BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Microgrids Pursuant to Senate Bill 1339 and Resiliency Strategies.	RULEMAKING 19-09-009 (Filed September 12, 2019)

Comments of the Center for Sustainable Energy® in response to Email Ruling on Potential Microgrid & Resiliency Solutions for Commission Reliability Action to Address Governor Newsom's July 30, 2021 Proclamation of a State of Emergency

Center for Sustainable Energy®

September 10, 2021

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I. INTRODUCTION

The Center for Sustainable Energy® (CSE) appreciates the opportunity to provide these comments in response to the California Public Utilities Commission (CPUC or Commission) *Email Ruling on Potential Microgrid & Resiliency Solutions for Commission Reliability Action to Address Governor Newsom's July 30, 2021 Proclamation of a State of Emergency* (Email Ruling).[1] CSE commends the Commission's efforts to take critical action to push for solutions to prepare the grid for the inevitable impacts of climate change. While the Email Ruling focuses on near-term proposals to address necessary energy system needs for the summers of 2022 and 2023, CSE strongly encourages the Commission to address the regulatory barriers identified in the Energy Division Staff Concept Paper that will help unlock the benefits of microgrids through greater deployment in the long-term within Track 4 of this proceeding.[2]

The Email Ruling outlines a breadth of topics on which the Commission is seeking proposals and comments, including prevention versus mitigation of system capacity shortfall, the role of islanding in load management, leveraging existing microgrid and resiliency programs, microgrid tariffs, and potential new microgrid programs. Given our extensive involvement in an active Electric Program Investment Charge (EPIC)-funded microgrid project, CSE focuses our comments on the following two questions posed by the CPUC regarding how to leverage existing microgrid and resiliency programs:

> *3. How should existing microgrids that have been awarded grant funds (e.g., projects awarded funding by the California Energy Commission or investor-owned utilities via EPIC) be further leveraged to reduce load, especially during net peak hours?*
>
> *4. Approximately how many megawatts could existing programs address during the net peak hours in 2022? Please provide estimates per program.*

[1] *Email Ruling on Potential Microgrid & Resiliency Solutions for Commission Reliability Action to Address Governor Newsom's July 30, 2021 Proclamation of a State of Emergency,* August 23, 2021.

[2] *Administrative Law Judge's Ruling Requesting Comment on the Track 2 Microgrid and Resiliency Strategies Staff Proposal, Facilitating the Commercialization of Microgrids Pursuant to Senate Bill 1339,* July 23, 2020.

Through these comments, CSE seeks to share our experiences working on the Santa Rosa Junior College (SRJC) microgrid project (EPC-17-053) to help inform specific proposals, including what steps the project is currently taking to reduce peak loads, as well as provide recommendations on how the Commission can make it easier for other existing and future microgrid projects to contribute to grid resiliency efforts. CSE does not provide these comments on behalf of the SRJC microgrid project team; rather, we share our insights based on our involvement in the project. Specifically, we focus our comments on the following issues:

- Leverage Existing Projects through Ongoing Collaboration
- SRJC Microgrid Project Background
- Load Reduction Considerations at SRJC
    - Participation in demand response programs was primarily driven by additional revenue benefits.
    - Identified load reductions were dependent on facility needs and storage capacity.
- Ensure Program Requirements and Benefits are Clearly Communicated
- Resiliency-Focused Demand Response Programs Should Be Competitively Incentivized and Allow Value-Stacking.
- Exceptions for Certain Peak Load Charges Should be Considered When Resources are Responding to Emergency Events.

California has made significant investments in developing microgrids to enhance resiliency, including, but not limited to, several EPIC-funded projects. However, the needs of the energy system are everchanging in the face of the impacts of climate change; thus, some projects may not have been designed to optimally meet current needs. As such, ongoing collaboration with existing microgrid projects will help ensure existing resources can be leveraged to address current issues, such as system capacity shortfall during extreme weather

events. CSE recommends the State maintain an inventory of California Energy Commission-administered microgrid projects and other projects with peak load reduction capabilities to ensure a direct line of communication to project managers as priorities shift and relevant policy decisions are considered. In addition to having the potential to build upon existing capabilities, demonstration projects such as the SRJC microgrid project can provide valuable insights to inform future projects and programs, and it is essential that they be considered in policy discussions.

II. SRJC MICROGRID PROJECT BACKGROUND

CSE is partnered with the Sonoma County Junior College District (SCJCD), PXiSE, and Worley to design, construct and test a microgrid at the Santa Rosa Junior College campus. The microgrid system incorporates three different types of distributed energy resources (DERs) – solar generation, battery energy storage, and load management devices – and will be controlled by a single microgrid controller. This four-year project aims to demonstrate the environmental, economic, and resiliency benefits of a highly flexible campus microgrid and serves as a blueprint for a campus microgrid strategy that can be implemented at other institutions. California has over 100 community college campuses throughout the State that naturally serve as community resilience hubs in the event of a blackout or other disaster, which makes them ideal candidates for microgrid projects. Replicating such projects will require capacity building at public facilities to spearhead such projects.

The primary operational objectives of the SRJC microgrid project are to create a flexible and resilient power system capable of isolating and reconfiguring itself, to meet at least 40% of the campus energy needs with emissions-free solar photovoltaics (PV), to reduce campus peak load, to optimize campus energy use, and to stabilize the utility distribution grid by providing frequency and voltage support. The SRJC microgrid is designed to achieve a "blinkless" transition from grid-following to grid-forming mode, allowing the campus to maintain uninterrupted power in the event of a planned or unplanned outage, and the system will

replace diesel generators as the primary back-up power source. The SRJC microgrid project is currently in the construction phase and is expected to begin its measurement and verification period by the beginning of 2022 when all microgrid components are fully installed, commissioned, and integrated.

III. LOAD REDUCTION CONSIDERATIONS AT SRJC

A. Participation in demand response programs was primarily driven by additional revenue benefits.

Part of the SRJC microgrid project scope includes a requirement to explore demand response (DR) programs to provide economic value streams to the campus project. The project team considered the impact of load reduction as a means for reducing campus greenhouse gas (GHG) emissions, but the modeling results indicated that the GHG emissions reductions were minimal and greater savings could be achieved with additional solar generation. Therefore, the main driver for campus participation in DR activities is the additional revenue. The project intends to dedicate half of the power battery capacity to DR, resulting in participation at 250kW, with an additional 250kW from HVAC loadshedding, for a total of 500kW load reduction in a DR event.

In the modeling phase of the SRJC microgrid project, completed in 2020, the project team considered three potential DR programs provided by the local utility, Pacific Gas & Electric (PG&E), including the Capacity Bidding Program (CBP), Base Interruptible Program (BIP), and Proxy Demand Response (PDR). Since the initial assessment of potential DR programs, additional emergency-focused DR programs have become available. The project team is currently in the process of reassessing the various program or programs in which the campus will enroll. The SRJC microgrid project's consideration of DR programs informs CSE's proposal recommendations and comments.

B. Identified load reductions were dependent on facility needs and storage capacity.

One of the primary objectives of microgrids is maintaining critical operations and minimizing interruptions of services during disruptive events. Given its level of operations and need to minimize interruptions of campus services for students and faculty, SRJC has limited ability to provide further load reductions, and those identified loads for DR participation are heavily dependent on storage capacity of both electric and thermal energy. For example, the college considered incorporating additional energy reductions from lighting into its DR participation but determined that this would result in too much of an interruption for campus occupants. However, it was noted that there may be willingness to endure some additional impacts to campus services to meet system needs during an emergency to prevent blackouts within the community, as opposed to typical DR program participation motivated by revenue. This culture shift would require education and outreach regarding the connection between a facility's actions and its contribution to a vital cause, and, as such, emergency DR programs should be distinct and communicated differently.

During emergency events, there are also significant limits to the load reduction capabilities of SRJC due to its role as a community resilience hub. For example, during high heat days, the campus would act as a cooling center for the community, which would prevent any load shedding from its HVAC operations that goes beyond existing thermal storage capacity. Load reductions should not be made at the expense of important emergency services, and we recommend the Commission take this into consideration when determining how to leverage existing microgrids for capacity shortfall mitigation.

IV. ENSURE PROGRAM REQUIREMENTS AND BENEFITS ARE CLEARLY COMMUNICATED

When modeling, designing, and selecting DR program enrollment, projects base decisions on the added value of DR participation, which is often the associated economic incentive. The SRJC microgrid project team performed techno-economic modeling to determine the optimal design and operation of microgrid components and DR program

enrollment in order to minimize the total annual energy cost to SRJC. Through this process, the design team decided to enroll in PG&E's CBP because the model found that enrollment and participation in this plan can potentially reduce utility expenses by 7.5%. However, it is important to note that this project still relies on grant funding in addition to this and other value streams. The upfront capital costs of this project exceeded the savings realized through operations and maintenance cost reductions, and the EPIC grant funding for all infrastructure and equipment costs played a key role in allowing SRJC to pursue the project. Additional grant or direct funding opportunities will be critical for overcoming the financial barriers to developing microgrids on community colleges, and public institutions are less likely to pursue such projects through financing or low-interest loans. The SRJC microgrid project demonstrates the need for funding to include community resilience planning and modeling exercises, which can be cost-prohibitive and may prevent an institution from pursuing a microgrid project.[3]

Because the modeled value streams are a driving factor in decision-making, it is essential that program incentives are clearly communicated and can be used to estimate project payback over several years. Moreover, program requirements and rules regarding dual participation should avoid being overly complex so they do not discourage participation. Lastly, it is important that the energy needs are clearly reflected in program design. For example, a microgrid project may choose to size a storage system to provide more capacity for load shed at a shorter duration, rather than focus on meeting longer duration storage needs for less load based on both the customer and systemwide energy needs. Proper economic signals are an important mechanism for ensuring priority needs are met, as discussed further below.

[3] The SRJC microgrid project spent between $40,000 and $80,000 for modeling efforts.

V. RESILIENCY-FOCUSED DEMAND RESPONSE PROGRAMS SHOULD BE COMPETITIVELY INCENTIVIZED AND ALLOW VALUE-STACKING.

Along with the need to be clearly communicated, economic signals must align with the State's priorities and energy system needs to ensure microgrid projects are optimally designed to meet these needs as well as individual customer needs. Participation in emergency load reduction programs is often compared to the economic values of other load management activities, including enrollment in other DER programs, demand charge mitigation, and energy arbitrage, as well as the potential economic impact of reducing load on facility operations. Accordingly, emergency load reduction programs should be economically competitive to encourage participation. CSE is encouraged by the Commission's efforts in developing a framework for valuing resiliency through the Resiliency and Microgrids Working Group and reiterates the importance of including a value of resilience in future incentives or tariffs for relevant projects. Such a value is needed to reflect the community benefits provided by resiliency projects, especially at public facilities, and will improve the cost-effectiveness of these necessary resources. Specifically, emergency load reduction programs could leverage microgrids by incentivizing long duration storage and consider the use of a resiliency adder similar to that utilized in the Self-Generation Incentive Program (SGIP).

Moreover, to the extent possible, enrollment in programs aimed at reducing net peak load during emergency events should be permitted to be layered onto existing DR programs and compensated accordingly. For example, according to PG&E's Emergency Load Reduction Program (ELRP) rules, "BIP participants are only eligible for ELRP compensation for ELRP events that overlap with BIP events and only for the overlapping window,"[4] which seems to reduce the incentive to enroll energy capacity in the ELRP. The energy system needs during

[4] Customer FAQ - Emergency Load Reduction Program (ELRP), available at https://elrp.olivineinc.com/customer-faq

extreme weather events may differ from typical peak demand occurrences, and, as such, resources should be encouraged to respond to various needs, as possible, through multiple value streams. For example, incentives for energy storage could be stacked with DR participation to optimize performance and allow for stored thermal energy to help ride out DR events for peak load reductions by preparing in advance. CSE encourages the Commission to consider a variety of storage technologies in addition to electricity storage for future programs, such as hot water and chilled water storage and phase change materials.

VI. EXCEPTIONS FOR CERTAIN PEAK LOAD CHARGES SHOULD BE CONSIDERED WHEN RESOURCES ARE RESPONDING TO EMERGENCY EVENTS.

In order to leverage existing microgrid projects for responding to grid needs to prevent a system capacity shortfall, we urge the Commission to consider exceptions to some existing charges. During its modeling phase, the SRJC microgrid project discovered that if the campus were to island during an outage or other grid event and then reconnect when the power comes back on, if the power comes back during peak hours, it would still be subject to peak load charges from the utility. Accordingly, we recommend there be an exception or grace period from peak load charges for microgrids with depleted battery systems if they were islanding to help with a load event or provide resiliency benefits.

VII. CONCLUSION

CSE appreciates the opportunity to provide these comments regarding the Email Ruling.

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