

PMC-EF2a

(20102)

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



RECIPIENT: West Virginia University

STATE: WV

PROJECT TITLE : Analysis of Low-Temperature Utilization of Geothermal Resources

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-EE0000075	DE-EE0002745	GFO-10-217	2745

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.

Rational for determination:

West Virginia University would develop innovative methods of using low-temperature geothermal resources to increase the efficiency of other renewable energy processes and illustrate the impacts that geothermal energy can have on the national scale. Three case-studies would be analyzed: 1) A hybrid biomass-geothermal cogeneration system at Cornell University, 2) Analysis of low-temperature geothermal heating and drying for biomass processing systems at Iowa State, and 3) A retrofit and expansion to a district heating system in a community redevelopment project at West Virginia University. Upon completion of the project, they would deliver a resource assessment for low-temperature geothermal energy utilization demonstrating that geothermal energy is truly a nationwide energy resource. Project work would take place at West Virginia University.

The project is divided into three phases with multiple tasks:

Phase 1: Analysis of integration/utilization potential of low-temperature geothermal sources

- 1.1 Evaluation of integration potential of geothermal and biomass energy
- 1.2 Develop models of EGS geothermal reservoirs for conditions near case-study sites
- 1.3 Analysis and estimation of EGS costs at base case sites, and drilling costs in particular
- 1.4 Characterize heat demand profiles and process model for direct-use
- 1.5 Facilitation of EGS costs into base case models
- 1.6 Analyze direct heating cases with steady-state parametric studies
- 1.7 Develop an Aspen model for geothermal electric power generation
- 1.8 Selection of the most promising integration strategies

Phase 2: Process optimization and economic analysis

- 2.1 Collect and improve accuracy of analytical input parameters
- 2.2 Perform reservoir simulations of sites at varying depths, temperatures, and flowrates
- 2.3 Characterize biomass feedstock types
- 2.4 Analyze organic binary Rankine cycles configuration performance
- 2.5 Low-temperature EGS resource characterization
- 2.6 Modification of SEDS, MARKAL, and NEMS models to incorporate low-temperature EGS resources
- 2.7 Develop preliminary conceptual design of hybrid co-gen systems
- 2.8 Analyze biomass-geothermal hybridization cases at steady-state
- 2.9 Detailed optimization of selected integration strategy

Phase 3: Regionalization/generalization and scale-up of results

- 3.1 Generalization of EGS costs by region
- 3.2 Development of supply curves
- 3.3 Identify regional opportunities for large-scale supply and utilization
- 3.4 Develop optimization strategies for direct heating, electric, and hybrid co-gen
- 3.5 Preliminary economic evaluations of promising heating, electric, and hybrid co-gen

- 3.6 Perform techno-economic analysis for specific scale-up opportunity
- 3.7 Modeling of market penetration of low-temperature EGS in national models
- 3.8 Determine fuel savings and CO2 reductions achieved for each configuration

This project is comprised of information gathering, data analysis, document preparation, and dissemination; therefore the DOE has categorized this proposal into Categorical Exclusion A9.

NEPA PROVISION

DOE has made a final NEPA determination for this award

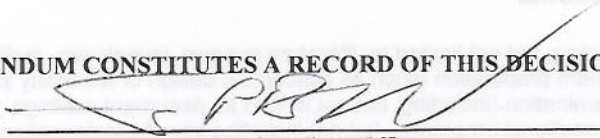
Insert the following language in the award:

Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



NEPA Compliance Officer

Date: _____

3/29/10

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: _____