

PMC-ND  
(1.08.09.13)

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



RECIPIENT:Rochester Institute of Technology

STATE: NY

PROJECT TITLE : NANOMETAL-INTERCONNECTED CARBON CONDUCTORS (NICCS) FOR ADVANCED ELECTRIC MACHINES

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
FOA-0001467	DE-EE0007863	GFO-0007863-001	GO7863

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:

- 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 Rochester Institute of Technology (RIT) to develop nanometal-interconnected carbon conductors for use in advanced electric machines.

RIT and its partners would conduct research on carbon nanotube (CNT) rovings and extruded wire materials through chemical vapor deposition process modifications, chemical treatments, and electroplating to incorporate nanoscale materials and enhance network transport. This would be followed by modifying the CNT surface chemistry to develop solution phase and vapor phase deposition technologies to increase the mass loading of dopants or metals in a CNT wire which would optimize the synergy between roving production, chemical and electrochemical modification, and vapor phase deposition to enhance conductivity.

Activities at the three proposed project locations would consist of similar hazards. These activities would require the use and handling of various hazardous materials, including metals, industrial solvents, gaseous precursors, and nanomaterials. All handling of these materials would occur in research labs and dedicated manufacturing facilities with dedicated hazardous material handling and disposal practices to ensure employee safety, environmental protection, and compliance with federal and state laws. Each location has its own environmental health and safety office that would develop and enforce safety policies, provide protective equipment, maintain controls, perform monitoring, to reduce risks to employees and the public.

The nanoscale materials to be used would include CNTs. The project team would follow OSHA guidelines by using a combination of engineering controls including the use of ventilated enclosed glove boxes equipped with high-efficiency particulate air filters, and other controls like handwashing facilities, procedures to address cleanup of nanomaterial spills, and personal protective equipment such as gloves and protective clothing. Any unused CNT materials would be disposed of by thermal oxidation.

Work proposed to be conducted at the Naval Research Laboratory may be subject to additional NEPA review by the cognizant Naval NEPA compliance authority for the laboratory prior to initiating such work. Further, any work conducted at the Naval Research Laboratory must meet the laboratory's health and safety requirements.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410 (2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal 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 the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Insert the following language in the award:

You are required to:

Work proposed to be conducted at the Naval Research Laboratory may be subject to additional NEPA review by the cognizant Naval NEPA compliance authority for the laboratory prior to initiating such work. Further, any work conducted at the Naval Research Laboratory must meet the laboratory's health and safety requirements.

Note to Specialist :

Advanced Manufacturing Office  
This NEPA determination does require a tailored NEPA provision.  
Review completed by Chris Rowe, 2/23/2017

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature:  Casey Strickland  Date: 2/24/2017  
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