PMC-ND
(1.08.09.13)

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

RECIPIENT: Proton OnSite **STATE:** CT

PROJECT TITLE: A Novel Stack Approach to Enable High Round Trip Efficiencies in Unitized PEM Regenerative Fuel Cells

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002022 Topic 2D	DE-EE0008848	GFO-0008848-001	GO8848

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), 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 Proton OnSite to demonstrate a novel unitized reversible fuel cell (URFC) system based on polymer electrolyte membrane (PEM) technology. The project would seek to develop the URFC system so as to achieve greater performance efficiency and reduced costs, as compared with current technologies. The project would be completed over two Budget Periods, with a Go/No-Go Decision Point in between each BP.

BP1 would focus primarily on development of the URFC system requirements and the fuel cell stack components. Project activities during this BP would include cell design, analysis, and fabrication (e.g. preparation of catalyst inks, catalyst deposition, membrane processing, and cell assembly), performance testing (e.g. accelerated life testing, electrolysis testing), down-select of membrane candidates, fuel cell system optimization, and completion of an initial techno-economic analysis (TEA). BP2 would consist of continued URFC testing with a focus on demonstrating the potential to meet efficiency and operational targets. Proposed activities would include cell stack optimization, performance testing, finalization of the TEA, and completion of a design for manufacture and assembly (DFMA) analysis.

Proton OnSite would coordinate all project activities. Laboratory testing and fabrication of testing materials would be

performed at its manufacturing facility in Wallingford, CT. Sub-recipients Southern Company Service ('SCS' – Birmingham, AL), Lawrence Berkeley National Laboratory ('LBNL' – Berkeley, CA), Electric Power Research Institute ('EPRI' – Palo Alto, CA), and Gaia (Arlington, VA) would perform work activities limited to computer modeling and analysis. All project activities would be completed at existing, purpose-built facilities. No physical modification to existing facilities, construction of new facilities, ground disturbing activities, or changes to the use, mission, or operation of existing facilities would be required. Likewise, no additional permits or authorizations would be needed for the completion of project activities.

Project work would include the use and handling of pressurized gases, industrial chemicals, and high-powered machinery. These materials and equipment are routinely handled by Proton OnSite at its facilities. All work activities would be performed in controlled laboratory environments. Any risks associated with the performance of these activities would be mitigated through adherence to established health and safety policies and procedures. These include Hazard Communication, Hazard Analysis, Emergency Response, Chemical Hygiene, and Hazardous Waste Operation procedures. All personnel would be appropriately trained to observe these protocols. Hydrogen would be vented into a gas management system, which would include combustible gas sensors and automatic emergency shut-off mechanisms. Chemicals would be stored in appropriate containers/storage cabinets. Proton OnSite and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations.

Nanomaterials would be handled throughout the project at Proton OnSite's laboratory facilities. The lab spaces in which they would be used are designed for the use, storage, and disposal of these materials. Proton OnSite regularly works with nanomaterials and has established policies and procedures that would be observed to mitigate associated risks. Protocols would include the use of ventilated hoods fitted with a constant flow mechanism to prevent inhalation, flow monitors, and the use of personal protective equipment.

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.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Fuel Cell Technologies Office
This NEPA determination does not require a tailored NEPA Provision.
NEPA review completed by Jonathan Hartman, 12/10/2019

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: 12/10/2019

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