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Sonoma Clean Power Comments on Scoping Order for the 2026 IEPR Update

Additional submitted attachment is included below.

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March 25, 2026

California Energy Commission
Docket Unit: MS-4
Docket No. 26-IEPR-01 (General/Scope)
715 P Street,
Sacramento, CA 95814

RE: Sonoma Clean Power Comments on Scoping Order for the 2026 IEPR Update

Dear Vice Chair Gunda, Commissioner Gallardo, and Commission Staff:

Sonoma Clean Power Authority (SCP) appreciates the opportunity to provide these comments to the California Energy Commission (CEC) in response to the Draft Scoping Order for the 2026 Integrated Energy Policy Report (IEPR) Update.

SCP is the public power provider for Sonoma and Mendocino Counties, serving approximately a half million residents and businesses. SCP has consistently supported progressive clean energy policy that enables rapid decarbonization while maintaining ratepayer affordability and grid reliability. SCP operates the only 100% 24/7 renewable service in California sourced entirely from within its territory and is committed to expanding the clean firm resource portfolio that will enable California to meet its Senate Bill (SB) 100, SB 1020, and climate targets.

The value proposition for next-generation geothermal resources has motivated SCP to develop a strategic initiative to use public-private partnership to expand the capacity of geothermal resources in Sonoma and Mendocino counties. SCP launched its Geothermal Opportunity Zone (GeoZone) in October 2021 to leverage its interest in off-taking geothermal power, community relationships, and advocacy experience to attract geothermal industry partners with next-generation geothermal expertise and an interest in local development.

Overview

SCP is supportive of the proposed focus on California Geothermal Resources, which promises to identify and address key barriers to scaled deployment of a critical clean firm resource amid an era of accelerated load growth. The framing of the Draft Scoping Order appropriately recognizes the need to fully characterize the value of and barriers to developing geothermal resources within the state. SCP appreciates that the CEC has specifically focused on in-state development, given the state's resource potential, the opportunity for economic benefits, and reality that recent geothermal procurement from California utilities has been unnecessarily concentrated out-of-state.

Developing a statewide geothermal resources assessment within an IEPR Update enables CEC to collaborate with industry stakeholders to identify high-potential geothermal development zones, transmission corridors, permitting reforms, and financing mechanisms that will substantially lower several of the most prominent market entry barriers to developing in California. SCP believes that this assessment also offers opportunities for inclusive public participation and for coordinated, joint agency alignment of policies and permitting processes across regulatory bodies.

SCP believes that geothermal, especially with next-generation technologies, represents a foundational clean firm resource that will play an essential role in securing the State's clean energy and climate goals. Through working on its GeoZone initiative, SCP has identified a series of opportunities and barriers that would improve the viability of geothermal technologies in California. It is in this spirit that SCP respectfully offers the following comments, which suggest a series of actions intended to support CEC's development of a useful evaluation framework for its California Geothermal Resources assessment within the 2026 IEPR Update.

I. CEC should convene a geothermal-focused stakeholder working group to inform priority subject areas within the California Geothermal Resources assessment.

SCP recommends that the California Energy Commission convene a geothermal-focused stakeholder working group to help shape the priority subject areas within the California Geothermal Resources assessment.

Through the early years of its GeoZone efforts, SCP has become familiar with the complexities of developing new in-state geothermal resources. Given the multi-faceted challenges experienced across each stage of project development, including project siting, permitting, transmission planning, and much more, a diverse variety of perspectives will be needed to comprehensively scope this effort. A dedicated working group would create a formal venue for expert input, enabling CEC staff to develop an assessment framework that is grounded in practical project development experience, real-world permitting considerations, and an accurate understanding of emerging technology capabilities.

The success of this assessment requires inclusive participation from both existing geothermal operators of hydrothermal projects and developers of Enhanced Geothermal Systems (EGS) and Advanced Closed-Loop (ACL) systems who can provide the most up-to-date insights to next-generation geothermal technologies, including project risks and uncertainties, technological viability, challenges with geology, and near-term commercialization pathways. Participation from load-serving entities acting as energy off-takers is also critical given their distinct roles in and approaches to resource and system planning and procurement. Engagement from trade organizations, labor representatives, and environmental advocacy groups ensures that technology advancement, workforce development, environmental protection, and community benefits remain aligned from the outset, helping to anticipate challenges before they manifest later in the planning or permitting process.

Additionally, SCP recommends that a CEC-led effort recruit additional involvement from key state agency staff from the California Geologic Energy Management Division (CalGEM), California Public Utilities Commission, California Independent System Operator, State Lands Commission, and California Air Resources Board. Convening a stakeholder group inclusive of representatives from each entity provides opportunities to accurately identify barriers within California's multi-jurisdictional policy and permitting landscape.

Early coordination among these entities will help build a shared understanding of where reforms can streamline timelines, reduce uncertainty, and improve predictability for developers without compromising environmental review or public participation.

II. Permitting considerations must be a central focus of the assessment.

SCP recommends that the CEC work with industry stakeholders to identify opportunities to align California's geothermal permitting practices with best practices from states leading geothermal deployment, such as by setting statutory timelines and transparent cost expectations for developers. Geothermal resource permitting is a distinct challenge in California, given the separate permitting processes, timelines, and agency authorities governing exploration and production phases for geothermal development projects.

California utilizes a permitting framework separating geothermal exploration from production well development, but currently lacks the exemption or expedient processing pathways available in the other states leading next-generation geothermal development. The Center for Public Enterprise's recent report, *The Firm Frontier: Geothermal and the Expansion of the Western Grid,* highlights the potential of EGS, specifically, to develop at scale in the absence of permitting delays.[1] California's approach requires that any single geothermal project undergoes two distinct California Environmental Quality Act reviews prior to development that have historically lengthened permitting timelines. Functionally, this introduces substantial uncertainty for developers, particularly in the early exploration phase when capital risk is highest. Developing a menu of effective permitting pathways with predictable timelines and transparent cost expectations would significantly de-risk projects and would signal to developers that geothermal investment in California can proceed with greater regulatory clarity.

Moreover, the assessment should evaluate how specific requirements within the permitting process for geothermal development may create structural delays that affect next-generation geothermal technologies, such as the Geothermal Resource Adequacy requirement in the Application for Certification (AFC) process. Next-generation technologies offer solutions to problems more frequently encountered by conventional hydrothermal projects (for example, significantly reduced water use), but they may be more difficult for CalGEM to validate as commercial to meet Geothermal Resource Adequacy requirements. Additionally, SCP recommends the CEC leverage the IEPR assessment to evaluate the significant new opportunity to utilize its Opt-in Certification Program for geothermal projects under 50 MW, as authorized by the passage of AB 531 (Chapter 372, Statutes of 2025). By integrating the CEC's

[1] *The Firm Frontier: Geothermal and the Expansion of the Western Grid.* Mitchell Smith, Michael O'Connor, & Katrina McLaughlin. Center for Public Enterprise, March 16, 2026. <https://publicenterprise.org/report/the-firm-frontier/>

Opt-in pathway into the geothermal resource assessment, the Commission can evaluate when and how this streamlined permitting framework may be appropriately applied to next-generation geothermal technologies, particularly EGS and ACL.

Finally, the CEC should also include a review of challenges and lessons learned from existing permitting, including capturing experience in the CEC's AFC process before the recent suspension of Berkshire Hathaway Energy Renewables projects in the Salton Sea. The review should also include a review of projects permitted by Imperial County. Existing operators should be engaged to understand how permitting, including both project and more ministerial permitting (e.g., air permits), impacts schedule, cost, and risk. This review could feed a valuable roadmap to reducing the burden on geothermal developers while still preserving California's environmental quality standards.

III. Any evaluation of geothermal resources must include a comprehensive suite of next-generation technologies, including Enhanced Geothermal Systems and Advanced Closed-Loop.

Any evaluation of geothermal resources in the 2026 IEPR Update must incorporate the full spectrum of geothermal technologies, including next-generation EGS and ACL systems. These technologies fundamentally expand the geographic and geologic potential for geothermal development in California by enabling access to hot rock far beyond the boundaries of traditional hydrothermal reservoirs. As demonstrated by early commercial deployments and DOE-supported innovation programs, next-generation geothermal has rapidly transitioned from a research concept to a commercially viable clean firm resource capable of delivering 24/7 carbon-free electricity. By taking a technology-inclusive approach, the CEC can more fully illuminate the scale of opportunities available to California, thereby ensuring its geothermal strategy supports the broadest range of innovative, high-impact solutions needed to meet the state's long-term clean energy and reliability goals.

Additionally, next-generation geothermal technologies offer operational characteristics that are uniquely valuable to California's evolving grid. EGS and ACL systems provide high capacity-factor, weather-independent power with the ability to operate flexibly and support grid stability during periods of low solar and wind output. These resources can serve as backbone assets that reduce reliance on scarcity-driven market purchases and diminish the need to overbuild large volumes of variable generation and long-duration storage resources. Incorporating next-generation geothermal into the assessment will allow the CEC to more accurately model resource adequacy contributions, evaluate transmission utilization efficiency, and understand how clean firm geothermal can mitigate the cost and reliability risks associated with an increasingly electrified and climate-impacted state.

Finally, a comprehensive evaluation of next-generation geothermal technologies will also support better policy and infrastructure planning by identifying how these resources align with California's permitting, labor, environmental, and economic development priorities. EGS and

ACL systems have the potential to create high-quality and just transition jobs, stimulate local supply chains, and drive innovation within California's energy sector.

IV. In-state transmission needs to geothermal hot-spots should be considered throughout the assessment.

In evaluating California's geothermal potential, it is essential that the CEC consider in-state transmission needs to provide interconnection opportunities within key geothermal hot spots, as transmission access will ultimately shape the pace and scale of resource deployment. Proactive transmission planning for geothermal resources is especially critical given that the best opportunities are location-constrained, and projects cannot simply relocate to areas with available grid capacity in a manner similar to solar and storage projects. It is also difficult for developers to justify the risk of funding exploration activities if burdened with both resource risk and interconnection risk concurrently.

At the same time, SCP believes that any transmission analysis should remain appropriately bound to ensure the assessment stays focused on the primary objective of identifying, characterizing, and advancing in-state geothermal development opportunities rather than becoming a broader transmission planning exercise. A targeted evaluation focused on the specific upgrades and transmission planning process improvements needed to unlock high-value geothermal zones will provide actionable insight into how transmission constraints intersect with next-generation geothermal deployment while keeping the central emphasis on accelerating clean firm resource development within California.

V. The CEC should conduct an analysis assessing the value of in-state geothermal development measured against the continued cost of out-of-state resource development and energy import.

SCP recommends the CEC conduct a comprehensive analysis comparing costs of in-state geothermal development to those of continued reliance on out-of-state resources and imported energy. A state-led assessment that fully compares in-state benefits with out-of-state alternatives will help the CEC quantify the avoided costs of long-distance imports, transmission congestion, and price volatility associated with import dependency.

Early modeling results from the Clean Air Task Force suggest statewide compliance with SB 100 becomes significantly more expensive when clean firm resources like EGS are available only outside California, with total system costs increasing by billions of dollars annually compared to scenarios with in-state deployment.[2] Additionally, these results suggest in-state

[2] Docket No. 23-SB-100 Comments of Clean Air Task Force in Response to 2025 SB 100 Joint Agency Report Draft Results. Clean Air Task Force, March 20, 2026.
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=269276&DocumentContentId=106356>

geothermal also avoids the need for tens of gigawatts of additional interregional transmission buildout.[3]

An analysis of in-state versus out-of-state geothermal must also account for the operational and system planning advantages tied to local development. In-state geothermal trims interregional transmission needs and reduces dependence on imported electricity, which is inherently more subject to availability constraints, curtailment risk, and external market conditions. These structural advantages translate into greater ratepayer protection against scarcity events and market spikes, while ensuring that economic benefits, including construction jobs, project revenues, and long-term operational spending, remain within California.

A holistic evaluation comparing these in-state advantages with the costs and risks of continued reliance on out-of-state clean firm imports enables the CEC to equip policymakers with a clearer understanding of how in-state geothermal can strengthen grid reliability, minimize ratepayer exposure, and maximize the economic value retained by California.

VI. The CEC should include a current characterization of statewide resource potential to establish statewide development goals and include recommendations to improve subsurface data coverage, expand access to public lands for development, and de-risk early stage drilling.

SCP recommends that the report includes a characterization of total techno-economic statewide geothermal resource potential, including both conventional and next-generation geothermal technologies. This characterization could leverage a variety of existing studies, such as the *NREL Enhanced Geothermal Shot Analysis* estimate of 27.9 gigawatts of installed capacity in California by 2050[4]. These existing studies in concert with projections for the state's need for clean firm capacity should be used to establish a statewide geothermal development goal. Establishing an in-state geothermal development goal will provide an important guidepost for state agencies and industry in building support for expanded development.

The CEC should also include recommendations to improve statewide subsurface data that are important for the characterization of geothermal resources. As an example, the USGS GeoDAWN program collected high-resolution airborne magnetic and radiometric data in Nevada that has been a key factor in de-risking geothermal development. Understanding the coverage of datasets that can inform geothermal development in California and opportunities to expand data coverage could be a very impactful finding from the report.

Significant geothermal potential occurs on public lands. Development on public lands creates the opportunity for significant revenue generation for state and local government. The CEC should include recommendations on how to improve access to public lands for geothermal

[3] Ibid.
[4] Enhanced Geothermal Shot Analysis for the Geothermal Technologies Office. Chad Augustine, Sarah Fisher, Jonathan Ho, Ian Warren, and Erik Witter. National Renewable Energy Lab, January 2023. <https://docs.nrel.gov/docs/fy23osti/84822.pdf>

developers, including through collaboration with the Bureau of Land Management of federal lease auctions, and working with the State Lands Commission to improve visibility on available land and set competitive royalty and rental terms. Assembling private acreage for geothermal development can be a complex and time-consuming task, so improving access to public lands can both accelerate geothermal development and provide direct financial benefits to state and local government.

Lastly, a key risk for geothermal development (including next-gen technologies) is financing early project characterization. The first well drilled for an opportunity bares significant cost and resource risk and cannot be financed as debt. The federal government and other Western states are considering risk-sharing programs, such as grants with cost-sharing, to overcome this challenge. The CEC's existing Geothermal Grant and Loan Program provides a structure for this type of program but is not at the appropriate scale to substantially fund the types of wells needed to de-risk next-generation opportunities, which can cost over $10 million each. The CEC should include in the report a recommendation on a California-specific program of sufficient scale to attract development interest to the state.

Conclusion

California's decarbonization pathway requires a high level of stakeholder coordination, process alignment, and technological innovation. The continued development of high-value renewable resources must be paired with planning process enhancement to ensure infrastructure readiness. EGS and other next-generation geothermal technologies provide the rare combination of high-capacity-factor, zero-carbon, dispatchable power that can both displace fossil generation and optimize use of new transmission lines, but the long lead times required to effectively and affordably develop these projects require careful planning and greater certainty.

SCP strongly supports the CEC's efforts to evaluate the value of and barriers to in-state geothermal resource development. By working with stakeholders and agency partners to evaluate process improvements and facilitate clean resource deployment, the CEC's efforts are leading the State toward a clear, actionable pathway to 100% clean electricity that is reliable, affordable, and equitable for California's ratepayers.

SCP appreciates the CEC's leadership and looks forward to continued engagement on these critical issues and is happy to provide support on these efforts where appropriate. Please reach out anytime with comments, questions, or if the SCP team can serve as a resource.

Sincerely,

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