

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Georgia Institute of Technology**STATE:** GA**PROJECT****TITLE:**

Advanced Characterization of Particulate Flows for Concentrated Solar Power Applications

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001697	DE-EE0008372	GFO-0008372-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), 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 Georgia Institute of Technology (Georgia Tech) to characterize the heat transfer and flow properties of particulate (granular) flows at elevated temperatures of up to 800°C. Experimental measurements, modeling, and simplified flow experimentations would be performed in order to further understanding of particulate flow behavior for concentrated solar power applications.

Proposed project activities include computer modeling, data analysis, testing/characterization of particulate flows, shakedown experiments, database development, plane experiments in a high-flux solar simulator, and the organization of workshops to disseminate results. Laboratory testing/characterization experiments would be conducted using a flow rig, consisting of a vacuum chamber with heating capabilities and a Fourier-transform infrared (FTIR) spectrometer with a built-in window for collecting optical beam input from the samples.

All research activities would be conducted in existing, purpose-built laboratory facilities at Georgia Tech's main campus in Atlanta, Georgia. Particulate flow measurements and characterization activities would be carried out at the campus' Carbon Neutral Energy Solutions Laboratory. Radiative heat transfer measurements would be taken at Georgia Tech's Nanoscale Thermal Radiation Laboratory.

The proposed project would involve the use and handling of various hazardous materials, including particulates and laboratory chemicals for cleaning. Particulate matter to be characterized at each laboratory would consist of ceramic sintered bauxite proppants and hydraulic fracturing proppants, both of which are used regularly by each facility for other applications. Approximately 10 – 20 kg of particulate matter would be characterized. All such handling would occur in-lab.

During experimentation, a window would be placed over the flow rig to mitigate any health risks associated with testing. Georgia Tech would adhere to established health and safety protocols, including use of property safety equipment, monitoring, and the provision of relevant safety training. All project activities would be conducted in

accordance with local, state, and Federal health, safety and environmental regulations. Project materials would all be disposed of in accordance with local waste management regulations.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410(2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Solar Energy Technologies Office

This NEPA determination does not require a tailored NEPA Provision.

NEPA review completed by Jonathan Hartman, 08/17/2018

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Casey Strickland

NEPA Compliance Officer

Date: 8/17/2018

FIELD OFFICE MANAGER DETERMINATION

Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____

Field Office Manager

Date: _____