PMC-ND
(1.08.09.13)

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

RECIPIENT: Advent Technologies, Inc. **STATE:** CT

PROJECT TITLE: Facilitated Direct Liquid Fuel Cells with High Temperature Membrane Electrode Assemblies

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000966	DE-EE0006959	GFO-0006959-001	GO6959

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:

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 federal funding to Advent Technologies, Inc. to increase the level of performance of hydrogen fuel cells to a level greater than the current state-of-the-art direct methanol fuel cell (DMFC).

Activities associated with the proposed project would include preparation of gas diffusion electrodes and membrane electrode assemblies (MEAs) through ink formulation and lamination, respectively, analysis of physical properties of these materials, testing of MEAs, data analysis, component characterization, and catalyst fabrication. Preparation of gas diffusion electrodes and MEAs would be conducted at Advent's dedicated research lab in Hartford, CT while testing, analysis, characterization and fabrication activities would be completed at Los Alamos National Lab (LANL) in Los Alamos, NM. These facilities are designed for this type of research; therefore, no modifications or new permits, additional licenses and/or authorizations would be necessary.

The proposed project would involve use and handling of carbon black (Advent--less than 10kg; LANL—less than 1 kg) and strong acids (Advent—less than 4L; LANL—less than 100g). All such handling would occur in a laboratory setting with vented hoods to contain and control carbon black. Advent Technologies, Inc. employs safe laboratory practices with regards to these materials, and has developed standard operating procedures (SOPs) that require personal protective equipment (PPE), outline expected methods of handling, and detail any risks for technicians to be aware of. Los Alamos National Laboratories has established a record and procedures for handling catalyst materials and testing of MEAs. For all work conducted at DOE laboratories, project activities may be subject to additional NEPA review by the cognizant NEPA Compliance Officer for the lab and would be required to meet the labs health and safety requirements.

Carbon black wastes would be diluted and added to the facility's standard waste treatment processor. Any waste containing precious metals (platinum, etc.) would be retained and sent to a refinery for recovery of the platinum value. Liquid wastes of nominal pH (2-12) would be added directly to the waste treatment lines: for those outside those ranges, a pre-neutralization is performed first. No siting, construction or major expansion of waste storage, disposal, recovery, or treatment actions/facilities would be required.

Based on review of the project information and the above analysis, DOE has determined that the activities associated with the proposed project would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusions B3.6 "small-scale research and development, laboratory operations and pilot projects and 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 you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Fuel Cell Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Rebecca McCord, 3/23/2015

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 3/24/2015
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