

Agency: Commerce, Community and Economic Development**Grant Recipient: Community & Economic Dev****Project Title:****Project Type:** New Construction and Land Acquisition

AEA - Mount Spurr Geothermal Project Development

State Funding Requested: \$18,000,000
One-Time Need**House District:** Southcentral Region (12-35)**Brief Project Description:**

Development of a 50MW geothermal power plant at Mount Spurr.

Funding Plan:

Total Project Cost:	\$25,000,000
Funding Already Secured:	(\$7,000,000)
FY2012 State Funding Request:	<u>(\$18,000,000)</u>
Project Deficit:	\$0

Funding Details:

To date, \$7 million has been spent on exploration and core drilling. \$5 million of this funding came from Ormat Technologies, and \$2 million came from a Round IV Renewable Energy Grant.

Detailed Project Description and Justification:

Mt Spurr is a volcano located approximately 75 miles west of Anchorage and 40 miles west of the Beluga natural gas power plant. During the last two years Ormat Technologies ("Ormat"), a leading global geothermal developer based in Reno, Nevada, has been conducting, through its affiliate Ormat Nevada Inc., extensive geothermal exploration on 36,000 acres of land leased from the state on the south flanks of the volcano.

Ormat estimates it could generate 50 MW of net baseload power from a geothermal power plant to be developed at Mt Spurr by 2016. Such a power plant may potentially be expanded to 100 MW or more by 2018-2019. Ormat's goal is to deliver the power to Railbelt utilities under a long-term, fixed price, Power Purchase Agreement.

Geothermal power is reliable and baseload, delivering consistent megawatt-hours 24 hours per day, 365 days per year, which is something most other forms of renewable resources cannot provide. Geothermal power generation technology is highly field-proven and has been successfully deployed by Ormat as well as by other developers in multiple states (e.g. California, Nevada, and Hawaii) and countries (e.g. Iceland, New Zealand and The Philippines) for several decades. From these reasons, for a generation and/or transmission entity, a geothermal power plant shows up in a resource plan much like a conventional fossil-fuel based power plant. Geothermal power is also unique in its little-to-no emissions, minimal land use, low visual impact and other environmental merits.

Should a commercial geothermal power plant be built at Mt Spurr the benefits to Railbelt utilities will include:

- Significant relief in the demand for depleting Cook Inlet natural gas
- Price stability, since the long term Power Purchase Agreement will state a fixed price, decoupled from future prices of fossil fuel and other commodities
- Significant progress towards achieving the state's target of 50% renewable generation by 2025

The AEA-sponsored 2010 Railbelt Integrated Resource Plan identified the Mt. Spurr geothermal project, if feasible, as a beneficial component in the Railbelt's generation portfolio. Furthermore, this project appears to be the only significant potential baseload generator that could come on line in the next 5-6 years, thereby contributing to filling the gap until long term solutions to the on-going depletion of Cook Inlet gas, e.g. a natural gas pipeline and/or a large hydro power plant, are commercially available.

From these reasons the project is greatly supported by all Railbelt utilities (ARCTEC and ML&P), by local communities (Tyonek, CIRI, Anchorage, Kenai Peninsula Borough) and by local environmental and renewable energy groups (Cook Inletkeeper, REAP, and others).

Results of geothermal exploration work done so far on Mt Spurr, including drilling of two core holes (up to 1,000' deep) in September of 2010 are encouraging as to the potential existence of a commercial geothermal resource. However, additional drilling is required in order to confirm or refute this potential. Ormat has been able to conduct the 2010 exploration and core drilling program and is able to continue this program in 2011, based on a \$2 million grant from round III of the Renewable Energy Grant Fund, matched by roughly \$3 million of Ormat's equity.

However, the next step in the geothermal resource confirmation, which will center on full-size deep exploration drilling, will be far more expensive, and is estimated at \$25 million to build a road to the project area, mobilize a full-size drilling rig and to drill three deep full-size geothermal production and injection wells, as required in order to confirm the existence of a commercial geothermal reservoir and to size it. This deep exploration drilling work is planned for 2012 and 2013. In addition, as with all grants and other incentives provided to this project, their economic value will be directly passed through to the ratepayers in the form of a lower power price, should a power plant eventually be developed.

The AEA has recently released its preliminary recommendations for round IV of the Renewable Energy Grant Fund, which include another \$2 million dollars – which is the cap set by AEA for funding energy projects in the Railbelt under this grant program - for cost-sharing the Mt Spurr 2012 drilling program. While Ormat greatly appreciates AEA's continued support of this project, this \$2 million represents less than 20% of the total estimated costs for drilling one deep full-size well and is therefore not sufficient to allow Ormat to execute that program without additional commitments from the Railbelt utilities and/or the state, namely a Power Purchase Agreement and a commitment to fund the required transmission line and permanent access road. Consequently, as mentioned above, we are asking for an additional \$18 million to build a road and drill 3 production wells.

Ormat is requesting the capital appropriation of \$18 million in favor of this project in order to support the 2012-2013 resource confirmation drilling program. Ormat will match this by \$5 million and this appropriation will supplement Ormat's grant application to round IV of the Renewable Energy Grant Fund. Such an appropriation will enable complete resource confirmation and will expedite the commercial operation date of the geothermal power plant, should results prove to be successful.

Project Timeline:

This appropriation and the 2012-2013 drilling program will be contingent on successful results of the core exploration drilling program planned for the summer of 2011.

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

Ormat Technologies

Grant Recipient Contact Information:

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Has this project been through a public review process at the local level and is it a community priority? Yes No



MOUNT SPURR GEOTHERMAL PROJECT - PROJECT HIGHLIGHTS AND THE NEED TO COST SHARE THE 2012-2013 RESOURCE CONFIRMATION DRILLING PROGRAM

1. **Project Title:** Mount Spurr Geothermal Project, 2012-2013 Resource Confirmation Drilling Program
2. **Amount Requested:** \$20 million (matched by \$5 million)
3. **Fund Requesting Entity:** ORNI-46 LLC, a special purpose entity fully owned by Ormat Technologies, a leading Independent Power Producer and global geothermal developer, publicly traded on the New York Stock Exchange (ticker: "ORA")

4. **Project Description:**

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Ormat is requesting the appropriation of \$20 million in favor of this project in order to support the 2012-2013 resource confirmation drilling program. Ormat will match this by at least \$5 million and this appropriation will replace Ormat's grant application to round IV of the Renewable Energy Grant Fund. Such an appropriation will enable complete resource confirmation and will expedite the commercial operation date of the geothermal power plant, should results prove to be successful.

This appropriation and the 2012-2013 drilling program will be contingent on successful results of the core exploration drilling program planned for the summer of 2011.

¹ \$2.1 million as a matching fund in the grant agreement, and the rest as exploration expenses incurred by Ormat outside the grant program

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5. Project Manager:

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