

DESERT PEAK EAST, NEVADA: A STEP TOWARD EGS COMMERCIALIZATION IN THE BASIN AND RANGE

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ABSTRACT

A project to assess the technical and economic feasibility of developing an EGS project at the Desert Peak East geothermal resource area is proposed within the boundaries of the approximately 9,000-acre Desert Peak leasehold. The presence of a potential EGS resource is confirmed by deep drilling and existing geological and geophysical data. This prototype Basin and Range EGS project seeks to enhance or create permeability in a subsurface environment that is common throughout the province. In the State of Nevada alone, there are numerous similar systems with low environmental sensitivity, good infrastructure and accessible terrain that could be developed for EGS power.

Elements of the first phase of the program include a conceptual hydrogeologic model of the EGS reservoir, well designs and drilling plans, fracturing programs, resource testing programs, forecasts of heat extraction rates, power plant design scenarios, economic analyses, environmental, regulatory and mitigation plans, and a project implementation plan with a detailed budget. The objectives of subsequent phases of this project will be the drilling, logging, hydraulic fracturing and testing of the reservoir, followed by the construction and operation of a facility employing EGS technology for commercial power generation.

The project seeks to demonstrate that: 1) hydraulic fracturing technology can be applied commercially to geothermal systems; 2) adequate analytical techniques (such as subsurface stress analysis, fracture definition through seismic monitoring, numerical simulation of fluid flow and heat transfer in fractured media, etc.) required for an EGS project are already available; 3) neither water loss nor cooling of the produced fluid is a prohibitive barrier to a well-designed EGS project; and 4) commercial power can be generated reliably from an EGS project.

The project relies upon proven technology for reservoir characterization and routine wellfield/power plant operation, and the application of existing fracturing technology to EGS. What remains to be demonstrated is the feasibility of creating a large and complex enough fracture network to support a modest initial power plant. Until attempts are made to create such fracture networks, EGS energy will remain a concept rather than a reality.

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