

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Terabase Energy, Inc.**STATE:** CA

PROJECT TITLE: Autonomous Control System for PV Table Delivery and Placement

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002243	DE-EE0009326	GFO-0009326-001	

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 Terabase Energy, Inc. (Terabase) to develop control software to automate onsite material distribution and installation at utility-scale solar photovoltaic (PV) power plants. Control software would be developed for integration into the autonomous vehicle systems of specialized vehicles designed for solar panel installation. Vehicles with the control software would be able to navigate routes and place PV systems autonomously. An existing autonomous vehicle would be used for laboratory and outdoor testing.

The project would be completed over two Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP. Project work would include field testing of the autonomous vehicle, to be performed during BP1 Subtask 2.4 and Task 6 and BP2 Subtasks 11.3 and 13.2. This would occur at a site that has not yet been selected. Site selection would take place after the project has commenced and the Recipient has negotiated site access with potential utility PV partners. Because DOE cannot meaningfully assess potential impacts of field testing until a site is selected, the aforementioned tasks and subtasks are restricted and will not be reviewed as part of this determination. DOE will review these tasks/subtasks once a testing site(s) has been selected and all relevant information has been submitted to DOE for review. This NEPA Determination will review all other tasks and subtasks.

Proposed project activities would include specifications development, software development, computer modeling, sensor development, and laboratory/outdoor system testing of the control system using an autonomous vehicle designed for solar panel installation. An existing vehicle, owned by project partner University of California Berkeley (UCB), would be used for testing. Sensors and communication equipment integrated into the vehicle would connect wirelessly with corresponding communication equipment installed at the field-testing location. Testing would assess the vehicle's ability to autonomously navigate within a predefined area and place solar PV equipment for installation. These parameters would be defined by the control software.

Terabase would coordinate all project activities and lead research and design efforts. Software development, sensor development, and autonomous vehicle development would be performed at the laboratory facilities of UCB in Berkeley, CA. No physical modifications to existing facilities, ground disturbance, or changes to the use mission, or operations of existing facilities would be required at this location. No additional authorizations or permits would be required at this location.

Component development and indoor/outdoor vehicle testing would be performed at the R&D facilities of project

partner SunPower (Davis, CA). All outdoor testing at SunPower's facilities would be performed within the confines of an existing outdoor testing facility. Small-scale communications equipment (e.g. sensor, antennas, GPS transponders) may be installed temporarily within the outdoor testing facility. Minor ground disturbing activity, consisting of vegetation removal or ground "smoothing" may be performed within the boundaries of the testing facility. Because vegetation removal would occur in a previously developed location that is actively used for research testing, DOE has determined that there would be no potential for adverse impacts to sensitive resources. No additional authorizations or permits would be required at this location.

The outdoor testing facilities of SunPower in Davis, CA are located adjacent to designated prime farmland. No impact is expected to designated prime farmland areas, as work activities would be limited to testing of small-scale assemblies within the footprint of the existing outdoor R&D facilities. No land conversion would occur as part of the project.

Project work would involve the use and handling of heavy machinery, powered equipment, and suspended loads. All such handling would be performed at controlled, purpose-built site locations. To mitigate potential risks, Terabase and its project partners would adhere to established corporate health and safety policies and procedures. Protocols would include employee training, the use of personal protective equipment, engineering controls, monitoring, and internal assessments. Terabase and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations.

NEPA PROVISION

DOE has made a conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

BP1 Task 1, Subtasks 2.1 – 2.3, Tasks 3 – 5, Tasks 7 - 9
BP2 Task 10, Subtasks 11.1 – 11.2, Task 12, Subtask 13.1, Task 14

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

BP1 Subtask 2.4 and Task 6
BP2 Subtasks 11.3 and 13.2

Notes:

Solar Energy Technologies Office
This NEPA determination requires a tailored NEPA Provision.
NEPA review completed by Jonathan Hartman, 01/29/2021

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.

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Casey Strickland

NEPA Compliance Officer

Date: 1/29/2021

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: _____