

PMC-EF2a

(20402)

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



RECIPIENT: Palo Alto Research Center Incorporated

STATE: CA

PROJECT TITLE : Recovery Act: Experiment-Based Model for the Chemical Interactions between Geothermal Rocks, Supercritical Carbon Dioxide and Water

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-PS36-09GO99018	DE-EE-0002765	GFO-10-527	GO2765

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 (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.
- 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:

Palo Alto Research Center, Inc. (PARC) would design and develop a geochemical model that simulates an Enhanced Geothermal System reservoir. The model would develop a foundation in theory and measurement of physical and chemical interactions between minerals, rocks, scCO₂ and water. The work would take place at the existing PARC facility located at 3333 Coyote Hill Rd. Palo Alto, CA 94304.

This project was previously approved by GFO-10-082 on December 23, 2009 with a CX A9 and B3.6. Subsequent to that approval, there was a recipient change for the award from Symyx Technologies, Inc. to PARC therefore another NEPA determination was needed. There has been no change to project in regards to scope or tasks that would be performed. No field work would be done for this project. All rock samples would be acquired from candidate reservoirs or similar potential EGS sites. All project work consists of conventional laboratory operations.

The project is divided into three phases with multiple tasks and subtasks.

Phase 1 – Batch study of mineral solubility and kinetics to refine the existing scCO₂-EGS models

Phase 2 – Develop a Rock-Fluid Dynamic Measurement System (RFDMS) to mimic recirculation of the EGS fluids through a bed of reservoir rocks under subsurface and supercritical conditions

Phase 3 – Experimentation to create an enhanced model for EGS transitioning from water to scCO₂

According to the R&D Laboratory Questionnaire, no additional permits would be needed and no additional air pollutants would be created beyond what is part of normal permitted laboratory operations. Safety equipment such as gas cabinets, fume hoods, gas detections systems and fire and smoke detection systems are in place. All safety procedures and protocols are monitored internally by PARC's Environmental Health and Safety Department and are subject to local and federal (including OSHA) regulatory bodies.

All project work is comprised of information gathering, data analysis, document preparation; and conventional laboratory operations; therefore the DOE has categorized this proposal into Categorical Exclusions A9 and B3.6.

NEPA PROVISION

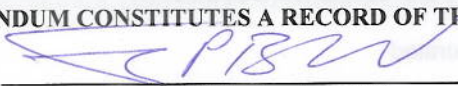
DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

EF2a prepared by Casey Strickland

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: 
NEPA Compliance Officer

Date: 8/5/10

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: _____