PMC-ND
(1.08.09.13)

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

RECIPIENT: 3M Company **STATE:** MN

PROJECT TITLE: Low-Cost, High-Performance Catalyst Coated Membranes for PEM Water Electrolyzers

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001874	DE-EE0008425	GFO-0008425-001	GO8425

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 funding to 3M Company to develop improved processes for fabrication of components for proton exchange membrane water electrolyzers (PEMWE), including membranes, catalysts, electrodes, and catalyst coated membranes (CCM). Fabrication processes would be developed in laboratory settings and then scaled up for process testing at production scale. 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 focus on fabrication process development of PEMWE CCMs and constituent components, based on laboratory-scale experiments. Process development would target components including membranes, catalysts, electrodes, and CCMs. Laboratory-scale fabrication experiments would be performed on component parts and processes, including electrochemical performance validation. Development of a component inspection process and cost model would also be completed under this BP. Proposed project activities for BP2 would center on scaling up the down-selected fabrication processes developed under the previous BP to production scale. The fabrication process for each component part would be adapted to this scale. Additionally, quality inspections, performance assessments and production-scale cost modeling would be performed.

All project activities would be performed by 3M Company and its project partner, Giner, Inc. at existing, purpose-built laboratory and manufacturing facilities that regularly perform work similar in nature to that proposed as part of this

project. Facilities to be used would include 3M Company's manufacturing plant in Menomonie, Wisconsin, 3M Company's research facility in St. Paul, MN, Giner's research and manufacturing facility in Newton, MA, and the National Renewable Energy Laboratory in Golden, CO. All laboratory, research and testing facilities 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.

Materials to be used in laboratory experiments would include catalyst materials, polymers, and solvents. All such handling would occur indoors, in laboratory settings. Electrical shock hazards would be present when electrolyzer stacks are electrically energized during operation. Electrolyzer stack operation would be conducted at Giner, Inc. facilities. Any risks associated with the handling of the stated materials, or performance of project activities would be mitigated through adherence to established health and safety policies and procedures. Protocols followed by 3M Company and its project partners include personnel training, the use of personal protective equipment, monitoring and oversight, and proper labelling/storage of hazardous substances. Any hazardous waste produced by the project would be transported and disposed of by a qualified hazardous waste disposal company. All work activities would comply with relevant Federal, state, and local health, safety and environmental regulations.

3M Company facilities would use and handle nanoscale materials, including high-aspect ratio platinum or iridium supported composite particles (ca. 1 micron length by ca. 50nm diameter) and platinum nanoparticles on carbon supports. Potential risks associated with the handling of these materials would be addressed by adherence to specific protocols and protective equipment for these substances.

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, 11/1/2018

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: 11/1/2018

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