

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Saint-Gobain Ceramics and Plastics, Inc.**STATE:** MA

PROJECT TITLE: Development of Durable Materials for Cost Effective Advanced Water Splitting Utilizing All Ceramic Solid Oxide Electrolyzer Stack Technology

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001647	DE-EE0008377	GFO-0008377-001	GO8377

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 Saint-Gobain Ceramics and Plastics, Inc. (Saint-Gobain) to develop a high temperature electrolysis technology which would combine a nickelate-based anode material with an all ceramic stack design. The project would seek to reduce material degradation in solid oxide electrolysis cells (SOECs) through the development of novel nickelate-based compositions, which would be integrated into specially designed SOEC stacks.

The proposed project is divided into three Budget Periods (BPs), with a Go/No-Go decision dividing each period. BP1 would focus on material characterization. BP2 and BP3 would center on testing the material stoichiometries down-selected during BP1. This NEPA review will only cover BP1. Should a 'Go' decision be made upon completion of BP1, a subsequent NEPA review would cover BP2 and BP3

Proposed project activities include materials characterization and development (e.g. nickelate based materials and doped ceria families), composite powder synthesis, chemical analysis (e.g. thermogravimetric analysis and vacuum fusion x-ray diffraction), measurement of composite properties, point defect chemistry of straight composites, button cell development, and accelerated life testing.

Composites synthesis, materials characterization, and testing would be conducted at Saint-Gobain's research and development facility in Northborough, MA, and at research laboratories within Boston University (Boston, MA), Saint-Gobain's project partner. Additional testing and analysis would be conducted by the Pacific Northwest National Laboratory ('PNNL' – Richland, WA) and the Idaho National Laboratory ('INL' – Idaho Falls, ID). No material generation would be carried out by the latter two institutions. All locations in which work would be performed are existing, purpose-built facilities. No changes in the use, mission or operation of existing facilities would be required as part of this project. No additional permits would be required in order to complete the project work activities.

The project would include the use of industrial chemicals and laboratory equipment, all of which is regularly used by

all of the project partners. Potential hazards associated with the handling of these items would be mitigated by established health and safety protocols at the facilities of each participating entity. These include detailed management of change processes, process risk assessments for all laboratory activities, engineering and administrative controls, and the use of personal protective equipment. Additional policies and procedures would be implemented as necessary as new health and safety risks are identified. Saint-Gobain and its project partners would adhere to all local, state, and Federal health, safety and environmental regulations.

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 the tasks within BP1 of the proposal 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. Tasks and subtasks within BP1 of the proposal are 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:

All tasks and subtasks associated with 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 Jonathan Hartman on 8/21/2018

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:



Casey Strickland

NEPA Compliance Officer

Date: 8/22/2018

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: _____