PMC-ND
(1.08.09.13)

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

RECIPIENT: Pajarito Powder, LLC. **STATE:** NM

PROJECT TITLE: Active and Durable PGM-free Cathodic Electrocatalysts for Fuel Cell Application

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001874	DE-EE0008419	GFO-0008419-001	GO8419

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 Pajarito Powder to integrate novel, Fe-N-C-type catalysts into a functional catalyst layer within a membrane electrode assembly (MEA). The catalyst active sites would then be optimized, as well as the manner in which they integrate into a catalyst layer to increase performance. The project would be completed over two Budget Periods (BPs), with a Go/No-Go Decision Point between each BP.

Proposed project activities include benchmark performance evaluations, characterization of catalysts and MEAs, synthesis of non-platinum group metal (PGM) catalysts, integration of catalysts into MEAs, catalyst and MEA optimization, and durability fuel cell testing. All project activities would be performed by Pajarito Powder, and its project partners, EWII Fuel Cell LLC and the Hawaii Natural Energy Institute at the University of Hawaii (HNEI). Non-PGM materials would be developed and tested at Pajarito Powder's research and manufacturing facility in Albuquerque, NM. MEA synthesis, mature fuel cell testing, and durability analysis would be performed by EWII Fuel Cells at its research and manufacturing facility in Albuquerque, NM. Fuel cell characterization, analysis and performance testing would be conducted at HNEI's Hawaii Sustainable Research Facility (HiSERF), in Honolulu, HI.

All locations are existing, purpose-built facilities that regularly perform work similar in nature to that proposed as part of this project. No physical modifications to existing facilities, ground disturbing activities, or any changes to the use, mission or operations of existing facilities would be required as part of this project. No additional permits, licenses or authorizations would need to be obtained.

Project activities would require the use of commercially available acids, solvents, heavy metals (e.g. nickel, copper, etc.), and gasses (e.g. hydrogen and nitrous oxides). All project activities would be performed indoors, in laboratory settings. Any risks associated with these activities would be mitigated through adherence to established health and safety policies and procedures. Protocols would include personnel training, oversight and monitoring, use of personal protective equipment, and proper storage and labelling of potential safety hazards. Pajarito Powder and its

project partners would observe all relevant health, safety and environmental laws and regulations when performing project work and disposing of waste materials.

Various materials would be used with internal porosity at the nano-scale. However, particles contained in the powders to be used would be larger than the nano-scale (>300-500 nm) and would not present an inhalation risk. Nonetheless, all project activities involving dry powders would be performed under fume hoods to mitigate potential safety hazards. Additionally, some pyrophoric materials, including powdered nickel, cobalt, manganese, and iron would be used. Protocols would be in place to prevent the self-ignition of these metallic particles. Specifically, a passivation method would be implemented by Pajarito Powder to prevent self-ignition of pyrophoric metals.

Based on the review of the proposal, DOE has determined the proposal fits 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. This proposal 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 the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Fuel Cell Technologies Office
This NEPA determination does not require a tailored NEPA Provision.
NEPA review completed by Jonathan Hartman, 10/29/2018

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Casey Strickland Date: 10/29/2018

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