PMC-EF2a

(2.06.02)

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

RECIPIENT: Trustees of Boston University **STATE:** MA

PROJECT TITLE : Prototype Development and Evaluation of Self-Cleaning Concentrated Solar Power Collectors and Receivers (0595-1625)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000595	DE-EE005794	GFO-0005794-001	

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:

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.
B5.17 Solar thermal systems	The installation, modification, operation, and removal of commercially available smallscale solar thermal systems (including, but not limited to, solar hot water systems) located on or contiguous to a building, and if located on land, generally comprising less than 10 acres within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rational for determination:

DOE is proposing to provide federal funding to the Trustees of Boston University (BU) to conduct research and development activities that advance prototype development of self-cleaning solar mirrors. DOE funding would be used to design, build, test and install the prototypes at two locations including Sandia National Laboratory and Abengoa Solar test facilities.

Laboratory work would be conducted at BU's Department of Electrical and Computer Engineering electromagnetics laboratory (8 Saint Mary's Street, Boston, Massachusetts 02478). BU has completed an R&D questionnaire addressing the protocols for laboratory safety, risk management, chemical handling and waste disposal. The university complies with standard safety procedures and all processes and procedures are monitored by university lab safety committee members. With respect to material engineering, BU would use conducting ink for depositing electrodes on glass plates and use a polymer film of urethane to coat the electrodes and the glass substrate. All work would be performed under a fume hoods.

The proposed project would require the following materials:

- alcohol and acetone for cleaning the glass substrate plates
- conducting ink (Indium tin oxide and silver ink paste), and polyurethane for dielectric coating
- 10 cm x 10 cm glass plates in small numbers (<50) of different thickness, polymer (such as Mylar) substrates
- materials including metals (aluminum, steel, and copper), dust samples from Harper Lake, Mojave Desert and plastics

No hazardous materials or heavy metals would be used. Chemicals would be stored in fume hoods. Waste materials are disposed of following standard lab practices involved in chemical, electronics, and optical laboratories. BU has all applicable permits to conduct research on campus.

Field testing of the prototyped devices would be conducted at 1) Sandia National Lab test facility in Albuquerque, New Mexico and 2) Abengoa Solar test facilities in Lakewood, Colorado. Field-testing would be performed with 20 prototype panels, each no larger than 30 cm x 30 cm x 2 cm glass mirrors with integrated transparent electrodynamic screen. No hazardous materials would be involved. The test units would be returned to the lab to investigate effects of UV radiation exposures. For all work conducted at DOE laboratories, project activities may be subject to additional NEPA review by the cognizant NEPA Compliance Officer at the lab.

Based on this information, DOE has determined the work outlined is consistent with activities identified in categorical exclusion B3.6 (indoor bench-scale research and conventional laboratory operation) and B5.17 (solar thermal systems).

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

Cristina Tyler 8.3.2012

DOE Funding: $730,000
Cost Share: $105,000
Total Project Cost: $835,000

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Kristin Kerwin Date: 8/6/2012

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