PMC-EF2a

(2.06.02)

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

RECIPIENT: Impact Technologies LLC **STATE:** OK

PROJECT TITLE : Deep Geothermal Drilling using Millimeter Wave Technology

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000522	DE-EE0005504	GFO-0005504-001	GO5504

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:

Impact Technologies LLC (Impact) would utilize DOE and cost share funds to further develop the intense millimeter wave (MMW) radiation technology for ablation/vaporization and melting of rocks in drilling to deep geothermal formations. Phase I of this work would consist of laboratory bench testing and prototyping of the technology and analysis of results. Laboratory work would be conducted at Massachusetts Institute of Technology's (Cambridge, MA) Plasma Science and Fusion Center gyrotron facility and Rock Mechanics Laboratory.

This project includes two Phases but this NEPA review is for Phase I only. Prior to initiating Phase II activities, there would be a go/no-go decision point after which DOE would determine whether or not to fund Phase II activities. Additional NEPA review will be required if this project is selected to continue with Phase II activities.

Task 0 – Project Management and Reporting

Phase I – Experiment and Design
1. MMW Bench Testing
2. Evaluation of Rock Specimens
3. Evaluate Experimental Results
4. Design Key Drilling Components
5. Prototype and Test Drilling Components
6. Evaluation of Project MMW Drilling / Feasibility Study

There is no fieldwork associated with Phase I of this project.

According to the R&D laboratory questionnaire, all required permits are in place and no additional permits are needed for project activities. There would be no hazardous liquid effluents or toxic substances produced from this work during Phase I activities. All safety procedures and protocols are monitored by University personnel, the State of Massachusetts, and the Cambridge Fire Department and are subject to regulation by those entities as well as OSHA and the EPA.

Phase I Budget: $1,000,000 (DOE) $93,815 (cost share)

Phase I of this project is comprised of information gathering, analysis, and dissemination; and laboratory operations;

therefore the DOE has categorized this into Categorical Exclusions A9 and B3.6.

NEPA PROVISION

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:
Phase II
This restriction does not preclude you from:
Task 0
Phase I (all tasks)
If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

EF2a prepared by Casey Strickland

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 11/30/2011
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