task 2.0: Control Development  
Subtask 2.1: Control Strategy Definition  
Subtask 2.2: Test Case Computation  
Task 3.0: PTO MTLSRM Development  
Subtask 3.1: Machine Calculation and Design  
Subtask 3.2: Machine Fabrication Plan  
Subtask 3.4: Power Converter Design  
Subtask 3.5: Power Converter Fabrication Plan  
Task 4.0: WEC Emulation  
Subtask 4.1: WEC Emulator Definition  
Subtask 4.2: WEC Emulator Fabrication and Testing Plan  
Task 6.0: MHK Risk and Reliability Analysis

If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.


Insert the following language in the award:

You are required to:  
Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

Note to Specialist :

Wind and Water Power Technologies Office  
This NEPA determination requires a tailored NEPA provision. Please see above.  
Review completed by Logan Sholar on 11/4/2015

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

NEPA Compliance Officer Signature:  Kristin Kerwin Date: 11/4/2015  
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.