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(1.08.09.13)

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

RECIPIENT: North Carolina State University **STATE:** NC

PROJECT TITLE : PowerAmerica: The Next Generation Power Electronics Manufacturing Innovation Institute

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000683	EE0006521	GFO-0006521-001	

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.)
B1.31 Installation or relocation of machinery and equipment	Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.
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 North Carolina State University (NC State) to establish, effectively manage, and assess the performance of PowerAmerica: The Next Generation Power Electronics Manufacturing Innovation Institute (referred to interchangeably as "PowerAmerica" or "Institute.") The Institute is planned as a consortium established under a Cooperative Agreement with the DOE and led by NC State (the prime recipient) , with participation from sub-recipients of the award, Member Companies, universities and other educational institutions, as well as other state and federal government agencies and research organizations. The Institute would define and manage a program to enable the next generation of energy-efficient, high-power electronic chips and devices by making wide bandgap (WBG) semiconductor technologies cost-competitive with current silicon-based power electronics in the next five years.

This project has five budget periods but only project activities within budget period 1 (BP1) have been defined. This NEPA Determination is specific to BP1 only. Further NEPA review will be required for the remaining budget periods once those activities have been defined and negotiated.

Each task/subtask in BP1 would be completed by either the prime recipient or one of the sub-recipients. Proposed activities in BP1 are generally laboratory scale operations, data analysis and modeling, or educational and reporting activities. The location of the facilities and description of proposed activities for the prime recipient and each sub-recipient is detailed within question 2b of the completed EQ1 for the project. For the majority of the project partners, the scope of work proposed fits within the type and scale of activities that already occur within their facilities and no additional permitting, authorization, waste generation, emissions or construction would be required. Only one of the sub-recipients (X-FAB) is modifying their existing facility to complete their proposed activities (see below). United Silicon Carbide would modify processes at their existing foundry for activities in Task 2.2 but these modifications would not require any physical modifications to the facility and all existing health and safety policies, storage and

handling procedures, permits, and authorizations would be adequate for the slightly modified processes (see uploaded document USiC EERE Environmental Questionnaire V1 8_8_2013 (1).docx for additional details). Tasks/subtasks in BP1 are described in detail in the uploaded document EERE 165 - Statement of Project Objectives (SOPO) _Combined.doc.

The X-FAB proposed activities in Task 2.1 would require the conversion of some existing Silicon (Si) wafer processing equipment at their existing Si wafer fabrication facility to handle Silicon Carbide (SiC) wafers and the acquisition and installation of new tools that are required for unique SiC processing requirements. The majority of the converted and purchased equipment would be installed in the existing cleanroom without modification but there would be a portion of the cleanroom that would be converted from a training facility to a WBG back end facility. No changes to existing permits or authorizations would be needed as a result of the proposed project activities. A slight increase in the quantity of toxic and hazardous waste generated and wastewater discharged is anticipated but existing management, storage, transport, and disposal procedures would still be adequate for the increase anticipated. A slight increase in the amount of manufacturing materials used is anticipated. No significant impacts to any of the integral elements are anticipated as a result of modifying the existing Si wafer fabrication facility to fabricate SiC wafers also. See the uploaded document EERE Environmental Questionnaire V1 8_8_2013 - XFABTX.pdf for additional details.

Based on review of the project information, DOE has determined the proposed activities in BP-1 would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed activities are consistent with actions contained in DOE categorical exclusions A9 "information gathering, analysis and dissemination," B1.31 "installation or relocation of machinery and equipment," and B3.6 "small-scale research and development, laboratory operations and pilot projects," and are categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:
Budget Period 2 through 5 activities
This restriction does not preclude you from:
Budget Period 1 activties
If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Advanced Manufacturing Office

This NEPA Determination requires a tailored NEPA provision.

Review completed by Casey Strickland 11/14/2014

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 11/14/2014
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.