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(1.08.09.13)

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

RECIPIENT: United Technologies Research Center **STATE:** CT

PROJECT TITLE: High Performance Non-PGM Transition Metal Oxide Oxygen Reduction Catalysts for Polymer Electrolyte Membrane Fuel Cells

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001874	DE-EE0008420	GFO-0008420-001	GO8420

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 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.
B3.15 Small-scale indoor research and development projects using nanoscale materials	Siting, construction, modification, operation, and decommissioning of facilities for indoor small-scale research and development projects and small-scale pilot projects using nanoscale materials in accordance with applicable requirements (such as engineering, worker safety, procedural, and administrative regulations) necessary to ensure the containment of any hazardous materials. Construction and modification activities would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible).

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to United Technologies Research Center (UTRC) to develop acid-stable, non-platinum group metal (PGM) transition-metal oxides for incorporation into proton-exchange membrane fuel cells (PEMFCs). The metal oxides would be developed using a combination of computational approaches and experimental methods, with project work focused on the areas of metal oxide synthesis, electrochemistry, catalyst ink development, fuel cell testing and characterization. The project would be completed over two Budget Periods (BPs), with a Go/No-Go decision point in between each BP.

Proposed project activities for BP1 would include development of a program management plan, identification of acid-stable oxides through computer modelling, development, characterization and testing of acid-stable oxides, electrochemical characterization of acid-stable oxides and development and optimization of a catalyst layer composition. BP2 activities would include fabrication of Membrane Electrode Assemblies (MEAs), incorporation of MEAs into PEMFCs, and accelerated-stress and durability testing of MEAs.

UTRC (East Hartford, CT) and its project partner, the Massachusetts Institute of Technology (MIT – Cambridge, MA) would perform all project activities in existing, purpose-built laboratory facilities owned and/or operated by each respective entity. Both UTRC and MIT regularly carry out work similar in nature to that included as part of this project. UTRC and MIT would also collaborate with national laboratories participating in the DOE-funded ElectroCat

Consortium and Energy Materials Network. These would likely include Argonne National Laboratory (Lemont, IL) and Los Alamos National Laboratory (Los Alamos, NM). All laboratory, research and testing facilities in which project work would be conducted, are equipped to complete the proposed research and processing activities. No change in the use, mission or operation of existing facilities would be required. Likewise, no new permits, licenses, or authorizations would be required to perform project activities.

Solvents (water, acids, bases, and alcohols) and catalysts (including synthesized metal oxide materials), would be used and handled throughout the project. Risks associated with handling these items would be mitigated through adherence to established health and safety policies and procedures. Protocols would include the use of personal protective equipment, personnel training, monitoring and control, and observance of proper materials handling, labelling, and disposal norms. Metal oxides would be produced with particle sizes at the nano-scale. Fume hoods would be used when handling all nanomaterials. Nanoparticulate waste would also be stored separately from oxidizable materials and solvents. UTRC and its project partners would adhere to all relevant Federal, state, and local health, safety and environmental regulations when completing project work.

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.

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assisstance agreement:

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

Notes:

Fuel Cell Technologies Office
This NEPA determination requires a tailored NEPA Provision.
NEPA review completed by Jonathan Hartman, 10/30/2018

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.
There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.
The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.
The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Casey Strickland Date: 10/31/2018

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

- [x] Field Office Manager review not required
- [ ] Field Office Manager review required

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

Field Office Manager's Signature: _____ Date: _____

Field Office Manager