PMC-ND
(1.08.09.13)

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

RECIPIENT: Purdue University **STATE:** IN

PROJECT TITLE : HIGH-SILICON STEEL SHEET BY SINGLE STAGE SHEAR-BASED PROCESSING

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
FOA-0001467	DE-EE0007868	GFO-0007868-001	

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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to Purdue University for the design and development of a new process for production of high-silicon electrical steel sheets. The project involves a first-stage process scaling and a second-stage scale-up of the primary process. Once the target scale is achieved, a new kinematic pilot production system would be designed/built to produce the steel sheets at the target scale.

The proposed project would develop a scaled hybrid cutting-extrusion process in order to produce a new class of electrical sheet steel from iron-silicon alloys of high silicon content. This class of steels would have superior magnetic and electrical properties that could enhance the efficiency and performance of electrical motors. Besides enabling production of the high-silicon content steel sheet that is very difficult to produce by current multi-stage sheet rolling processes, the cutting-extrusion would produce sheet from billet in a single step, be less energy-intensive than rolling, and would require much simpler infrastructure than current sheet forming processes.

At the Purdue University Center for Materials Processing and Tribology in Lafayette, Indiana the project would include instrumented experimental studies of cutting-extrusion process and materials and process characterization using advanced test equipment. At the Pacific Northwest National Laboratory in Richland, Washington the project would involve the use of mechanical testing equipment and laboratories. At M4 Sciences in Lafayette, Indiana the project would involve the use of design resources, including computer equipment and small machinery. At the Purdue University Grainger Power Magnetics Fabrication Laboratory in Lafayette, Indiana the project would involve the use of electrical testing equipment and machinery. At all locations, existing health and safety policies and procedures would be followed, including the use of personnel training, engineering controls, personal protective equipment, and internal audits. Additional policies and procedures would be defined and adopted for any new health and safety risks identified at Purdue University Center for Materials Processing and Tribology.

The proposed project would not require any physical modification of facilities or construction of new facilities. No ground disturbances would result. This project would not change the use, mission, or operation of existing facilities and would not require any special permits, licenses, or authorizations.

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.

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:
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.

Note to Specialist :

Advanced Manufacturing Office
This NEPA determination requires a tailored NEPA provision.
Review completed by Chris Rowe, 2/9/2017

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By Casey Strickland Date: 2/9/2017

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