

PMC-EF2a

(201402)

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



**RECIPIENT:**Bandgap Engineering, Inc.

**STATE:** MA

**PROJECT TITLE :** Intermediate Bandgap Solar Cells from Nanostructured Silicon

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0000387	DE-EE0005323	GFO-0005323-001	0

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** Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

**Rational for determination:**

DOE is proposing to provide federal funding to Bandgap Engineering (Bandgap) to perform laboratory research to increase the efficiency of silicon based solar cells by turning silicon into an intermediate bandgap solar cell. The proposed project would involve forming controlled silicon nanowire arrays with electronic structures different than bulk silicon.

Bandgap would partner with Illuminex Corporation (Illuminex) and Pennsylvania State University (PSU) to perform laboratory research only. All three facilities have completed an R&D questionnaire addressing the protocols in place regarding laboratory safety, risk management, chemical handling and waste disposal.

Bandgap is located at 6 Gill Street, Suite H, Woburn MA 01801. All safety protocols are put in place by the Safety Officer, reviewed externally by Innovative Safety Services, Inc. and meet all OSHA standards. All permits are in place for this facility including: The Commonwealth of Massachusetts Department of Public Safety – Division of Fire Protection, Permission to Store Flammable Liquids at 6 Gill Street STE H&J Woburn MA 01801, Massachusetts Water Resources Authority and General Permit for Low Flow and Pollutant Dischargers (Permit #43403397 Expiration Date 12.15.2014).

PSU is located at 211 Oswald Tower, University Park, Pennsylvania 16802. PSU safety protocols are developed based on the requirements established by the Environmental Health and Safety (EHS) department and include standard procedures for such things as hazardous materials handling and disposal and radiation protection. EHS personnel monitor compliance through regular laboratory inspections.

Illuminex is located at 1064 New Holland Avenue, Lancaster, Pennsylvania 17601. Work would be performed in three laboratories: wet chemistry, silicon process and materials evaluation. All safety protocols are in compliance with OSHA regulations and are internally and externally monitored.

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 operations).

**NEPA PROVISION**

DOE has made a final NEPA determination for this award

Insert the following language in the award:

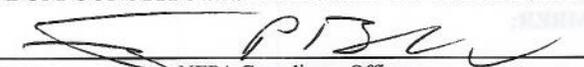
If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Cristina Tyler 10.26.2011

DOE Funding: \$750,000  
Cost Share: \$149,929  
Total Project Cost: \$899,929

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature:  Date: 10/26/11  
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