

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



RECIPIENT: Rutgers University

STATE: NJ

PROJECT TITLE : Foundational Agrivoltaic Research for Megawatt Scale (FARMS)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002697	DE-EE0010439	GFO-0010439-001	

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.)

B3.1 Site characterization and environmental monitoring

Site characterization and environmental monitoring (including, but not limited to, siting, construction, modification, operation, and dismantlement and removal or otherwise proper closure (such as of a well) of characterization and monitoring devices, and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis). Such activities would be designed in conformance with applicable requirements and use best management practices to limit the potential effects of any resultant ground disturbance. Covered activities include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. (This class of actions excludes activities in aquatic environments. See B3.16 of this appendix for such activities.) Specific activities include, but are not limited to: (a) Geological, geophysical (such as gravity, magnetic, electrical, seismic, radar, and temperature gradient), geochemical, and engineering surveys and mapping, and the establishment of survey marks. Seismic techniques would not include large-scale reflection or refraction testing; (b) Installation and operation of field instruments (such as stream-gauging stations or flow-measuring devices, telemetry systems, geochemical monitoring tools, and geophysical exploration tools); (c) Drilling of wells for sampling or monitoring of groundwater or the vadose (unsaturated) zone, well logging, and installation of water-level recording devices in wells; (d) Aquifer and underground reservoir response testing; (e) Installation and operation of ambient air monitoring equipment; (f) Sampling and characterization of water, soil, rock, or contaminants (such as drilling using truck- or mobile-scale equipment, and modification, use, and plugging of boreholes); (g) Sampling and characterization of water effluents, air emissions, or solid waste streams; (h) Installation and operation of meteorological towers and associated activities (such as assessment of potential wind energy resources); (i) Sampling of flora or fauna; and (j) Archeological, historic, and cultural resource identification in compliance with 36 CFR part 800 and 43 CFR part 7.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Rutgers University (RU) to research crop performance, soil health, energy production and socio-economic aspects of agrivoltaic systems for ecologically diverse farms. Agrivoltaic systems consist of previously installed photovoltaic (PV) arrays on farmland in order to generate solar energy while allowing for crop planting under and between the rows of PV panels.

Project activities would occur over three Budget Periods (BPs) at three RU farm locations operated by the New Jersey Agricultural Experiment Station (NJAES), including Rutgers Agricultural Research and Extension Center (RAREC) (Bridgeton, NJ), Cook Campus Animal Farm (Cook) (New Brunswick, NJ), and Snyder Research and Extension Farm (Synder) (Pittstown, NJ). Project activities would include soil experimentation, crop trials, outreach activities, energy assessments, and economic data collection. Delaware State University (DSU) (Dover, DE) would carry out some outreach activities.

BP1 would consist of obtaining supplies and preparing sites for crop trials and soil monitoring. This would include establishing crops at RAREC, Snyder, and Cook. Soil, energy, crop, and economic data management plans would be created. Predictive models for completed arrays would be created, as well as electrical performance models. An advisory committee of regional experts would be set up, and stakeholders from Rutgers would be consulted. The Regional Agrivoltaic Extension Network (RAEN) would be set up to have regular meetings between Rutgers

representatives and other partners. In-ground sensors would be installed to measure dynamic soil properties, and measurements of soil and shading properties would be taken.

BP2 would consist of crop performance, soil health, economic data, and electrical output analyses. Crops would be replanted as needed and management would continue. Technical assistance training, college-level courses, and summer workshops would be prepared and piloted, including installation of model agrivoltaics. A land-grant university network would be created. Summer workshops would take place at DSU, as well as inclusion of some undergraduate courses. Approval would also be obtained for community-based human subjects research in BP3.

Project and preliminary plans for the community-based human subjects research would be submitted to the cognizant Institutional Review Board (IRB) to determine if any of the proposed activities are considered human subjects research and, if so, IRB approval in accordance with 10 CFR 745.103 would be obtained prior to initiating the proposed activities in the field.

BP3 would consist of two additional years of crop trials and continued data collection on soil properties, economics, and electrical production. BP3 would also consist of two years of technical assistance trainings with farmers and specialists, continuing college-level courses, expanding the land-grant network, and continuing RAEN meetings. Online and in-person studies of community perceptions of agrivoltaics would be connected, by bringing some participants to an RU farm site, and having some participants participate online. After this, follow up surveys and interviews would be conducted.

Ground disturbances would include seeding, harvesting, managing crop performance, and using instruments to probe and take soil samples around agrivoltaic installations. Soil data sensors would be installed in agrivoltaic and control plots up to a depth of one meter. These activities fall within the standard agricultural production operations performed by NJAES research farms and should not affect any resources of concern.

This project would involve the handling of potentially hazardous materials, including pesticides and herbicides. The usage of potentially dangerous equipment such as farm equipment, including tractors and harvesters would also take place. All such use would be performed by trained professionals and workers who regularly perform similar activities in conjunction with their work at the NJAES research farms.

DOE has considered the scale, duration, and nature of proposed activities to determine potential impacts on resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate impacts on these resources which would be considered adverse, significant, or require DOE to consult with other agencies or stakeholders. Pesticide use would be applied by permitted pesticide applicators.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Solar Energy Technologies Office (SETO)
Review completed by Alex Colling on 06/09/2023.

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: _____



Signed By: Andrew Montano

NEPA Compliance Officer

Date: 6/23/2023

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: _____