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**PCE Solar+Battery Backup Program Joint CCA Proposal for Clean Energy Resources for Reliability (Docket Number 21-ESR-01)**

*Additional submitted attachment is included below.*



December 16, 2022

California Energy Commission  
David Erne – Deputy Director  
Docket Number 21-ESR-01  
715 P Street  
Sacramento, CA 95814

**Re: Joint CCA Proposal for Clean Energy Resources for Reliability (Docket Number 21-ESR-01)**

## Summary

These comments and preliminary proposal are intended to inform the CEC's call to analyze the ability of clean energy resources to support grid reliability and resilience. Peninsula Clean Energy Authority (PCE), East Bay Community Energy (EBCE), and San Jose Clean Energy (SJCE), together the "Joint CCAs," appreciate the opportunity to submit this response and are encouraged by the holistic approach taken the California Energy Commission (CEC) to considering clean energy alternatives for reliability.

The Joint CCAs propose that the CEC draw on Clean Energy Resources for Reliability funding to support the development of load modifying resources ("LMR") that consistently provide peak load management on a daily basis, including peak days, rather than only during emergency events, as is the current norm. The incentives proposed by Joint CCAs are better aligned with the value that regularly deployed LMR provide and would likely increase the number of systems enrolled in load modification programs, actively contributing to peak load reduction. Additionally, Joint CCAs suggest that LMR be expanded to include all other measurable resources, such as flexible grid services or energy efficiency, that can reduce peak load.

Peninsula Clean Energy and the Joint CCAs represented here are supportive of EBCE's proposed \$30M pilot and request an additional \$30M for PCE's pilot detailed below. PCE will focus on utilizing both newly installed solar+storage systems and retrofitting stand-alone solar systems with new battery storage to provide LMR. PCE has a significant amount of stand-alone PV systems throughout its service territory, totaling over 21,000 solar systems with a combined capacity of over 115MW. Identifying pathways to integrate battery storage with existing solar will be a focus of PCE's pilot, with the intention it will provide a path for these existing customers to adopt battery storage. Through the Proposal, these customers would export less solar energy to the grid during the day and reduce their load during the system net peak hours. The Proposal as further detailed below complements the proposal submitted by East Bay Community Energy (EBCE) and Sonoma Clean Power (SCP) to the California Energy Commission on December 14, 2022.

## Background

### *Overview*

Load modification is set to play a significant role in helping California ensure grid reliability, especially amidst increasing generation from intermittent renewable resources and the frequency of extreme weather events. Currently, solar energy generation, which constitutes almost 20% of in-state

generation,<sup>1</sup> does not typically align with peak customer demand. The state routinely experiences a significant ramp-up of expensive natural gas generators when the sun sets, which increases power-sector emissions and can create operational and reliability issues. Furthermore, California will continue to experience increased frequency and severity of extreme heat events over time, further testing the resiliency of the electricity grid. As such, California has an immediate and long-term interest in reducing peak load via demand side management.

As the State actively seeks solutions to reduce load at the peak, LMR should be considered as a cost-effective approach. When effectively managed, LMR enable the effective shifting of customer load from on-peak to off-peak periods which can reduce load during periods of extreme grid stress and diminish the frequency of grid stress events. Additionally, LMR align with many of the positive attributes identified in the 21-ESR-01 RFI, such as readiness, lowered GHG emissions, dispatchability, customer acceptance, and equity considerations. As such, LMR are well situated to address the issues raised in 21-ESR-01, and supporting the adoption and utilization of LMR is in the best interest of the State.

OhmConnect's Response to Request for Information on Clean Energy Resources for Reliability<sup>2</sup> successfully highlights the critical role that Demand Response (DR) resources play in California.<sup>3</sup> Additionally, OhmConnect's filing highlights how the current market rules and incentives do not adequately value flexible demand. OhmConnect's recommendations regarding supplementing incentives during dispatch events and adding base incentive rates are steps in the right direction. Additionally, Joint CCAs propose another approach, grounded in the demonstrated successes of PCE's Solar+Battery Backup program.

#### *Background on PCE's Solar+Battery Backup Program*

PCE launched the Solar+Battery Backup Program (Program) in 2020 with the primary goal of providing backup power to single and multifamily residential homeowners facing rolling blackouts or Public Safety Power Shutoff (PSPS) events. Under the Program, PCE partners with solar company Sunrun, who assists customers with installing behind-the-meter solar and battery systems and provides customers with financing options for the systems. PCE selected Sunrun through a competitive solicitation and the program provides incentives to customers in exchange for allowing PCE to dispatch the batteries every weekday during the evening peak hours.

PCE has been developing a portfolio of load modifying resources over the last two years through the Program. With over 450 residential solar and storage systems under management, PCE delivers real, ongoing peak load management on a daily basis, including on CAISO peak days. Each residential battery delivers approximately 2 kilowatts (kW) over a 4-hour period (8 kWh) every weekday. Batteries are coordinated to charge at controlled rates during periods with high solar generation and discharge at a consistent rate across times of peak grid load. As shown in Error! Reference source not found. in the appendix, actively managing the batteries is crucial to optimizing their load modification capabilities. Unmanaged batteries operating "in the wild" may not be effectively reducing customer load during peak periods.<sup>4</sup>

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<sup>1</sup> 2021 Total System Electric Generation, California Energy Commission ([energy.ca.gov](https://www.energy.ca.gov))

<sup>2</sup> Response to Request for Information on Clean Energy Resources for Reliability, OhmConnect ([energy.ca.gov](https://www.energy.ca.gov))

<sup>3</sup> PCE believes that DR resources and LMR are functionally identical, and that DR resources should be considered as LMR in the context of this proposal.

<sup>4</sup> 2020 SGIP Energy Storage Impact Evaluation, Verdant Associates, Page 58. ([cpuc.ca.gov](https://www.cpuc.ca.gov))

## Funding Proposal

### *Incentives for Consistent LMR*

The Joint CCAs believe that funding should be allocated for LMR that consistently provide peak load management on a daily basis, including peak days, rather than *only* during emergency events, as is the current norm with existing programs such as Demand Side Grid Support (DSGS) or Emergency Load Reduction Program (ELRP). Daily deployment of LMR, such as the paired solar and storage systems in PCE’s Solar+Battery Backup program, not only provide emergency load reduction, but also provide reliable load shifting that can lessen the frequency of grid stress events and reduce the need for natural gas plants during periods of peak demand, thus improving emissions outcomes. These benefits are reflected in provisions of SB 846 that identify DR and energy efficiency as “preferred resources” in the State’s energy loading order.<sup>5</sup> Despite these benefits, incentives for consistent delivery of LMR are limited. Providing incentives better aligned with the recognized value that LMR provide is more likely to increase the number of systems enrolled in load modification programs, actively contributing to peak load reduction.

The Joint CCAs encourage the CEC to draw on the Clean Energy Resources for Reliability funding, authorized in SB 846, to provide \$2,500 per kW of LMR. As each battery in the Solar+Battery Backup program is rated at roughly 2kW, this equates to \$5,000 per system, or \$20.83/kW-month for delivered capacity over a proposed 10-year contract. If this funding is made available to PCE, it can then be distributed to customers to incentivize the uptake of managed LMR through two pathways:

1. **Coordinating existing systems.** As shown in Table 1 below, there are roughly 2,700 existing residential solar paired storage systems in PCE’s service territory, totaling around 36MW of storage. PCE currently enrolls 466 of these systems in coordinated dispatch through Solar+Battery Backup. With an additional monetary offering, PCE could capture currently unmanaged systems and deliver an additional 2kW, or 8 kWh, of daily load modification per battery.
2. **Increasing storage adoption.** Sales of new battery systems would increase with the additional incentive.
3. **Retrofitting existing stand-alone solar with batteries.** Net Metering has historically focused on incentivizing standalone solar, which does not provide relief during grid shortages, and as a result, there are currently over 21,000 behind-the-meter PV system installations in PCE’s service area with no integrated storage, representing over 115MW of stand-alone solar capacity. Adding incentives to retrofit these systems with controlled storage will allow us to convert more stand-alone solar systems to combined solar+storage systems.

Table 1: Solar + Storage Systems and Capacity in PCE Service Area<sup>6</sup>

Year	Additional # of Solar + Storage Systems	Additional Storage Capacity (kW)
2014	9	104

<sup>5</sup> SB-846 Diablo Canyon powerplant: extension of operations ([leginfo.legislature.ca.gov](http://leginfo.legislature.ca.gov))

<sup>6</sup> Information on the number of solar and storage systems and capacity is drawn from a quarterly distributed energy resources interconnection report PCEs receive from PG&E.

2015	2	44
2016	5	36
2017	11	110
2018	86	884
2019	221	2,554
2020	584	8,248
2021	873	12,515
2022	966	11,755
<i>Total</i>	2,757	36,251

With this funding, PCE can deliver 12 MW of additional load modification over the next 5 years, with a 10-year contract duration for Load Modification deliveries. Combined with EBCE’s proposal, this equates to 24 MW of additional LMR. Due to the immediate need for peak load reduction in Summer 2023, PCE will focus on capturing as many existing and unenrolled solar and storage systems. For 2024 and onwards, PCE will expand on the success of Solar+Battery Backup by continuing to enroll existing systems, retrofitting existing stand-alone solar with batteries, and enrolling new systems.

*Program Design*

The Joint CCAs propose a load modification contract period of 10 years, guaranteeing ongoing delivery. The CEC could fund a \$30M pilot<sup>7</sup> as described in this proposal, to be expanded and modified based on successful delivery of the first 12MW of Load Mod by PCE. Additionally, the Joint CCAs suggest a pay for performance structure where subsidies will only be provided for delivered load modification, thus preventing the CEC from paying for resources that are not built or effectively utilized.

The Joint CCAs also recommend that LMR be expanded to include all other measurable resources, such as flexible grid services or energy efficiency, that can reduce peak load. This tech-neutral approach will allow for the proliferation of LMR in the manner that is most cost-effective and suitable for other load serving entities or third parties given their individual market conditions and circumstances. However, given the time needed to scale these resources, solar and storage under Solar+Battery Backup would be the primary focus of PCE for the Summer of 2023.

**Conclusion**

The Joint CCAs appreciate the opportunity to provide this response and look forward to collaborating with the CEC and other stakeholders.

Respectfully submitted,

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<sup>7</sup> \$30M, utilized at \$2,500 per 2kW battery, would produce roughly 12,000 additional storage systems.

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## Appendix

Figure 1: Managed Solar+Battery Backup Battery Performance

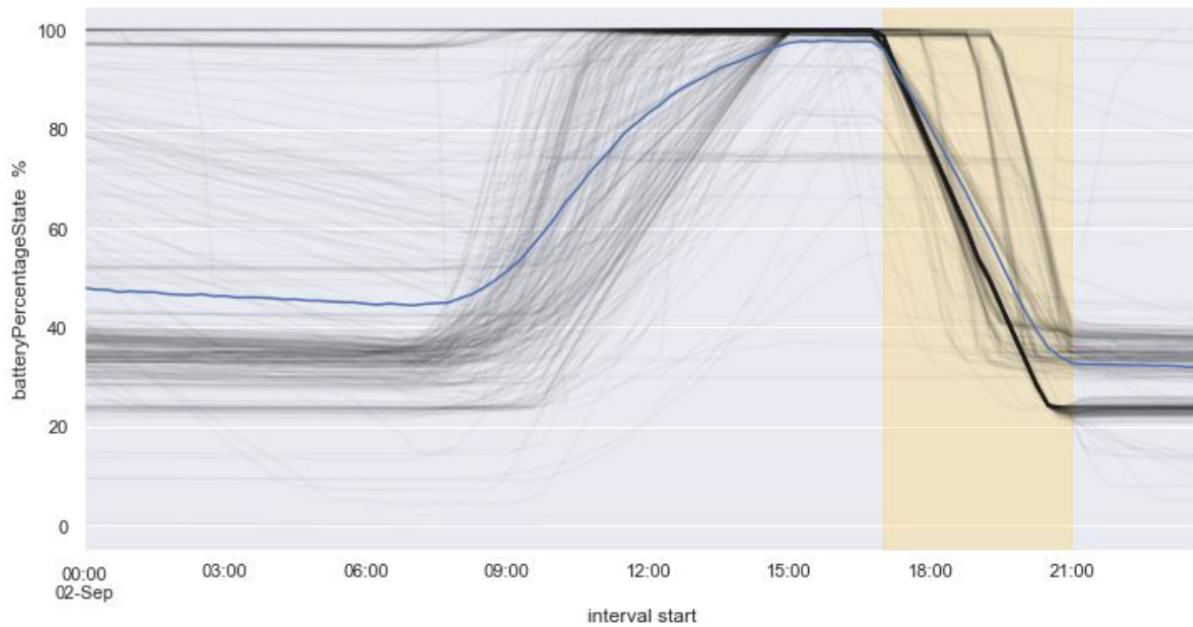


Figure 1 shows how customer battery systems charge and discharge when actively managed in the Solar+Battery Backup program. Each black line represents a single battery, and the blue line represents the average state of charge across all batteries. When operating with coordination, the portfolio maximizes load modification, as evidenced by:

1. Systems charge at controlled rates during times of high solar generation
2. Systems discharge at an optimized rate to ensure constant output throughout the contracted four-hour window