

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Paragon Robotics LLC**STATE:** OH

**PROJECT TITLE:** Advanced District Energy Controls for Improved Efficiency and Resilience

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001980	DE-EE0009143	GFO-0009143-001	GO9143

**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.)

**B2.2 Building and equipment instrumentation** Installation of, or improvements to, building and equipment instrumentation (including, but not limited to, remote control panels, remote monitoring capability, alarm and surveillance systems, control systems to provide automatic shutdown, fire detection and protection systems, water consumption monitors and flow control systems, announcement and emergency warning systems, criticality and radiation monitors and alarms, and safeguards and security equipment).

**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.

**B5.1 Actions to conserve energy or water** (a) Actions to conserve energy or water, demonstrate potential energy or water conservation, and promote energy efficiency that would not have the potential to cause significant changes in the indoor or outdoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, manufacturers, and designers), organizations (such as utilities), and governments (such as state, local, and tribal). Covered actions include, but are not limited to weatherization (such as insulation and replacing windows and doors); programmed lowering of thermostat settings; placement of timers on hot water heaters; installation or replacement of energy efficient lighting, low-flow plumbing fixtures (such as faucets, toilets, and showerheads), heating, ventilation, and air conditioning systems, and appliances; installation of drip-irrigation systems; improvements in generator efficiency and appliance efficiency ratings; efficiency improvements for vehicles and transportation (such as fleet changeout); power storage (such as flywheels and batteries, generally less than 10 megawatt equivalent); transportation management systems (such as traffic signal control systems, car navigation, speed cameras, and automatic plate number recognition); development of energy-efficient manufacturing, industrial, or building practices; and small-scale energy efficiency and conservation research and development and small-scale pilot projects. Covered actions include building renovations or new structures, provided that they occur in a previously disturbed or developed area. Covered actions could involve commercial, residential, agricultural, academic, institutional, or industrial sectors. Covered actions do not include rulemakings, standard-settings, or proposed DOE legislation, except for those actions listed in B5.1(b) of this appendix. (b) Covered actions include rulemakings that establish energy conservation standards for consumer products and industrial equipment, provided that the actions would not: (1) have the potential to cause a significant change in manufacturing infrastructure (such as construction of new manufacturing plants with considerable associated ground disturbance); (2) involve significant unresolved

conflicts concerning alternative uses of available resources (such as rare or limited raw materials); (3) have the potential to result in a significant increase in the disposal of materials posing significant risks to human health and the environment (such as RCRA hazardous wastes); or (4) have the potential to cause a significant increase in energy consumption in a state or region.

#### Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to Paragon Robotics, LLC, for the research and development of an advanced district energy (DE) control architecture and algorithm set to reduce energy waste. Project partners would include Cleveland Thermal, Brite Energy Innovators (formerly known as TBEI) and Cleveland State University. The project would be completed over three Budget Periods (BPs). This NEPA determination is applicable to all three BPs.

Energy use data would be gathered in BP1 to identify the most strategic locations to install wireless sensors for collecting data to establish the baseline performance and customer demand for the current Cleveland Thermal DE system. The sensors would be installed on 15 to 20 existing Cleveland Thermal customers in the downtown Cleveland area for real time data, and would be left in operation at the end of the DOE project. The sensors would be approximately 150mm x 100mm x 30mm. For customers with older steam condensate meters, Cleveland Thermal would replace the older meters before affixing sensors to the new meters. Most of the meters would be inside facilities, but a few could be located outside. The data from the sensors would be utilized to develop a thermodynamic and demand model. Information from the modeling would then be used to establish theoretical control optimizations to generate efficiency improvement targets. BP2 would require the development and testing of the resulting algorithm changes on a small scale testbed. The design and economic analysis of a combined heat and power energy storage system addition would also be completed. In BP3, a low voltage control system would be installed and the effectiveness of the control performance, system security, and overall energy efficiency would be measured and validated.

Proposed project activities by location are listed below:

Cleveland Thermal, Cleveland, OH

- Replace two large flow meters, upgrade low voltage controls, install approximately 50 wireless sensors on existing equipment and install a 65kW natural gas microturbine

Brite Energy Innovators (formerly known as TBEI) - Warren, OH

- Install a testbed control system with low voltage controls and sensors to simulate a DE energy model

Cleveland State University – Cleveland, OH

- Install a combined heat and power energy storage system approximate 5'x10'x5' with a control system in mechanical room to allow for additional data and testing as a two-way system, with computer and modeling analysis

Paragon Robotics, LLC

- Computer and modeling analysis

Laboratory work at Brite Energy Innovators would occur in a controlled, purpose built facility. Work at Cleveland Thermal and Cleveland State University would involve possible hazards due to hot pipes and high pipe pressures. All locations would be managed in accordance with existing safety policies, and follow Federal, state, and local environmental regulations.

All equipment installation would occur inside facilities, other than the few outdoor meters that would require replacement with their associated sensors that would be added. The National Register of Historic Places indicates that there are historical districts and historical properties present in downtown Cleveland. While exact locations have yet to be determined for the outdoor meter replacements with the addition of sensors, the types of equipment that would be installed would not require modifications to the facilities, new permits, additional licenses and/or authorizations, ground disturbing activities, or changes in the operation of existing facilities. Based on the types of activities proposed, DOE does not anticipate any impacts to resources of concern due to proposed activities of the project.

#### NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

[Advanced Manufacturing Office](#)

[This NEPA determination does not require a tailored NEPA Provision](#)  
[NEPA review completed by Diana Heyder, 5/29/2020](#)

#### 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: \_\_\_\_\_



Casey Strickland

NEPA Compliance Officer

Date: 6/2/2020

#### 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: \_\_\_\_\_