

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Virginia Tech**STATE:** VA

PROJECT TITLE: Achieving Cyber-Resilience for Power Systems using a Learning, Model-Assisted Blockchain Framework

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002243	DE-EE0009338	GFO-0009338-001	

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 Virginia Tech to develop cyber security tools for distributed energy resources (DER) applications. Virginia Tech would develop an overlay network, incorporating machine learning and block-chain algorithms, to enable secure communications, architecture management, and attack detection/response. Software would be developed and tested utilizing physical hardware at demonstrations sites with existing DER and solar photovoltaic (PV) infrastructure. The project would be completed over three Budget Periods, with a Go/No-Go Decision Point in between each BP.

Proposed project activities would include data analysis, computer modeling, algorithm/software development, network architecture development, use-case development/simulations, field demonstrations of cyber security tools, and stakeholder engagement. Existing data would be used throughout the project, as well as data collected from routine operations at utility partners' service areas.

For field demonstration activities, the security tools developed as part of the project would be integrated into DER and solar PV infrastructure at utility sites operated by Virginia Tech's project partners (discussed further below). The security tools' capabilities (e.g., secure communications, architecture management, and attack detection/response) would be validated at these locations. Specific sites would be selected after the project has commenced and as part of negotiations with Virginia Tech's project partners. Equipment installations would be limited to temporary deployments of small-scale commercial off-the-shelf hardware, including communication interfaces, monitoring sensors, remote terminal units, and servers. Hardware would be integrated into existing equipment and would not require any facility modifications, ground disturbance, or changes to the use, mission, or operation of existing facilities. No additional permits or authorizations would be required.

Virginia Tech would coordinate all project activities and perform data analysis, computer modeling, algorithm/software development, network architecture development, simulations, and validation testing at its campuses in Arlington and Blacksburg, VA. GE Research, Utah State University, and CPS Defense LLC would

perform computer modeling and validation testing of security tools at their facilities in Niskayuna, NY, North Logan, UT, and Washington, DC, respectively. Additional validation testing of security technologies would be performed at an existing solar generation power plant operated by project partner Energy Artisans in Somerset County, MD. The specific site would be selected after the project has commenced. Computer modeling/simulations and algorithm development would also be performed by project partners Washington University in St. Louis, Commonwealth Edison, and University of Arizona.

Project work would consist primarily of software development and modeling, with some small-scale hardware deployments. All work would be performed in existing, purpose-built facilities. Given the nature of project activities, potential health and safety hazards are considered to be minimal. Nonetheless, Virginia Tech and its project partners would adhere to established corporate health and safety policies and observe all applicable Federal, state, and local health, safety, and environmental regulations.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Solar Energy Technologies Office

This NEPA determination does not require a tailored NEPA Provision.

NEPA review completed by Jonathan Hartman, 04/12/2021

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: Kristin Kerwin

Date: 4/15/2021

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: _____
Field Office Manager

Date: _____