



Staff Report - Item 02

To: Sonoma Clean Power Authority Community Advisory Committee

From: Ryan Tracey, Director of Planning & Analytics
Geof Syphers, Chief Executive Officer
Miles Horton, Legislative Policy & Community Engagement Manager
Claudia Sisomphou, Public Affairs & Advocacy Manager

Issue: Receive Geothermal Opportunity Zone Update

Date: April 11, 2024

Background

The Geothermal Opportunity Zone (GeoZone) is SCP's initiative to guide the development of local geothermal power that is compatible with community values and enables SCP to phase-out its dependence on natural gas power plants for reliability. The Community Advisory Committee (Committee) meetings are a regularly scheduled public forum for the community to receive updates and provide input on the GeoZone. The updates provided to the Committee each month, and minutes from any discussion are posted on SCP's website at <https://sonomacleanpower.org/geozone-public-updates>. Staff incorporate any feedback received from the Committee presentation into the monthly updates to the Board of Directors. Additional background on the GeoZone can be found on the GeoZone webpage at <https://sonomacleanpower.org/geozone>.

Next-Generation Geothermal Power Commercial Liftoff Report

SCP's GeoZone project has been enabled by a technological renaissance in the geothermal industry that has expanded the envelope of locations where geothermal power is economically possible to develop while also reducing water consumption. In March, the Department of Energy (DOE) released a comprehensive report detailing the geothermal industry's progress and the necessary steps to commercialize next-generation geothermal power entitled [Pathways to Commercial Liftoff: Next-Generation Geothermal Power](#). Previous commercial liftoff reports on technologies like long-duration energy storage, advanced nuclear, and virtual power plants have been incredibly influential in guiding policy development. Below is a summary of several

important observations in the report:

- Decarbonization modeling indicates the United States will need to add 700-900 GW of clean firm capacity by 2050 (low carbon resources with a high-capacity factor: geothermal, nuclear, gas with carbon capture and sequestration are examples), which is quadruple the existing available supply. The DOE estimates that next-generation geothermal can satisfy over 90 GW of this need. Decarbonizing without new clean firm technologies like next-generation geothermal could increase system costs by 40%.
- Although next-generation geothermal largely leverages technologies from the oil and gas industry, such as hydraulic fracturing in Enhanced Geothermal Systems (EGS), there are distinct differences in the application and most of the environmental risks of oil and gas activities do not apply to geothermal development. However, the DOE recognizes that an early two-way dialogue with host communities (many which will have trust concerns due to the application of oil and gas technologies) will be critical.
- Commercial success of next-generation geothermal technologies is dependent on deploying a repeatable and modular design that can enjoy cost declines from iterative improvements and learning. The current EGS demonstrations are far outperforming expectations in their learning rate—the DOE’s EGS demonstration has improved its drilling rate by 500% since 2017 and Fervo (a private geothermal developer of EGS) has demonstrated a 300% increase in drilling rate. The DOE liftoff report believes these advances, coupled with engineering improvements and economies of scale can achieve a target cost of \$60-\$70 per MWh to enable widespread commercialization. The DOE recognizes similar opportunities for closed-loop technologies (such as proposed by Eavor in the GeoZone) with a 2035 target of \$80-\$90 per MWh.
- Demonstrating next-generation technologies can be successful in a diverse set of geologic conditions will be important for reducing the financing risk for commercial “liftoff”. The DOE targets investing \$20-\$25 billion in 2-5 GW of next-generation geothermal across 5-10 different geologic conditions to de-risk the geothermal industry and enable access to traditional lower cost financing.

Sacramento Lobbying Day

On March 20th, SCP staff and Board Chair Hopkins spent the day in Sacramento to meet with lawmakers on legislative priorities. A key objective of the day was to build support

for SCP's GeoZone and for geothermal more generally. The day also included discussions about allowing local permitting review of geothermal exploration activities rather than the current system of only allowing such review by the State's California Geologic Energy Management (CalGEM) division, while preserving the requirements of CEQA and improving local accessibility to the process.

GeoZone Project Updates

There have been no specific project updates since the March report. SCP continues to meet with each GeoZone partner on a bi-weekly basis to validate progress towards milestones in the cooperation agreements and identify opportunities to partner in overcoming hurdles to GeoZone development.

Community Engagement

SCP continues to be focused early this year on capturing lessons learned from other organizations that can be incorporated into an expanded GeoZone community engagement plan. In March, SCP met with the team leading [community outreach and communications at the Department of Energy's Frontier Observatory for Research in Geothermal Energy \(FORGE\)](#) EGS project in Utah. The FORGE team shared their experience in building the community's trust for hosting an EGS project, managing disinformation, and engaging youth amongst many other topics.