



U.S. Department of Energy Categorical Exclusion Determination Form

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Proposed Action Title: University of Utah - Low-Cost Ultra-Low-Power Wireless Chemical Sensor Networks for Early Detection of Invasive Parasitic Weeds and Herbivores in BioFuel Crops

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Salt Lake City, Utah; Lincoln, NE; Mead, NE

Proposed Action Description:

Funding will support the project team's small-scale research and development activities to develop ultra-low-power sensors to enable the early detection of invasive weeds and insects in biomass crop production. Specifically, the project team will (1) develop a sensor technology that enables "ultra-low-power" operation, (2) integrate the sensor technology into a solar-powered node that can be easily applied to plants and can communicate with a central data station, and (3) field test the sensors and wireless communication network. If successful, these sensors could significantly increase the economic viability of biomass generation by minimizing the loss of crops due to weeds and insects (currently at 40%) as early detection would allow rapid, targeted applications of pesticides and herbicides.

Project activities will be conducted at existing facilities at University of Utah (Salt Lake City, UT), University of Nebraska (Lincoln, NE), and the Eastern Nebraska Research and Extension Center (Mead, NE) designed for the applicable activities. Project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and local regulatory requirements. No modifications will be made to the existing facility to accommodate the proposed work. University of Utah, under the terms of its ARPA-E Cooperative Agreement, is prohibited from commencing applicable project work involving outdoor field work before (1) obtaining the necessary permits and approvals and (2) providing written assurances to ARPA-E of the same.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of [10 CFR Part 1021](#).

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal 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 proposal that may affect the significance of the environmental effects of the proposal.

The proposal 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.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer:

(Beatrice Goode)
for William Borkover
(This form will be locked for editing upon signature)

Date Determined: 01/25/2019