PMC-EF2a

(2.04.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: Massachusetts Institute of Technology **STATE:** MA

PROJECT TITLE : Concentrated Solar Thermoelectric Power

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000595	DE-EE0005806	GFO-0005806-001	

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.

Rational for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the Massachusetts Institute of Technology (MIT) to perform laboratory research and development activities to develop two high efficiency concentrated solar thermoelectric generators. The generators would utilize the temperature difference to convert heat into electricity. This would be combined with thermal storage to demonstrate the potential for electricity to be generated at any time of the day.

Researchers would design, fabricate and test two thermoelectric generators using two different materials, each would be optimized for a specific operating temperature range. Researchers would perform modeling on the prototype demonstration including optical, thermal, mechanical and electrical components of the full prototype system. Thermoelectric, radiative and thermal insulation properties would be included in the modeling. The modeling would provide the basis for construction of the prototype demonstration device. The device would be a one sq. meter system, including proper thermal insulation and heat sink, and thermal storage. The device would be demonstrated to adhere to concentrated solar power conditions over 24 hours. Reports would compiled on modeling and experimental data, and the demonstration of high efficiency concentrated solar thermoelectric generation and integration with storage to demonstrate a 24 hour operation cycle.

All proposed work would be performed in the laboratories of MIT and Boston College. Work would be performed at MIT's Rohsenow-Kendall Heat Transfer Lab located at 77 Massachusetts Ave., Cambridge, Massachusetts 02139. Work would also be performed at Boston College's Higgins Hall-Room 135, 155, 157, 160 located at 140 Commonwealth Ave., Chestnut Hill, Massachusetts 02467.

The proposed project would not have adverse effects on wetlands, floodplains, cultural resources, threatened and/or endangered species because the scope of work would occur in existing university laboratories.

MIT and Boston College completed an R&D questionnaire addressing the protocols for laboratory safety, risk management, chemical handling and waste disposal. MIT and Boston College comply with standard laboratory safety procedures and have appropriate safety equipment available in all laboratories. MIT and Boston College have all applicable permits in place to conduct research on site. No additional permits are needed for project activities. The laboratory general safety procedures would be followed and have routine safety inspections performed by EH&S supervisors.

Based on review of the project information and the above analysis, DOE has determined the research and prototype development would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with the actions contained in DOE categorical exclusion A9 "information gathering, analysis, and dissemination," and B3.6 "small-scale research and development," and 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 you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Diana Scott 8.22.2012

DOE Funding: $990,000
Leveraged Funds: $247,000
Total Project Cost: $1,237,000

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Lori Gray / Lori Gray Date: 8/22/2012
NEPA Compliance Officer

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: _____ Date: _____
Field Office Manager