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**SCPPA Comments on Pre-Rulemaking Staff Workshop on
Photovoltaic System Requirements**

Additional submitted attachment is included below.



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August 9, 2023 | Submitted electronically

California Energy Commission
Docket No. 22-BTSD-01
715 P Street
Sacramento, CA 95814

RE: 2025 Pre-Rulemaking Staff Workshop on Heat Pump Baselines and Photovoltaic System Requirements

The Southern California Public Power Authority¹ (“SCPPA”) appreciates the opportunity to provide feedback on the 2025 Pre-Rulemaking Staff Workshop on Heat Pump Baselines and Photovoltaic System Requirements held on July 27, 2023.² SCPPA supports the efforts of the California Energy Commission (“CEC”) to increase energy efficiency and reduce greenhouse gas emissions (GHGs) through the Energy Code. As building standards continue to expand building decarbonization strategies, it is imperative that regulations work cohesively across both the utility sector and the building sector. The photovoltaic (PV) system requirements in the Energy Code are one of these critical intersections between the sectors.

SCPPA appreciates the opportunity to work with CEC staff to support energy efficiency and GHG reductions and offers the following comments and recommendations for the CEC to consider:

1) PV systems and associated battery storage systems should be considered for their collective impact on the energy system rather than as a building-by-building resource.

From the perspective of the power sector, rooftop PV systems act either as a load reduction resource or a generation resource depending on building load. At scale, both cases have significant impacts to the grid. As the PV system requirements in the Energy Code mature and more buildings with PV systems accumulate, it is important to consider these grid impacts. CEC is perfectly positioned to marry the expertise of building energy usage with understanding of the state’s electrical system. And this type of cross-cutting analysis is especially key with regard to large pockets of new development, which bring a lot of new solar and storage onto the same circuit in a short period of time.

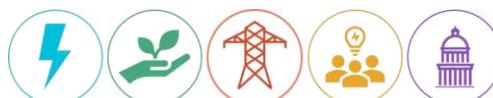
The following comments provide some specific examples of the grid impacts of large amounts of PV and storage but are not exhaustive. SCPPA urges CEC staff to design the Energy Code PV system requirements from a top-down approach: using conditions of the local grid as inputs to justify addition of

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 Energy Commission Docket #22-BTSD-01, Document #251405,

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=251405&DocumentContentId=86256>

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PV systems on new buildings. SCPPA recommends that CEC staff incorporate data and projections from all relevant CEC activities on building decarbonization and distribution grid interconnection.

2) As utilities adjust their rates to allocate the costs that large PV systems and associated battery storage systems incur, CEC should incorporate those allocations into their cost-effectiveness calculations.

The evolution of the Energy Code to include battery storage systems gives building owners greater control of when the building is importing or exporting energy to the grid. This allows POU's to use price signals as a mechanism to help handle the fluctuations in electricity demand on the grid, such as through customer net metering. Load shifting is a key strategy for managing the evolving electric grid, and SCPPA advises that any state policy to promote rooftop PV should contain considerations for load flexibility, which may include batteries.

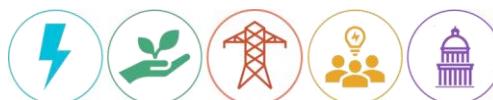
However, it is important to note that large PV systems and associated battery storage systems significantly degrade the longevity of some grid infrastructure. For example, a piece of equipment called an on-load tap changer (LTC) regulates the voltage ratio of electrical transformers, ensuring that there is no interruption to electrical service when the voltage on a circuit suddenly changes—such as when a large commercial building diverts its load to a battery storage system. These LTCs are designed to preserve reliability in case of rare and unexpected shocks to the system; they typically last for decades. However, increasing amounts of load shifting means that LTCs are activated multiple times per day and are wearing out in less than 10 years.

Utilities are adjusting to this new normal by identifying materials that need more frequent replacement and planning accordingly. SCPPA Members are also working to determine how the costs of these new capital investments should be allocated. Smaller POUs and POUs with high proportions of disadvantaged communities are limited in their abilities to socialize those costs over a large customer base. Instead, the most equitable solution is for the customer—in this case the large commercial building—to bear the cost incurred by this load shifting.

This scenario is a perfect example of the “implementation of public agency rules regarding utility system costs” possibly causing the CEC’s cost-effectiveness calculations to not hold.³ SCPPA encourages the CEC to communicate with POUs as they continue to adjust their rules regarding system costs and to incorporate these changes into their cost-effectiveness calculations. As new technologies and innovations continue to transform the grid, more scenarios such as the LTC example will likely emerge. Nimbleness in adapting to these scenarios will be critical for both POUs and the CEC and SCPPA looks forward to being a resource to CEC staff in adjusting cost-effectiveness calculations and/or in evaluating 10-109(k) considerations between code cycles.

³ 24 C.C.R. §10-109(k), <https://codes.iccsafe.org/content/CAAC2022P1/chapter-10-administrative-regulations-for-the-california-energy-commission-cec>

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3) CEC should consider the role of PV system requirements as the energy sector approaches 100% clean electricity, with some utilities already approaching or achieving that goal.

As discussed above, PV systems on buildings act as both a load reduction and generation resource, depending on the building owner's usage. These resources feed into the real-time balancing act of the electrical system. However, they do so under the control of the building's demand-side management system rather than the utility's dispatch control center. Although POUs incorporate building electrification, rooftop solar, and distributed storage resources into their planning, they are still responsible for dispatching electricity when it is in demand, and curtailing or redirecting power when it is not needed. Therefore, when a utility customer exports electricity from their rooftop PV or battery storage system, that power displaces other electricity that would otherwise go into the system. Enough exports from rooftop PV in a local area can therefore mean the reduction in usage of a natural gas power plant. But, if customers decide not to export at any time, the utility must have energy on hand to deliver in its place.

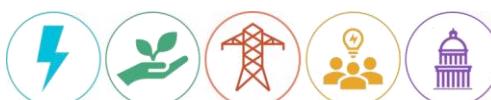
However, it is the policy of the state that 100% of electricity come from zero-carbon sources by 2045. Utilities are also compliant with the Renewable Portfolio Standards, meaning that at least 33% of each California utilities' electricity is procured from eligible renewables. In sunny California, those renewables are mostly large-scale solar plants. That ratio will increase to 44% by the end of 2024 and 60% by the end of 2030. Some POUs are already served by majority zero-carbon resources, especially smaller utilities for whom one contract with a renewable energy project can cover a large percentage of their load. As the electric grid gets cleaner and cleaner, rooftop solar will no longer be displacing natural gas, but rather displacing other renewable energy sources, especially utility-scale solar. This displacement can result in a POU's power purchase agreements for solar energy becoming stranded assets that are no longer needed.

SCPPA encourages CEC staff to evaluate the costs and benefits of PV system requirements in anticipation of 2030, when 60% of electricity will be from renewable sources. And SCPPA urges CEC staff to make adjustments now to accommodate POUs that are getting to these high percentages of clean energy ahead of schedule. Such adjustments may include waivers for utilities that have reached a high percentage of renewable energy in their portfolios.

Thank you for the opportunity to provide comments on the PV system requirements in the 2025 Energy Code. SCPPA looks forward to continuing to collaborate with CEC and other stakeholders as the 2025 code cycle for building standards is further developed and refined.

NATALIE SEITZMAN

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