

## IS EGS COMMERCIALY FEASIBLE?

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### ***Keywords:***

*EGS, Enhanced Geothermal System, HFR, Hot Fractured Rock, HDR, Hot Dry Rock, Desert Peak, levelized power cost, EGS power cost*

### **ABSTRACT**

This paper presents an evaluation of the cost of electric power from Enhanced Geothermal Systems (EGS), that is, reservoirs with sub-commercial permeability enhanced by hydraulic stimulation. The parameters in this exercise reflect the conditions encountered at the Desert Peak EGS project in Nevada, but the results should be applicable, at least qualitatively, to any EGS project. The approach taken is to : 1) use numerical simulation to evaluate energy recovery versus time over an assumed 30-year project life for various system configurations (number and spacing of wells, assumptions about stimulation effectiveness, etc; 2) estimate the levelized power cost for each configuration, based on capital cost, O&M cost, the cost of money and inflation rate (using Monte Carlo sampling to address uncertainties); 3) determining the sensitivity of levelized cost to the cost components, interest and inflation rates, and resource characteristics (maximum practical pumping rate, reservoir characteristics, and the depth to the reservoir at the site); and 4) estimating future EGS costs and considering the possible technology improvements that could be made by that time. Levelized cost was shown to be a strong function of stimulated volume and well configuration. The lowest possible levelized cost was estimated at 5.43¢/kWh (2006 dollar) for a repeated pattern and a stimulated volume of 7 billion cubic feet. To forecast what the levelized cost of EGS power might be by 2050, the most likely values of the U.S. prime interest rate and the inflation rate were defined based on the economic trend over the last 40 years. The possible values of the other explicit and implicit variables were then estimated for 2050 using certain assumptions about the market forces and the technology improvements achievable by then. The results of this study confirm that EGS power is a strategic resource rather than a commercial resource today. With adequate research, development and demonstration over the next decade or two, EGS power should become commercially competitive by 2050.

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