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SCPPA's Comments to the Draft SB 423 Report

Additional submitted attachment is included below.



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August 26, 2024 | [Submitted electronically](#)

California Energy Commission
Docket No. 21-ESR-01
715 P Street
Sacramento, CA 95814-5512

RE: SB 423 Emerging Renewable and Firm Zero-Carbon Resources Report, Draft

The Southern California Public Power Authority¹ (“SCPPA”) appreciates the opportunity to provide feedback on the CEC’s draft SB 423 report on firm zero-carbon resources (Draft SB 423 Report).²

As stated in the Draft SB 423 Report, the electricity sector faces several challenges in the transition to a 100% clean energy grid. One of the most difficult challenges is replacing existing natural gas generation with affordable and reliable clean energy resources. Natural gas power plants, which supplied [39% of California’s in-state electricity generation last year](#), are “firm resources” – they are intended to be available at all times during the day. A significant portion of the state’s natural gas fleet is dispatchable, meaning they can be turned on or off or adjust output to meet changing energy needs. These type of generation attributes are critical to avoiding blackouts, especially as more intermittent renewable resources come online and as we experience more extreme events that stress the grid.

SCPPA Members have been taking aggressive action in furtherance of the state’s policy to serve their communities with 100% clean energy by 2045. In fact, many SCPPA Members have adopted more aggressive policies that call for 100% clean energy several years in advance of the state’s goal. The success of these efforts will be predicated on the ability to procure affordable and reliable clean energy at all hours of the day and during extreme conditions. As such, more firm zero-carbon resources, including dispatchable technologies, must be available at affordable costs and utility-scale application to replace the current reliability benefits of natural gas power plants.

We appreciate the Draft SB 423 Report analyzing the challenges of emerging firm zero-carbon resources, such as long duration energy storage (LDES), hydrogen, and small modular reactors (SMRs). These nascent technologies have the potential to provide significant reliability benefits to the grid, but more action is required to advance these technologies so they can be built at utility scale and are affordable for electricity customers. As leaders in our clean energy transition, several SCPPA Members are making investments in these resources or

¹ SCPPA is a joint powers authority whose members include the cities of Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Los Angeles, Pasadena, Riverside, and Vernon, and the Imperial Irrigation District. Each Member owns and operates a publicly owned electric utility (POU) governed by a board of local officials. Our Members collectively serve nearly five million people throughout Southern California. Together they deliver electricity to over two million customers throughout Southern California, spanning an area of 7,000 square miles.

² <https://efiling.energy.ca.gov/GetDocument.aspx?tn=258290&DocumentContentId=94286>

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are seriously analyzing them as part of their long-term resource planning efforts. The comments below provide additional information on these investments and planning efforts as well as many of the challenges associated with them:

- **Long Duration Energy Storage.** Seasonal and multi-day LDES technologies can provide a critical role in supporting grid reliability by storing surplus generation during periods of high renewable generation and low demand for subsequent release during seasons or periods of heightened demand or decreased renewable generation. Most LDES technologies are in their precommercial stage and some are being piloted with small capacities. For example, Burbank Water and Power (BWP) recently commissioned a 75 KW/500 KWH 12-hour iron flow battery from ESS Energy Warehouse. This LDES project, which received grant funding from the American Public Power Association, is located on the BWP EcoCampus and is integrated with a 265-KW solar array that will provide enough renewable power for 300 homes annually.

In modeling how to achieve 100% clean energy by 2035, Glendale Water and Power (GWP) recently developed a planning scenario that considers 180 MW of LDES in 2035 and 250 MW in 2045. However, GWP noted that any delay in the development of the technology or in the constructability and transmission of the energy will hinder its system in meeting load and providing reliability in emergency scenarios.

The Imperial Irrigation District (IID) has also considered the benefits of LDES in its recent long-term resource planning. For IID, LDES can help address the risk of overgeneration in a future with significant renewable build out and the long position the utility may find itself in during the winter months when demand is the lowest. IID did not look at a particular LDES technology and their specific characteristics since such storage technologies are not yet concretely defined as commercially viable options.

The Los Angeles Department of Water and Power (LADWP) is planning to build over 1,000 MW of energy storage in-basin and out-of-basin by 2030, which will be critical to the City of Los Angeles's clean energy future as called for by its LA100 study. LADWP has been evaluating proposals for new energy storage projects – including LDES – at the Beacon Energy Storage Center, an LADWP-owned property in the Mojave Desert. The project would be adjacent to existing electric infrastructure, including several of LADWP's existing renewable facilities. LADWP also recently completed demolition of three natural gas units at the Haynes Generating Station to make room for future energy storage systems. Additionally, LADWP owns and operates the Castaic Power Plant, a 1,320 MW pumped-storage hydroelectric generation facility located in Castaic, California. LADWP expects to increase the use of this LDES resource to provide more pumped storage as the utility integrates additional renewable energy into its system.

- **Hydrogen.** Green hydrogen presents itself as the most probable emerging firm zero-carbon technology for many local publicly owned electric utilities in the state. This is largely due to the possibility to convert

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existing plants from conventional fuels to hydrogen that is dispatchable and carbon-free. However, there are no generators that can currently burn 100% hydrogen although manufacturers are planning for 100% hydrogen fueled options. Fuel cells are the only option currently available for full hydrogen generation, but they exist in capacities too small and expensive for use at utility scale. There are other questions that must be addressed as well, including, but not limited to, those related to affordability, safety, transmission and storage infrastructure, hydrogen production, availability of renewable energy to power electrolyzers, and the effect of potential federal and state regulations.

SCPPA Members are leading the way on advancing hydrogen as a clean energy resource. The Intermountain Power Project (IPP) in Delta, Utah will be one of the first utility-scale hydrogen power plants in the world when it comes online in 2025. IIP, operated under the supervision of LADWP, is currently a two-unit 1,800 MW coal-fired plant. IIP will be converted in 2025 to support new efficient units – with a net capacity of 840 MW – capable of operation on a fuel mixture of 30% green hydrogen and 70% natural gas with the expectation to fully convert to hydrogen by 2045. IPP will use renewable energy-powered electrolysis to split water into oxygen and hydrogen, storing the latter in underground salt caverns for use as fuel to drive electricity-generating turbines. The participants in this repower project include LADWP, BWP, and GWP.

At its Scattergood Generation Station located in Los Angeles, LADWP plans to implement a green hydrogen-ready generating system by 2029 to replace the generation currently provided by two natural gas units. This initiative enables LADWP to enhance carbon-free generation, decrease greenhouse gas emissions, and discontinue the use of once-through cooling (OTC). The new units will have the capability to utilize 30% green hydrogen blended with natural gas from the first day of operation. LADWP's aim is to escalate the utilization of green hydrogen as turbine technology and infrastructure advances, with the ultimate goal of achieving 100% green hydrogen fuel as soon as it becomes technically and practically feasible.

At least one SCPPA Member – BWP – has submitted information on two natural gas plants it operates to ARCHES's RFP/RFI portal. The purpose of this RFP/RFI process is to provide ARCHES with information to help build the California hydrogen ecosystem and marketplace.

Many other SCPPA Members are interested in the potential for hydrogen generation as a clean reliability resource within their service territories. LADWP's hydrogen projects will provide these utilities with an opportunity to gain significant insights in the use of green hydrogen, which can help support the transition of their own existing natural gas plants. A major barrier is that new infrastructure will be needed to deliver hydrogen to these power plants, a situation that is challenging for many of the urban cities served by SCPPA Members.

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- **Small Modular Reactors.** An SMR is a zero-carbon nuclear fission reactor a fraction of the size of a traditional nuclear energy plant. It features a compact simplified design that – according to the Department of Energy (DOE) – offers distinct safeguards, security, and nonproliferation advantages. DOE views SMRs as a next-generation technology capable of providing clean, reliable, flexible electricity to complement intermittent renewable energy. The federal government has dedicated significant resources to advancing SMR technologies, including through the bipartisan Infrastructure Investment and Jobs Act and Inflation Reduction Act. Most recently, DOE announced its intent to fund up to \$900 million to support the initial U.S. deployments of Generation III+ SMR technologies. DOE asserts that some SMRs will likely be deployed in the late 2020s to early 2030s.

Several SCPPA Members have examined the potential for SMRs in their future resource mix. At least one SCPPA Member has incorporated SMR as a potential option in its long-term clean energy plans. BWP, which has the local goal of achieving 90% carbon free resources by 2035 and 100% by 2040, developed a planning scenario that includes the procurement of 25 MW of capacity from an out-of-state SMR project starting in 2030. Construction, transmission, and costs of the SMR resource will ultimately determine whether SMR will be a viable resource for BWP and other interested electric utilities.

In addition to emerging firm zero-carbon resources, SCPPA appreciates the Draft SB 423 Report’s analysis of more mature technologies, such as hydropower, renewable natural gas (RNG), and geothermal. Of SCPPA’s 44 generation projects, we procure energy – on behalf of our members – from one hydropower facility, two renewable natural gas projects, and eight geothermal resources. SCPPA Members have also independently made significant investments in these types of projects. The comments below provide additional information on these resources as well as many of the challenges associated with them:

- **Hydropower and Renewable Natural Gas.** We concur that the development of new hydropower plants faces significant hurdles such as environmental regulation and stakeholder opposition. We also agree that the largest barriers to RNG include the availability of feedstocks and economic viability. But another significant barrier to RNG can be stakeholder opposition.
- **Geothermal.** Of the mature technologies analyzed in the Draft SB 423 Report, the development of new geothermal projects has the potential to play the biggest role for some SCPPA Members. For example, IID’s recent long term planning analysis favors a geothermal-heavy scenario. The challenge for IID is that while geothermal would provide needed firm capacity for a portfolio with increased penetration of variable generation renewables, the year-round generation profile of geothermal means that overgeneration in the non-summer months becomes a concern. As discussed above, the commercialization of seasonal LDES could help store this type of clean energy overgeneration for use in the later summer months when demand and power prices are the highest.

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Both GWP's and Riverside Public Utilities' (RPU) recent long term resource planning analysis also favors new geothermal resources. Due to GWP's limited transmission capacity, geothermal provides major value since it makes efficient use of current transmission lines. RPU is looking to potentially add more geothermal to its already substantial geothermal portfolio. For RPU, geothermal is a significant resource because it contributes directly to meeting reliability needs during hours of net-peak demand. However, with midday negative pricing happening more frequently, it would be most effective to store geothermal during the day for use during other times of the day or night. LDES that can store energy for at least six to eight hours – as opposed to current short duration batteries that generally store energy for less than four hours – would best serve this purpose.

There are other SCPPA Members that have considered little or no geothermal in their long-term planning analysis. One of these utilities highlighted the challenges of building new geothermal projects, which include citing, the local and environmental permitting process, large capital expenses, exploration risks, and transmission access.

In addition to the recommendations listed in the Draft SB 423 Report, SCPPA offers the following recommendations to help address challenges for firm zero-carbon resources:

- **Develop Timelines for Emerging Firm Zero-Carbon Resources.** As SCPPA Members continue to engage in long term resource planning to reach 100% clean energy, assumptions need to be made on when emerging firm zero-carbon resources are reasonably expected to be commercially available and when supporting infrastructure can be built. While it is unreasonable to think the CEC has a crystal ball on this issue, the agency may have more expertise and resources than individual POU's to identify realistic expectations. It would be extremely helpful for the CEC to develop timelines for each emerging zero-carbon resource with an explanation of the factors that must be met before electric utilities can reasonably plan for the resource to be an affordable and available option for their communities. This timeline, which would need to be updated periodically, could be a valuable tool for informing POU's, their governing boards, and the public as they make decisions on prudent long term resource planning.
- **Provide Non-Ratepayer Funds to POU's to Invest in Firm Zero-Carbon Resources.** To address the cost challenges that will be associated with replacing the state's existing natural gas fleet with firm zero-carbon resources, SCPPA strongly recommends measures focused on protecting consumer affordability.

As recognized by the state's joint agency *Report to the Governor on Priority SB 100 Actions to Accelerate the Transition to Carbon-Free Energy*,³ "The equitable transition to carbon-free energy will require significant costs, traditionally funded by ratepayers." The report further states that given the nonenergy benefits of our clean energy transition, "[new frameworks] may be needed to move beyond systematically

³ <https://www.energy.ca.gov/sites/default/files/2021-09/CEC-200-2021-008.pdf>

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passing through to ratepayers the social or environmental costs to meet the state’s mandates to reduce carbon emissions, and to address the risks of climate change....Shifting the cost burden of societal and environmental impacts away from ratepayers could better facilitate decarbonization and improve overall equity.”

SCPPA strongly agrees with this joint agency recommendation and calls on the state to take bold action to establish a sustainable source of non-ratepayer funding to support POU investments in clean energy projects, including firm zero-carbon resources and supporting infrastructure (e.g., transmission). We further encourage that any funding program take a bottom-up approach, where instead of developing prescriptive criteria aimed at a specific technology, it focuses on supporting locally identified POU priority projects designed to serve community needs. This type of funding program would have the potential to mitigate costs for consumers as POU’s make historic investments in new clean energy projects.

- **Address Barriers to Clean Energy Development.** To operate as clean energy resources, significant levels of renewable and zero-carbon resources will be needed to support LDES and hydrogen – LDES needs this energy to store for later use and hydrogen needs it to power electrolyzers. Therefore, the success of these technologies is dependent on the ability to build and interconnect new renewable and zero-carbon generation resources.

Currently, clean energy developers are facing challenges that are hindering their ability to timely bring new projects to commercial operation. As discussed in an [April 2024 report from Lawrence Berkeley National Laboratory](#), the time between interconnection agreement to commercial operations for projects in the CAISO has “increased dramatically” in the last five years. Meanwhile, the time to secure an interconnection agreement has also been delayed due to the CAISO interconnection backlog, which has prevented the approval of new interconnection applications submitted to the CAISO since April 2021. While this issue has broader implications beyond LDES and hydrogen, if the problems persist, they will have a direct effect on whether LDES and hydrogen will in fact be zero-carbon when they come online. This issue will also have an effect on whether LDES and hydrogen themselves can connect to the grid when needed. The SB 423 Report should recognize these delay issues and support ongoing efforts to address them.

Support an All-of-the-Above Approach. Pursuant to SB 100, utilities will be required to maintain a 60% RPS starting in 2030. By 2045, the other 40% of a utility’s portfolio can consist of both RPS-eligible renewables and other “zero-carbon resources.”

To avoid overly restricting clean energy resources and to allow for the most cost-effective clean energy investments, SCPPA urges state policy to expressly recognize SB 100’s intended definition of “zero-carbon resources,” which is technology neutral and focused on zero-emitting resources.

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Reaffirming this definition – including for firm zero-carbon generation resources – is also important to provide regulatory certainty for SCPPA Members. Our POU's need to make decisions now on planning and investments to achieve 100% clean energy. Formal adoption of SB 100's intended definition of "zero-carbon resources" will provide the confidence that their customer-funded investments will not be stranded in the future.

SCPPA appreciates the attention the CEC is placing on analyzing barriers to the development and deployment of firm zero-carbon resources. For zero-carbon resources to reach their full potential in our clean energy transition, these challenges must be addressed to ensure affordability and reliability for electricity customers.

If you have any questions about SCPPA or SCPPA's comments on the Draft SB 423 Report, please do not hesitate to contact me at 916-510-9278.

Sincerely,

Mario De Bernardo
Government Affairs Director

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