

## DOCKETED

<b>Docket Number:</b>	15-AFC-01
<b>Project Title:</b>	Puente Power Project
<b>TN #:</b>	220972
<b>Document Title:</b>	CESA's Comments on Moorpark Sub-Area Local Capacity Alternative Analysis
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	CESA/Donald Liddell
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	8/30/2017 4:19:40 PM
<b>Docketed Date:</b>	8/30/2017

*Comment Received From: Donald Liddell*

*Submitted On: 8/30/2017*

*Docket Number: 15-AFC-01*

## **CESA's Comments**

*Additional submitted attachment is included below.*

August 30, 2017

**Email to: Hearing Officer, Paul Kramer (Paul.Kramer@energy.ca.gov)**

Original Copy to:  
California Energy Commission  
Docket Office, MS-4  
Re: Docket No. 15-AFC-01  
Puente Power Project Proceeding  
1516 9<sup>th</sup> Street  
Sacramento, CA 95814-5512

**Re: Comments of the California Energy Storage Alliance (CESA) on the  
Moorpark Sub-Area Local Capacity Alternative Analysis  
Docket No. 15-AFC-01**

---

Dear Commissioners:

The California Energy Storage Alliance (“CESA”) applauds the energy Commission and its staff, the CAISO, and others for undertaking an analysis of energy-storage roles in addressing key grid challenges. Such analysis provides options for tackling an important challenge for grid reliability, and appropriately considers energy storage. This type of analysis which contemplates solutions like energy storage is important and reflects a forward-looking competitive assessment. The analysis also provides an approach of contemplating different blends of transmission and generation types of solution, e.g. by structuring different portfolios to provide local capacity, local voltage support, and to reduce reliance on transmission solutions where such solutions may be less viable. CESA appreciates this important work.

Importantly, the analysis shows how viable energy-storage related solutions can address local needs in the Moorpark Sub-Area. While CESA understands that the study needed to be done in a short period of time with a limited set of scenarios, CESA believes the study likely underestimates the benefits and overstates the costs of energy storage solutions. CESA believes that a competitive solicitation may yield information on storage costs lower than those used in the analysis. For instance, the nature of the needs for local capacity, which include numerous hours of energy duration at times, will allow for extremely robust competition from different energy storage solutions, including all energy storage subclasses such as various forms of electro-chemical storage (batteries) thermal storage (chilled water/ice/molten salt), mechanical storage (flywheels/compressed air), and even potentially smaller scale gravitational storage (pumped hydro). Also, additional consideration of more updated load-curves or of the roles and capabilities of behind-the-meter storage could lead to outcomes where storage durations of less than nine or ten hours can satisfactorily address the grid’s reliability needs, again lowering costs.

CESA offers further comments on these matters below. CESA supports technology neutral competitive energy storage solicitations.

**I. ENERGY STORAGE PROVIDES VIABLE, COST-EFFECTIVE SOLUTIONS TO THE CHALLENGES IDENTIFIED IN THE STUDY.**

Energy storage is arriving in California. Following successful deployments of energy storage this decade, energy storage is now being recognized as a viable, albeit new, category of solutions for the

grid's needs. Whether as generating capability (to avoid thermal overloads while serving load), as voltage support (enabled by smart inverters and interconnection requirements to provide voltage capabilities to the system), or in other configurations, energy storage is commercially available today and is already supporting the reliable, cost-effective operation of the grid.

Energy storage is an asset class that represents a broad array of technologies with capabilities for both shorter and longer durations of energy. While many of California's energy storage deployments have aligned with the four-hour energy requirements of Resource Adequacy or of the shorter-duration requirements of the Self-Generation Incentive Program, longer-duration energy storage is commercially available and viable as well. In fact, no major competitive solicitations specifically for longer-duration projects have yet been undertaken in California. Such a solicitation would allow for more intense competition from Flow Batteries, Advanced Lead Acid batteries, Lithium Ion batteries, and other non-battery solutions. With respect to the identified needs for 9-hour and 10-hour storage, CESA confirms that many industry members would be ready to propose storage solutions. CESA believes further study scenarios, as described below, could also highlight outcomes where storage of less than nine and ten hours is appropriate.

## **II. WHILE WELL-INTENDED, THE STUDY LIKELY OVERSTATES THE COSTS AND UNDERESTIMATES SOME THE BENEFITS OF ENERGY STORAGE.**

While the CAISO's Moorpark Sub-Area analysis is thoughtful in many ways, one serious limitation is the lack of more recent publicly available cost information on energy storage solutions. While the CAISO clearly acknowledges they are not cost experts with energy storage, CESA believes the costs used in the study are too high, which in turn make energy storage appear to be less cost-effective than alternative solutions.

There are several key ways that the costs may be too high. The study sources its Lithium-Ion cost information (Moorpark Sub-Area Analysis, page 26) from a July 2016 Navigant study, which showed a cost of \$1,940/kW for a 4-hour system. In general, for a system delivered end of year 2020, these costs are at the higher end of the cost spectrum. Meanwhile, other sources, including a major EPRI report on Energy Storage costs for utility planning, provide views which confirm the Navigant cost assumptions list higher range costs.<sup>1</sup> Further, the CAISO study uses the 4- hour number to calculate \$485/kWh and then multiplies by 9 hours to get to an estimate of \$4,365/kW for a 9-hour system. This is also problematic because there are some project costs which don't scale in a linear fashion. CESA offers that the best way to approach this would be look at the cost to build a 9-hour system as opposed to scaling a \$/kWh number for a smaller system. *(See Section III for more information on determining updated forward-looking costs.)*

---

<sup>1</sup> Other sources include: EPRI's Energy Storage Cost Summary for Utility Planning: Executive Summary, Information from GTM, and information from the Energy Storage Association. EPRI's 2016 work shows that installed costs per kW for a 6-hour Lithium-Ion battery are listed on the low end of a range at \$2500/kW, or \$416/kWh (See link, pg. 6: <https://www.epri.com/#/pages/product/000000003002008877/>). For longer duration storage, the costs per kWh can be presumed to go down. Approval is needed from GTM Research see their cost estimates. ESA provides cost information in the "Including Advanced Energy Storage in Integrated Resource Planning: Cost Inputs and Modeling Approaches, Energy Storage Association, November 2016.

With online dates scheduled for several years in the future, CESA believes that energy storage costs will very likely be lower. The 2016 Aliso Canyon Energy Storage solicitations highlighted how energy storage can be deployed quickly, and with surprisingly low cost, even under short installation timeframes.

Additionally, administrative cost determinations do not consider other revenue streams or values that could potentially improve the cost-to-benefit value proposition of energy storage relative to other solutions. As examples, some customers may have general preferences for energy storage, and some energy storage applications capture additional revenue streams and provide customer benefits that may not be otherwise reflected in pure quantitative analyses. BTM energy storage solutions, for example, already deployed in SCE's territory and throughout the state today are already providing multiple value streams to customers and supporting the reliable, cost-effective operation of the grid. It is therefore incorrect to compare the full costs of such systems to other resources which may be deployed with the sole purpose of providing contingency capacity or voltage services to meet an N-2 event.

### **III. SOLICITATIONS CAN BE DESIGNED TO RESOLVE THE MOORPARK SUB-AREA'S LOCAL CAPACITY NEEDS WITH ENERGY STORAGE SOLUTIONS.**

Parties and agencies within California have been involved in numerous solicitations designed to foster competitive offers from energy storage solutions. CESA recommends the use of Requests for Information (RFIs) and competitive solicitations to secure up-to-date cost information on energy storage solutions. The CAISO's scenarios provide a helpful framework for 3-different approaches to using energy storage for select local capacity challenges. Additional scenarios may also be helpful to consider (See section 4). Solicitations that encourage competition from amongst a broad range of energy storage solutions could yield helpful and updated cost information.

### **IV. ADDITIONAL SCENARIOS THAT APPROACH THE VOLTAGE SUPPORT PROBLEM DIFFERENTLY COULD LEAD TO ALTERNATIVE STORAGE SOLUTIONS THAT ARE LESS COSTLY.**

The analysis shows how determinations of voltage support and thermal overload drive the needs and durations for energy storage. CESA believes two key sensitivities should be investigated to confirm or explore how perhaps less expensive storage solutions might still address the Moorpark Sub-Area reliability needs. Collectively, these points emphasize that the cost-effectiveness of storage solutions could be better than those shown in the analysis.

First, based on the spreadsheet analysis, CESA believes that different forward-looking load shapes may narrow the window of local capacity shortage. This is revealed from Table 4-3 which shows how changes in net load between 20014-2016 lead to fewer total hours of local deficiencies.<sup>2</sup> With more forward-looking load shapes, this trend could continue until the total hours of local deficiency is smaller, necessitating storage solutions with less of the nine or ten-hour duration.

---

<sup>2</sup> CAISO study, pg. 21.

California Energy Commission  
August 30, 2017  
Page 4

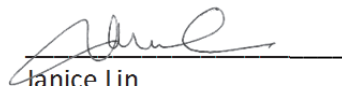
Second, a scenario on how BTM storage can provide support for the Moorpark Sub-Area beyond the incremental growth assumptions used in the study would be helpful. Specifically, with the voltage support capabilities of grid-connected energy storage and solar PV potentially reducing the need for long-duration solutions, the scenario could assess how BTM storage can provide the necessary capacity or support for demand response to back up the grid in the event of the loss of two transmission lines serving the Moorpark Sub-Area. By adjusting how voltage stability is achieved, the reliability issue becomes one of thermal overload, which can be forecasted and allows more time for resources to respond, shorter duration storage that is both in-front of and behind the meter.

**V. CONCLUSION.**

CESA appreciates the consideration of energy storage solutions to meet the anticipated contingency needs of the Moorpark Sub-Area. The CAISO's analysis is relevant and provides important recognition of the roles energy storage can play in the grid. While further analytic work could help, CESA believes the key takeaway from the study should be that energy storage can provide needed services and that costs are likely lower than expected, particularly if additional scenarios are deployed. Because public cost information is difficult to identify, CESA recommends the use of RFIs or competitive solicitations, which can reveal otherwise confidential and current cost-information on an array of various storage solutions. Where possible, CESA always recommends approaches that allow for competition from a variety of energy storage solutions, which includes not only battery solutions, but also other useful and commercially available forms of energy storage such as thermal, mechanical and gravitational energy storage where possible. Additionally, CESA always recommends that such solutions can and should be provided from multiple locations in the grid: in front of the meter as well as behind the meter.

CESA members stand ready to provide a full array of contingency voltage and capacity services to ensure the reliable and cost-effective operation of the grid in the Moorpark Su- Area and we look forward to the opportunity to respond to requests for proposals to meet those needs.

Sincerely,



Janice Lin  
Executive Director  
California Energy Storage Alliance

cc: Karen Douglas, Commissioner, Presiding Member  
Janea Scott, Commissioner, Associate Member