



# Mt. Spurr Geothermal

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LAST MODIFIED: 12TH AUGUST 2019

CREATED: JAN. 19, 2018

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## Summary

The proposed Mt. Spurr geothermal project, located about 75 miles west of Anchorage, has the potential to produce 50-100 MW of electricity annually. Ormat Technologies - the prospective developer - stated the project was still alive (<http://www.adn.com/2013/05/10/2898490/ormat-says-spurr-geothermal-project.html>) as of 2013. The project is near the currently inactive Chakachamna hydroelectric project (</Issues/Renewable-Energy-in-Alaska/chakachamna-hydro-lake.html>), and if either is built infrastructure for one would help make the other project viable.

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**ASCENDING TO CRATER PEAK** — A [team of mountaineers \(http://thingstolucat.com/irs-traverse/\)](http://thingstolucat.com/irs-traverse/) climbs Crater Peak in Alaska, near Spurr Volcano, in May 2014. — Get Photo (</photos/ascending-to-crater-peak/>)

## Geothermal power background

[Geothermal power \(http://en.wikipedia.org/wiki/Geothermal\\_electricity\)](http://en.wikipedia.org/wiki/Geothermal_electricity) is increasing in popularity and has become a well-established technology, with over 10,000 MW installed worldwide (<http://geo-energy.org/events/2013%20International%20Report%20Final.pdf>) as of 2013 and numerous projects in development. For reference, the total generation capacity in AK (coal, gas, hydro, oil, and wind) is around 2,200 MW. Geothermal power lacks fuel costs, has minimal environmental impact, and provides year-round “base

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load” power to offset the seasonality of some hydro power plants as well as the variability found with wind and solar power generation. However, geothermal power is highly site-specific, and requires a specific combination of heat, water and rock permeability that can only be found in particular locations, often located far from population centers. New technology, known as “enhanced geothermal systems” ([http://en.wikipedia.org/wiki/Enhanced\\_geothermal\\_systems](http://en.wikipedia.org/wiki/Enhanced_geothermal_systems)) may expand the reach of geothermal projects, but is mostly still in development.

### History of Mt. Spurr project

Mt. Spurr is an active volcano located about 75 miles west of Anchorage, near Chakachamna Lake. The Alaska DNR (Department of Natural Resources) held geothermal lease sales ([http://dog.dnr.alaska.gov/Leasing/Documents/GeothermalLeasing/MtSpurr\\_Fact\\_Sheet.pdf](http://dog.dnr.alaska.gov/Leasing/Documents/GeothermalLeasing/MtSpurr_Fact_Sheet.pdf)) for acreage on the volcano in 1983 and 1986, but interest at the time was minimal. The few leases purchased expired in the early 1990’s without any action being taken to develop them. Another competitive lease sale of over 36,000 acres was successfully conducted in 2008. A geothermal power company called Ormat Technologies Inc. (<http://www.ormat.com/>) purchased nearly all the lease area ([http://dog.dnr.alaska.gov/leasing/Documents/GeothermalLeasing/MtSpurr\\_Bid\\_Results\\_Map.pdf](http://dog.dnr.alaska.gov/leasing/Documents/GeothermalLeasing/MtSpurr_Bid_Results_Map.pdf)), for a total of \$3.5 million. Since 2008, Ormat has been conducting exploration in the area and assessing the resource.



### Project Details

The State of Alaska has agreed to help pay for Ormat's exploration work, as part of the push to have 50% renewable energy by 2025. Costs to date have been shared by Ormat and various grants from AEA (Alaska Energy Authority). The state approved \$18 million for FY2012 ([http://omb.alaska.gov/ombfiles/12\\_budget/CapBackup/proj56386.pdf](http://omb.alaska.gov/ombfiles/12_budget/CapBackup/proj56386.pdf)) for the project. Results from 2011 drilling were disappointing (<http://www.alaskajournal.com/Alaska-Journal-of-Commerce/AJOC-October-23-2011/Ormat-has-a-setback-on-geothermal-project/>), and the project has proceeded only slowly since then, looking at sites closer to the foot of the volcano.

The project would require the construction of about 25 miles of roads and 40 miles of transmission line (to Beluga), at a cost of \$70-80 million. The total cost of the project, including the airstrip, power plant, and associated facilities has been estimated (<http://www.akenergyauthority.org/Geothermal/Dilley-MountSpurrPresentation.pdf>) (2.8 MB) at \$170-\$368 million.

For the state to support financing the infrastructure needed to build the plant, Ormat would likely need to first enter into a long-term Power Purchase Agreement (PPA) with Railbelt utilities (</Issues/Infrastructure/Railbelt-Electrical-Grid.html>). Ormat is unlikely to commit to extensive deep drilling before the PPA is in place and the state has committed to building the road and transmission line.

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The proposed plant itself would provide 50-100 MW of power with 95% availability year round. Ormat estimates the retail prices of electricity produced by the plant to be around 12-13 cents/kWh, which is more expensive than the expected cost of electricity to be produced by the proposed Susitna hydro project (</Issues/RenewableEnergy/Susitna-Hydro.html>) (6.3 cents/kWh), but competitive with existing fossil fuel sources in Alaska.

### Current Status

Ormat performed extensive pre-drilling surveys and some preliminary, shallow drilling in 2010, with encouraging results. However, difficult geologic conditions and equipment problems resulted in a truncated and disappointing exploration season in 2011 ([http://articles.ktuu.com/2011-08-22/ormat-technologies\\_29916909](http://articles.ktuu.com/2011-08-22/ormat-technologies_29916909)). The company spent ~\$3 million on the project in 2012. In May 2013 they stated (<http://www.adn.com/2013/05/10/2898490/ormat-says-spurr-geothermal-project.html>) that the project was still “alive and well” and hoped to recommence drilling in 2014.

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### Further Reading

> "The Mount Spurr Geothermal Project", Presentation to the House and Senate Resources Committees by Ormat. (2011). ([http://housemajority.org/coms/hres/27/Ormat\\_Technologies\\_Mt.\\_Spurr\\_Geothermal\\_Project.pdf](http://housemajority.org/coms/hres/27/Ormat_Technologies_Mt._Spurr_Geothermal_Project.pdf))

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> [Mount Spurr Technical Conference \(2007\), hosted by AEA \(http://www.akenergyauthority.org/MtSpurrPresentations.html\)](http://www.akenergyauthority.org/MtSpurrPresentations.html)