PMC-ND
(1.08.09.13)

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

RECIPIENT: Hexagon R&D, LLC **STATE:** NE

PROJECT TITLE: Carbon Composite Optimization Reducing Tank Cost

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002229	DE-EE0009240	GFO-0009240-001	GO9240

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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to Hexagon R&D, LLC (Hexagon) to develop processes for carbon fiber synthesis for use in hydrogen storage applications. Research would focus on targeted developments in material synthesis, processing, and hydrogen storage vessel design. Carbon fiber produced via the optimized processes would be used to fabricate and test hydrogen storage vessels. The project would be completed over five Budget Periods (BPs).

Proposed project activities would include computer modeling/design, material synthesis and processing (e.g. polymers, resins, carbon fibers), material characterization, fabrication/testing of hydrogen storage vessels, techno-economic analysis, and development of recycling methods for resin and fiber recovery. All synthesis would be performed at laboratory scale utilizing 4 and 50 gallons reactors. Sub and full-scale hydrogen storage vessels would be fabricated using the carbon fibers and methodologies developed.

Hexagon would lead all project management tasks and coordinate work activities amongst its project partners. Polymer synthesis, carbon fiber fabrication/processing, and testing would occur at Cytec Engineered Materials' laboratory facility in Piedmont, SC and at the facilities of Oak Ridge National Laboratory (ORNL) in Oak Ridge, TN. Pressure vessel modeling, fabrication, and testing would be completed at Hexagon's manufacturing facility in Lincoln, NE. Hexagon regularly fabricates hydrogen storage vessels at this location. Pacific Northwest National Laboratory (PNNL) would contribute to modeling work, pressure vessel fabrication, and development of recycling processes for composite materials at its facilities in Richland, WA. Additionally, Newhouse Technology and Kenworth Truck Company would assist in completing engineering analyses from their offices in Lincoln, NE and Renton, WA, respectively. No laboratory work would be performed at these locations.

All project activities would be performed at existing, purpose-built facilities. No physical modifications to existing facilities, construction of new facilities, ground disturbing activities, or changes to the use, mission, or operation of existing facilities would be required for any of the above activities. No additional permits, licenses, or authorizations would be required.

Project work would involve the use and handling of reactive materials and industrial solvents. In order to mitigate against any risks associated with this handling, Hexagon and its project partners would adhere to established corporate health and safety policies and procedures, including the performance of regular health and safety

assessments. Waste products produced during synthesis and fabrication, including polymer wastes and resins, would be disposed of properly in accordance with established waste management policies. Waste water produced as a result of carbon fiber processing would be treated prior to disposal. All project work would be performed in accordance with Federal, state and local health, safety, and environmental regulations.

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, 10/21/2020

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: 10/21/2020
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☑ 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