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Joint CCA Proposal for Clean Energy Resources for Reliability, 21-ESR-01

Additional submitted attachment is included below.

December 14, 2022

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

Joint CCA Proposal for Clean Energy Resources for Reliability, 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. East Bay Community Energy (EBCE) and Sonoma Clean Power Authority (SCP), together, the "Joint CCAs," appreciate the opportunity to submit this response and are encouraged by the CEC's holistic approach 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 the Joint CCAs are better aligned with the value that regularly deployed LMR provide and would likely increase the number of customers enrolled in load modification programs, actively contributing to peak load reduction. Additionally, the 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.

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,[1] 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

[1] 2021 Total System Electric Generation, California Energy Commission (energy.ca.gov)

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 shifting of customer demand from on-peak to off-peak periods which can reduce load during 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[2] successfully highlights the critical role that Demand Response (DR) resources play in California.[3] 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, The Joint CCAs propose another approach, grounded in the demonstrated success of the Resilient Home program.

Background on EBCE's Resilient Home Program

EBCE launched the Resilient Home 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, EBCE partners with solar company Sunrun, which assists customers with installing behind-the-meter solar and battery systems and provides an option for financing the systems. EBCE selected Sunrun through a competitive solicitation and the Program provides incentives to customers that allow EBCE to dispatch the batteries every weekday during the evening peak hours.

Through Resilient Home, EBCE has been developing a portfolio of load modifying resources over the last two years. With over 1,200 residential solar and storage systems under management, EBCE 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 times of high solar generation and discharge at a consistent rate across times of peak grid load. As shown in **Figure 1** and **Figure 2** in the appendix, which depict data collected from the Resilient Home program, actively managing the batteries is crucial to optimizing their load

[2] Response to Request for Information on Clean Energy Resources for Reliability, OhmConnect (energy.ca.gov)
[3] The Joint CCAs believe that DR resources and LMR are functionally identical, and that DR resources should be considered as LMR in the context of this proposal.

modification capabilities. Unmanaged batteries operating "in the wild" may not be effectively reducing customer load during peak periods.[4]

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 EBCE's Resilient Home 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.[5]

Despite these benefits, incentives for consistent delivery of LMR are limited. Providing incentives better aligned with the recognized value of LMR 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 Resilient Home 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 EBCE, it can then be distributed to customers to incentivize the uptake of managed LMR through three pathways:

1. **Coordinating existing systems.** As shown in Table 1 below, there are roughly 4,800 existing residential solar paired storage systems in EBCE's service territory, totaling around 29MW of storage. EBCE currently enrolls 1,260 of these systems in coordinated dispatch through Resilient Home. With an additional monetary offering, EBCE 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 7,500 behind-the-meter PV system

[4] 2020 SGIP Energy Storage Impact Evaluation, Verdant Associates, Page 58. (cpuc.ca.gov)
[5] SB-846 Diablo Canyon powerplant: extension of operations (leginfo.legislature.ca.gov)

installations in EBCE's service area with no integrated storage. Adding an incentive to retrofit these systems with controlled storage will help to capture more of this market.

Table 1: Solar + Storage Systems and Capacity in EBCE Service Area[6]

Year	*Additional # of Solar + Storage Systems*	*Additional Storage Capacity (kW)*
2014	13	56
2015	0	0
2016	5	27
2017	47	282
2018	203	1,208
2019	403	2,527
2020	885	6,095
2021	1,469	10,839
2022	1,772	7,845
Total	4,797	28,878

With this funding, EBCE can deliver 12 MW of additional load modification over the next 5 years, with a 10-year contract duration for Load Modification deliveries. Due to the immediate need for peak load reduction in Summer 2023, EBCE will focus on capturing many existing and unenrolled solar and storage systems. For 2024 and onwards, EBCE will expand on the success of Resilient Home by continuing to enroll existing systems, retrofitting existing stand-alone solar with batteries, and enrolling newly deployed 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[7] as described in this proposal, to be expanded and modified based on successful delivery of the first 12MW of Load Mod. Additionally, The Joint CCAs suggests that subsidies 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 approach-neutral proposal 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, circumstances, and programs. However, given the time needed to scale

[6] Information on the number of solar and storage systems and capacity is drawn from a quarterly distributed energy resources interconnection report EBCE receives from PG&E.

[7] $30M, utilized at $2,500 per 2kW battery, would produce roughly 6,000 additional storage systems.

these resources, solar and storage under Resilient Homes would be the primary focus of EBCE 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 moving forward.

Respectfully submitted,

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Appendix

Figure 1: Non-Managed Residential Battery Performance

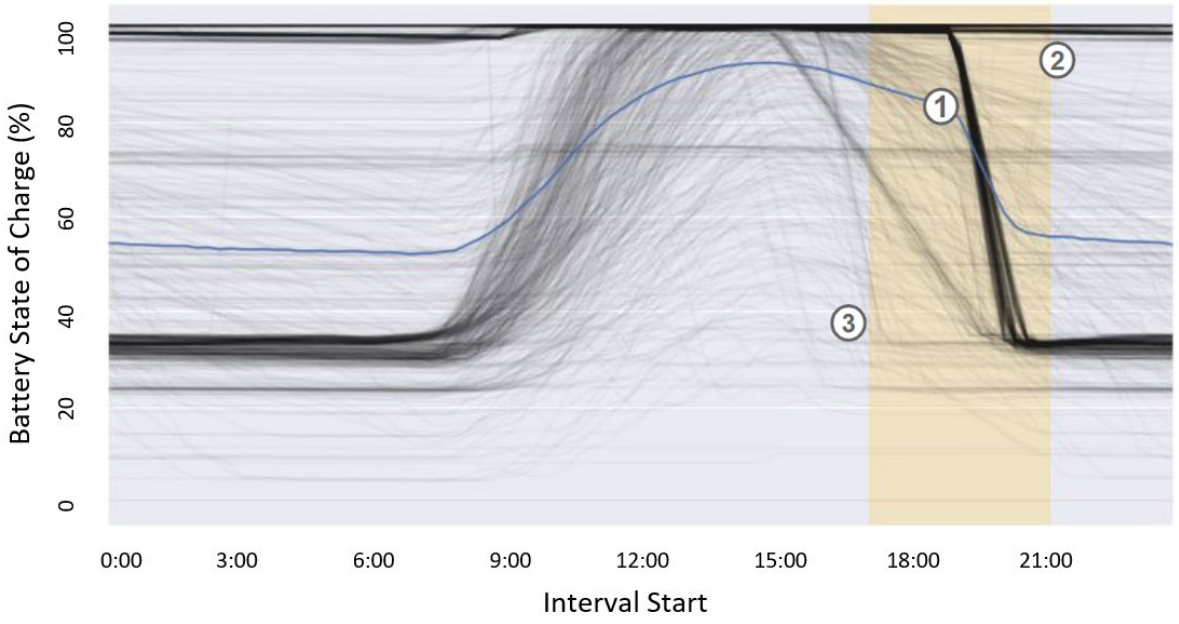

Figure 1 shows how residential battery systems charge and discharge when not actively managed. Each black line represents a single battery, and the blue line represents the average state of charge across all batteries. When operating without coordination, the portfolio fails to maximize load modification benefits, as evidenced by:

1. Batteries dispatch for TOU, and generally are set to discharge over 1-2 hours, which does not align with entirety of grid stress event
2. Batteries are in back-up only mode and do not dispatch in the evenings
3. Batteries are configured to maximize self-consumption and may not dispatch during evening hours

Figure 2: Managed Battery Performance

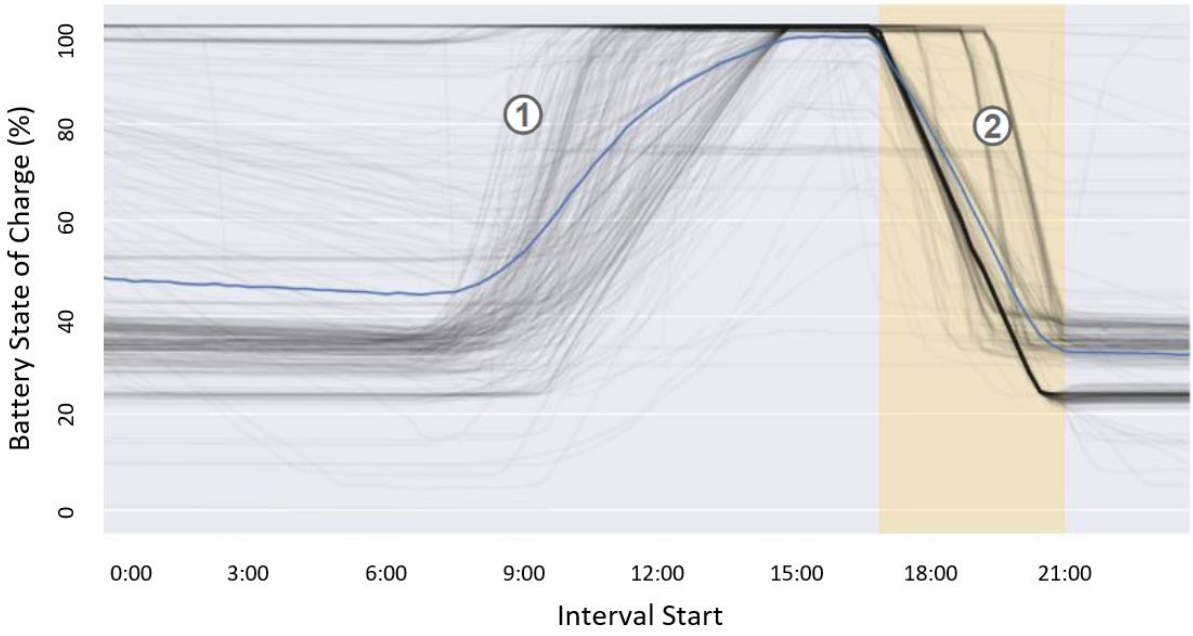

Figure 1 shows how customer battery systems charge and discharge when actively managed. Each black line represents a single battery, and the blue line represents the average state of charge across all batteries. When operating with coordination, the portfolio maximizes load modification, as evidenced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

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