



Department of Energy

Golden Field Office
1617 Cole Boulevard
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DOE/EA 1733

FINDING OF NO SIGNIFICANT IMPACT FOR THE PROPOSED CALPINE ENHANCED GEOTHERMAL SYSTEMS PROJECT WITHIN THE NORTHWEST GEYSERS, CALIFORNIA

AGENCY: Department of Energy, Golden Field Office

ACTION: Finding of No Significant Impact

SUMMARY: In accordance with the U.S. Department of Energy (DOE) National Environmental Policy Act of 1969 (NEPA) implementing regulations, DOE prepared an Environmental Assessment (EA) that analyzed the potential impacts associated with an Enhanced Geothermal System (EGS) demonstration project (Project). The Project would be located within the Northwest Geysers, Sonoma County, California within the Geysers-Clearlake Known Geothermal Resource Area (KGRA).

DOE, through its Golden Field Office, proposes to provide federal funding to the Calpine-Geysers Power Company (Calpine) for the Project. Granting of financial assistance for this project constitutes a major federal action as defined by NEPA. DOE must consider the possible environmental impacts from the Project before committing to provide funding. The EA evaluates the impacts of the No Action and the Proposed Action alternatives under the following impact areas:

- Air Quality
- Geology and Geothermal Resources
- Seismicity and Induced Seismicity
- Biological Resources
- Water Resources
- Noise
- Aesthetics and Visual Resources
- Human Health and Safety and Risk Assessment
- Cumulative Impacts



All discussion, analysis and findings related to the potential impacts of construction and operation of the EGS demonstration project are contained in the Final Environmental Assessment (EA). The Final EA is hereby incorporated by reference.

The Proposed Action analyzed under this EA includes:

- Phase I: Pre-stimulation
 - Development of the stimulation plan for the proposed EGS concept
 - Construction of a pipeline spur to deliver water from the Santa Rosa Geysers Recharge Project (SRGRP) for injection to the PS-31 well pad
 - Re-opening of two wells (known as Prati State-31 (PS-31) and Prati-32 (P-32)) and performing the necessary well bore modifications (i.e., open and complete the selected wells and potentially deepen the wells)
- Phase II: Stimulation
 - Implementation of the stimulation
 - Monitoring and validation of the stimulated EGS system
- Phase III: Long Term Injection, Data Collection, and Monitoring
 - Continued injection, monitoring and validation of the sustainability of the EGS project

The EGS project would be located entirely on privately-owned surface lands within a mineral estate owned by the State of California, and private Fee Lands. Activities would only occur in previously disturbed areas (surface areas). The objectives of the project are to:

- Develop and demonstrate the stimulation methodologies to create an EGS in a deep, very hot fractured rock system by means of injection of treated wastewater at temperatures substantially lower than the formation.
- Investigate how the water injection affects the fractured rock system, both mechanically (e.g., cooling shrinkage and fracture shear reactivation) and chemically (e.g., dissolution) and how such processes contribute to EGS.

In accordance with applicable regulations and policies, DOE sent scoping notices to potentially interested federal, state, and local agencies, and published a notice in the local newspaper. DOE also mailed a scoping notice to adjacent property owners and posted the notice on the DOE Golden Field Office reading room website. The scoping letters described the Proposed Action and requested assistance in identifying potential

issues that could be evaluated in the EA. Consultations were also conducted with the local State Historic Preservation Office, U.S. Fish and Wildlife Office, and local Native American tribes.

DOE sent notices announcing the availability of the Draft EA for public comment to the same state, local, and federal agencies, representatives, businesses, and individuals that received the scoping notice. The Draft EA was made available for public review and comment on the DOE Golden Field Office reading room website.

One public comment letter was received on the Draft EA from the Friends of Cobb Mountain organization. The main concerns identified by the Friends of Cobb Mountain relate to the potential for seismic events; potential intensity of seismic events; effects of seismicity on the community; and that the analysis in the EA did not incorporate residents' testimony in regards to induced seismicity.

An analysis of community reaction to earthquakes was completed through an evaluation of hotline calls. The evaluation demonstrated that 6 percent of the earthquakes over M 2.0 that occurred between January 1, 2004 and August 31, 2009 (within 0.5 miles of the Calpine strong motion instrument) were felt, and of those, the vast majority occurred within 10 km of the community reporting the motion. This analysis of verbal testimony has been included in the Final EA (Appendix L). The analysis does not change any conclusions of the EA, and further serves to strengthen the conclusion that the project would not likely have a significant adverse effect to the communities. The project could induce small seismic events; however, the project is over 10 km from the nearest communities, and based on existing data from existing operations and earthquake monitoring, is not likely to produce earthquakes capable of damage to buildings or structures in the nearby communities. These findings are described in detail in the report entitled "Evaluation of the Environmental Impacts of Induced Seismicity at the Calpine Enhanced Geothermal System Project, The Geysers, California" included in the Draft and Final EA (Appendix I).

DOE has responded to the comments in the EA and determines the analysis to be thorough and complete. DOE determines that impacts related to these issues are less than significant in regards to the Proposed Action. A complete copy of the comments and responses to the concerns noted are included as Appendix L of the Final EA.

DETERMINATION: DOE determines that providing funding to support the construction and operation of the proposed EGS demonstration project within the Northwest Geysers, Sonoma, County, California, would not constitute a major Federal Action significantly affecting the quality of the human environment, as defined by the National Environmental Policy Act.

The applicant-committed measures identified in Chapter 2.8 (pp 2-21 to 2-26) of the EA shall be incorporated as conditions of funding in the DOE award documents. The measures include obtaining and complying with all required permits and minimizing potential impacts through the implementation of construction and operation Best Management Practices and other identified design features.

The preparation of an Environmental Impact Statement is not required and DOE is issuing this Finding of No Significant Impact.

All discussions and findings related to the project site and the Proposed Action are contained within the Final EA. Copies of the Final EA are available at the DOE Golden Field Office Public Reading Room website at:

http://www.eere.energy.gov/golden/Reading_Room.aspx, or from:

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