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House Committee on Natural Resources
Subcommittee on Energy and Mineral Resources

Hearing on
"Transparency and Production of American Energy Act of 2023"
February 28, 2023

Chairman Stauber, Ranking Member Ocasio-Cortez, and Members of the Subcommittee, thank you for the opportunity to provide testimony on the "Transparency and Production of American Energy Act of 2023."

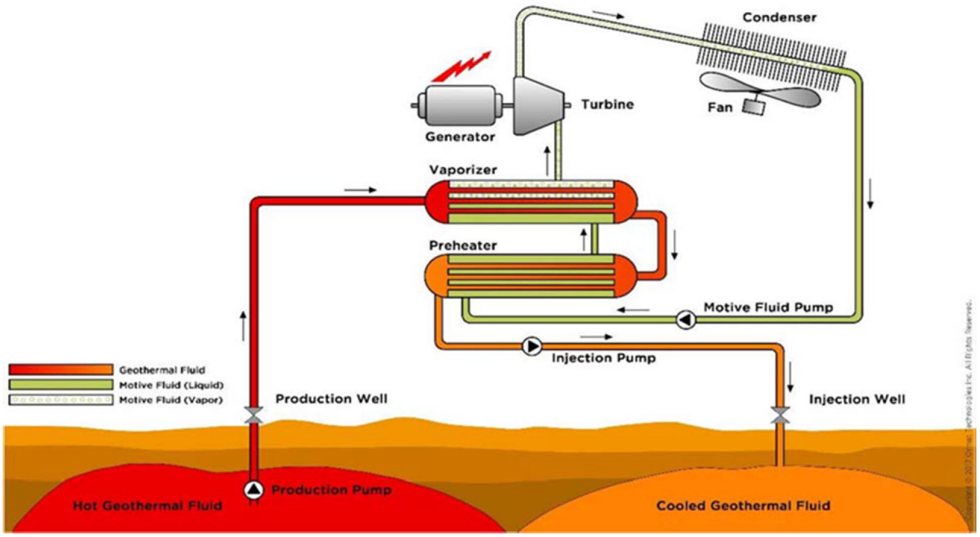
Ormat Overview

By way of introduction, Ormat Technologies, Inc. is a New York Stock Exchange registered company (symbol "ORA"). Headquartered in Reno, Nevada, Ormat Technologies has more than five decades of experience as a global leader in geothermal power and recovered energy generation (REG). A vertically integrated company with 1,400 employees, Ormat designs, develops, manufactures, owns, and operates geothermal power plants all over the world, with more than 3,000 MW of gross capacity in over 30 countries. Ormat has extensive experience on U.S. public lands, with 22 operating facilities (880 acres) utilizing 256,784 acres on Bureau of Land Management (BLM) land in California, Nevada, New Mexico, and Utah. In 2020, Ormat paid $2.6 M in royalties and $993,344 in rentals to the Bureau of Land Management.

Ormat's state-of-the-art, air-cooled binary facilities provide stable and reliable renewable energy 24 hours a day, seven days a week, with zero carbon emissions. Its geothermal facilities utilize binary technology to further reduce greenhouse gas emissions and decarbonize the power grid. Binary plants reinject 100% of geothermal fluid and maintain reservoir pressures, meaning they are ideal for geothermal reservoirs to maximize sustainability.

Ormat is a pioneer in Organic Rankine Cycle (ORC) technology and a leader in the manufacture of ORC power equipment. Using this technology, geothermal fluid is extracted from an underground reservoir and flows from the wellhead through pipelines to heat exchangers in the Ormat Energy Converter (OEC). Inside the heat exchangers, the geothermal fluid heats and vaporizes a secondary working fluid with a low boiling point. The organic vapors drive the turbine. They are then condensed in a condenser, which is cooled by either air or water. The turbine rotates the generator. Condensed fluid is recycled back into the heat exchangers by a pump, completing the cycle in a closed system.

Air-Cooled Binary Geothermal Power Plant



In March 2022, Ormat signed a 15-year Power Purchase Agreement (PPA) with Peninsula Clean Energy, a Community Choice Aggregator (CCA) that provides more than 3,500 GWh of electricity to San Mateo County and the City of Los Banos, California. Under the terms of the PPA, Peninsula Clean Energy will purchase 26 MW of clean, renewable energy from Ormat's Heber 2 geothermal facility located in Imperial Valley, California. This PPA marks the successful completion of Ormat's first ever solicitation for bids, with a request for bids (RFB) on the Heber 2 facility issued in July of 2021.

In May 2022, we announced the execution of two PPAs with NV Energy. Under the first PPA, signed in 2021, NV Energy will purchase 25 MW of power over 25 years generated by the North Valley Geothermal Project, a new facility in Washoe County, Nevada, expected to come online by early 2023. Additionally, NV Energy will purchase up to 135 MW of power generated by a portfolio of the company's new and existing geothermal power plants under a PPA signed in May 2022. The portfolio PPA is subject to the Public Utility Commission's approval.

In June 2022, Ormat announced the execution of a PPA with California Community Power (CC Power), a Joint Powers Agency consisting of numerous CCAs. Energy deliveries under the portfolio PPA are expected to start in the second quarter of 2024, with the expectation that the entire portfolio covered under the new PPA will be online by the end of 2026. The portfolio PPA covers up to 125MW for a term of 20 years and is comprised entirely of new projects currently under construction or in development in Nevada and California. Capacity is subject to California Independent System Operator (CAISO) connection approval.

Demand for geothermal and other renewable energy is growing in the United States as generation costs have become more competitive. We believe that future demand for energy generated from geothermal and other renewable resources in the United States will be driven primarily by a further commitment to carbon-free capacity resources. For example, in California, the Public Utilities Commission has required Electric Load

Service Entities (LSEs) to procure 11.5 GW of new clean electricity by 2028. One GW of this procurement must deliver firm power with an 80% capacity factor, produce zero on-site emissions, and be weather independent. With a high capacity factor and firm and flexible generation, geothermal energy addresses these requirements and is the natural replacement for baseload fossil fuels and nuclear generation, which is why the United States are seeing a massive surge in geothermal development.[1]

TAP American Energy Act

Many geothermal resources that are commercially viable for energy production using today's technologies are located on public lands. BLM manages all subsurface geothermal resource on federal lands, regardless of the federal agency that manages the surface estate (such as the Forest Service). Therefore, almost all geothermal development must conduct a National Environmental Policy Act (NEPA) review. While geothermal is inexpensive to operate and maintain once a project is complete, during the resource discovery, phase developers must drill resource confirmation holes to determine the true quality and quantity of the underground resource. This means the industry has a disproportionate permitting burden at the "front end" of a project, before a revenue payback is guaranteed. A heavy permitting burden means a slow development cycle, and a slow development cycle means developers pay a lot for financing.

Regulatory reform is critical to alleviate barriers to geothermal development in the United States. Ormat appreciates the work of Congressman Bruce Westerman (R-AR), Congressman Pete Stauber (R-MN), and members of this Committee for introducing the "Transparency and Production of American Energy Act of 2023." The TAP act provides clarity and consistency in three areas that will help meet the administration's goal of deploying at least 25 GW of geothermal resources on public land by 2025:

- Section 109, Geothermal Leasing: Amends the Geothermal Steam Act to require a yearly lease sale for geothermal energy.
- Section 203, Non-Major Federal Actions: Exempts from NEPA review any drilling for geothermal exploratory wells, including for constructing or making improvement to structure pads for activities that are less than 12 inches in diameter and where total surface disturbance is less than 5 acres.
- Section 213, Access to Federal Energy Resources from Non-Federal Surface Estate: Amends the Geothermal Steam Act to exempt from federal permitting any geothermal exploration and production activities that occur on nonfederal surface estate, provided that the U.S. owns less than 50% interest in subsurface estate and the operator submits a State permit to the Secretary of the Interior for the activity. Nothing in this section affects royalties owed to the federal government, and this same exemption does not apply to resources managed in trust for tribes.

Section 109, Geothermal Leasing: Ninety percent (90%) of conventional geothermal resources in the United States are located on federally managed lands. Access to more federal land is the critical first step for ensuring additional geothermal production. Lease provisions administered by the Bureau of Land Management (BLM) vary by state in process and frequency. Nevada BLM, for example, has held a geothermal lease sale every year since 2016, while California BLM has not held a geothermal lease sale since 2016. Standardizing annual land quotas, nominations, and decision timeframes will create more opportunities for geothermal exploration and utilization.[2]

[1] Geothermal Power Purchase Agreements on the Rise (https://www.geothermal-library.org/index.php?mode=pubs&action=view&record=1040017)

[2] Geothermal Rising, Letter to Secretary Debra Haaland, March 18, 2021, https://geothermal.org/resources/geothermal-rising-letter-addressinggeothermal-permitting-public-lands

Section 203 and 213, Non-Major Federal Actions: Clarifying that temperature gradient holes and other geothermal exploratory wells required for preliminary resource confirmation are Non-Major Federal Actions will enable the geothermal industry to deploy more megawatts on public lands, creating new jobs and royalty revenues for our treasury, local states, and counties. This clarification is the result of extensive consultation within the industry, whitepapers, and a review of geothermal permitting conducted in 2013 and 2014 by the Department of Energy, Geo Vision Report[3] and National Renewable Energy Laboratory (NREL).

As the GeoVision Analysis Supporting Task Force Report concluded:

"Reducing the overall project time directly attributable to NEPA, whether by reducing the time of individual NEPA processes or reducing the frequency of NEPA analysis for a particular project, can alleviate some of the major barriers to geothermal development. Reducing NEPA timelines directly decreases overall project timelines which indirectly decreases the perceived risk profile—lowering three of the four barriers to geothermal development identified by industry. Lowering these barriers is in line with one of NEPA's stated goals: to "enhance the quality of renewable resources."[4]

Defining geothermal resource confirmation drilling as a Non-Major Federal Action will significantly relieve the permitting burden for the geothermal industry without undermining environmental stewardship.

For years, Ormat and Geothermal Rising, the industry's trade association, have requested that Department of Interior (DOI) or Congress issue a new rulemaking or memorandum to expand and clarify existing categorical exclusions (CX) from NEPA to reduce the permitting burden for geothermal resource confirmation and observation. Defining geothermal resource confirmation drilling as a Non-Major Federal Action immediately unlocks new projects and their associated economic benefits, while allowing the hardworking BLM field staff to focus on appropriate permitting priorities. This action also also provides greater parity between geothermal and oil and gas, which is afforded a broad CX for exploration activities, including resource confirmation wells, under Section 390 of the Energy Policy Act of 2005.

Next Steps for Geothermal Development on Public Lands

In addition to annual lease sale requirements and categorical exemptions for exploration activities (as currently proposed in the TAP American Energy Act), Ormat asks the committee to consider additional reforms that prioritize renewable geothermal energy development on public lands. Ormat continually updates Congress on permitting timelines and the increasing timelines for Environmental Assessments (EA), Environmental Impact Statements (EIS), and even Geothermal Drilling Permits (GDP). Formation of a geothermal task force within BLM could expedite the review and execution of permits, educate BLM offices less familiar with geothermal development, coordinate U.S. Department of the Interior Office of the solicitor review of BLM actions, and reduce permitting delays caused by the Biden administration moratorium on drilling which impacted geothermal project permitting and increased solicitor review times.

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[3] Chapter 5: The GeoVision Roadmap: A Pathway Forward, ENERGY.GOV (2019), https://www.energy.gov/sites/default/files/2019/06/f63/5-GeoVision-Chap5-opt.pdf.

[4] Young, K., A. Levine, J. Cook, D. Heimiller, and J. Ho. 2019,. GeoVision Analysis Supporting Task Force Report: Barriers. An Analysis of Non-Technical Barriers to Geothermal Deployment and Potential Improvement Scenarios. , NREL/TP-6A20-7164, NATIONAL RENEWABLE ENERGY LABORATORY (2019). https://www.nrel.gov/docs/fy19osti/71641.pdf.

Streamline Geothermal Drilling Permits: BLM manages all subsurface geothermal resources on federal lands, regardless of the federal agency that manages the surface estate (like the U.S. Forest Service), creating a permitting bottleneck due to ineffective collaboration among land and resource managers. While interagency environmental planning remains essential to geothermal utilization at the power plant development phase, there is agency gridlock during review of Geothermal Drilling Permits (GDP) when multiple agencies cannot coordinate review efficiently. The DOI or Congress should establish a maximum two-month, BLM-only administrative approval time limit.

Permit Process Transparency: Ormat understands regulatory processes are essential to ensuring geothermal development is carried out responsibly. Increasing transparency in the permit process would assist in overcoming uncertainty and costs associated with undefined regulatory review timeframes. Ormat has approximately 17 projects currently under review by BLM. On average, permitting geothermal exploration takes four years, though some projects have taken many more years and are still pending NEPA determination. Permit tracking across districts and field offices can provide renewable energy developers clear outcomes, issues identification, improved education of agency staff, and a significantly shorter permitting process.

Remove Agency Redundancy: While geothermal plants are relatively inexpensive to operate and maintain once constructed, the resource discovery phase requires costly permitting and drilling to determine the quantity and quality of an underground resource. This places a disproportionate front-end investment on renewable energy projects. Costs are further exacerbated by cumbersome permitting cycles that put meeting federal and state renewable targets in jeopardy. Removing agency redundancies saves money and time. BLM should not be tasked with responsibilities to evaluate in detail resource issues that are under the jurisdiction or special expertise of federal or state environmental protection agencies. In the case of Nevada, water degradation prevention is already the jurisdictional responsibility of a state subsurface Underwater Injection Control (UIC) program with expertise in basin and range hydrologic and hydrogeologic systems. BLM should be directed to rely on and incorporate by reference the analyses of other state and federal agency with jurisdiction or special expertise, allowing BLM staff to focus on appropriate permitting priorities.

Conclusion

Ormat has unmatched insight into the progress and pitfalls of geothermal development, which is why the company is celebrating with two ribbon cuttings events in 2023, one of which is the first new independent plant in California in over a decade. Ormat remains resolute in its mission to deliver 320 MW in Power Purchase Agreements by 2026, a quantity that could easily double with regulatory reform. In closing, Ormat Technologies supports the House Natural Resources Committee's commitment to energy development, and specifically to the deployment of more megawatts of geothermal production, which will generate new energy, new jobs, and added revenue for the treasury, states, and counties. It is my pleasure to ask this Committee to help ensure geothermal energy remains a pillar of our nation's clean energy future.