PMC-ND
(1.08.09.13)

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

RECIPIENT: The Pennsylvania State University **STATE:** PA

PROJECT TITLE : Developing a Novel Hydrogen Sponge with Ideal Binding Energy and Hugh Surface Area for Practical Hydrogen Storage

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001412	DE-EE0007655	GFO-0007655-001	GO7655

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.)
B3.6 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 funding to The Pennsylvania State University (Penn State) to carry out research and development on the synthesis of two new boron-containing polymer systems. This is a three-year research project that includes three budget periods. Only Budget Period 1 is being negotiated at this time. This NEPA review is for Budget Period 1 activities only. Additional NEPA review will be required if DOE proposes to continue funding the project into subsequent budget periods.

Budget Period 1 would focus on material synthesis, structure characterization, and hydrogen adsorption isotherms. The research would be conducted in Penn State laboratories. Activities would involve a series of chemical reactions, including synthesis of monomers, polymerization of monomers, and crosslinking reactions. The resulting polymers would be characterized by their molecular and morphological structures. In addition, they would be evaluated to understand the hydrogen binding energy and sorption capacity under various temperature and pressure conditions. The research would also involve collaboration with the HyMARC team headquartered at the Sandia National Laboratory. HyMARC research would entail computer simulation to understand thermodynamic and kinetics of the hydrogen adsorption results. The research would involve material characterization and hydrogen adsorption evaluation, as well as the verification of experimental results. The facilities in which this lab work would occur are purpose-built for the type of activities being proposed; therefore, no new or modified permits, construction of new facilities or physical modifications to existing facilities would occur as a result of the proposed project.

The proposed project would necessitate use and handling of hazardous chemicals. All chemical syntheses would be conducted at Penn State laboratories. Penn State laboratories are equipped to protect researchers from hazardous chemicals. All students and postdocs are trained and must pass a lab safety exam before gaining access to the research laboratories. The by-products generated during the chemical reactions would be water-soluble salts and organic solvents. Professional personnel would dispose of the wastes following the Penn State chemical waste disposal procedures. Sandia National Laboratory would only work with the solid plastics resulting from the laboratory work at Penn State.

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 the review of the proposal, DOE has determined Budget Period 1 fit within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410 (2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. Budget Period 1 is 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:
Budget Periods 2 and 3
This restriction does not preclude you from:
Budget Period 1
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 :

Fuel Cell Technologies Office
This NEPA determination requires a tailored NEPA provision.
Review completed by Chris Rowe, 8/9/2016

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Kristin Kerwin Date: 8/11/2016
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