

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



RECIPIENT: GE Research

STATE: NY

PROJECT TITLE : Multi-Port Converter Interface for Streamlined Distributed Energy Resources Integration in District Energy Systems

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002573	DE-EE0010279	GFO-0010279-001	GO10279

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.

B5.15 Small-scale renewable energy research and development and pilot projects

Small-scale renewable energy research and development projects and small-scale pilot projects, provided that the projects are located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to GE Research to develop, build, and field-test a multi-port converter interface capable of aggregating a combined heat and power system (CHP), photovoltaics (PV), and a battery energy storage system (BESS) for district energy systems application. A 375kW multi-port converter prototype for field demonstration would be built and deployed at Tok School in Tok, Alaska. The project would be completed over three Budget Periods (BPs) with a Go/No-Go decision point between each BP. This NEPA determination is applicable to all three BPs.

A 125kW prototype would be designed and built as a building block for the larger converter. This would be installed at a test facility for extended performance testing prior to deployment of the larger prototype at the field demonstration site. The scaled-up 375kW multi-port interface converter would then be built and tested. Two prototype units would be manufactured, the second would serve as a back-up.

The 46kW PV, 375kWh BESS, the multi-port converter, and microgrid would be installed and integrated with the existing 120kW biomass CHP system currently operated by Tok school. The multi-port converter would be installed indoors in the existing CHP barn. The estimated size of the converter is 6 feet by 7 feet and up to 7 feet high. The BESS would be installed inside, either in the CHP barn or in a different building. The PV and BESS would be interconnected to the converter. All control hardware would be integrated, and commissioning tests would be performed before energization. After clearance is received from the utility, the multi-port converter would be interconnected to the grid and field demonstration tests would be performed. Field validation data would be collected for at least 6 months.

Proposed project activities by location are listed below:

GE Research – Niskayuna, NY

- Design, simulations, and testing of the multi-port control, control hardware-in-the-loop simulations, submodule

hardware testing, installation and testing of the manufactured 375kW multi-port converter prototype for full scale validation.

Center of Additive Technology Advancement GE Power Conversion – Imperial, PA

- Manufacturing, assembly, and routine and factory acceptance testing of 375kW multi-port converter units.
- Packaging and shipping of equipment.

Clarkson University – Potsdam, NY

- Development of forecasting, economic dispatch, and adaptive protection algorithms and power simulations.

Tok School – Tok, AK

- Commissioning of field demonstration equipment including multi-port converter, connecting with existing biomass CHP, the PV system, and the BESS integration of full system with the grid.
- Operation of the demonstration site for at least 6 months. Collection of performance data.

No physical modification to existing facilities, change of mission, or construction of new facilities at GE Research, GE Power Conversion, or Clarkson University would occur. Installation of PV at Tok School would require ground disturbance of a 5,000 square foot area for cabling and for installation of the mounting structure. This would occur on previously disturbed ground near the existing CHP barn belonging to the school and would be at least 300 feet from the closest school building. Electrical and construction permits would be required to erect and operate the PV. The multi-port converter would need permission to operate from the utility. GE Research would obtain necessary permits and permissions prior to installation and operation of equipment.

DOE has considered potential impacts on resources of concern, including those of ecological, historical, cultural, and agricultural nature. Due to the absence of any of these resources in the proposed project area, DOE does not anticipate adverse impacts on resources of concern.

Project activities would involve the use and handling of various hazardous materials, including metals and steel for the fabrication of the multi-port converter and the assembly of the microgrid assets at the field demonstration site. Any risks associated with the handling of these materials would be mitigated through adherence to established health and safety policies and procedures. All waste products would be disposed of by licensed waste management service providers. GE Research and its project partners would observe all applicable federal, state, and local health, safety, and environmental regulations.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Advanced Manufacturing Office
Review completed by Shaina Aguilar on 3/9/23.

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: Casey Strickland

NEPA Compliance Officer

Date: 3/14/2023

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: _____