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CESA Comments on Joint Agency Action Plan

Additional submitted attachment is included below.



E-mail: docket@energy.ca.gov April 22, 2015

Original copy to

Lead Commissioner: Robert Weisenmiller

California Energy Commission

Dockets Office, MS-4 Re: Docket 15-IEPR-07 1516 Ninth Street Sacramento, California 95814-5512

Re: Comments of the California Energy Storage Alliance on Request for Public

Comments on 2016 Integrated Energy Policy Report

(Docket No. 16-IEPR-02)

Dear Commissioner Weisenmiller,

The California Energy Storage Alliance (CESA) recognizes the severity and scale of the grid reliability situation in the Los Angeles (LA) Basin stemming from the limited capacity of and capped withdrawal from the Aliso Canyon Natural Gas Storage Facility. As detailed in the Aliso Canyon Action Plan to Preserve Gas and Electric Reliability for the Los Angeles Basin (Joint Action Plan), there could be up to 14 days of outages in summer 2016 due to limitations of the Aliso Canyon facility, which is critical to support hourly summer electricity demand changes and prevent collapse of operating temperatures. Given the uncertain timing of a return to normal conditions for the Aliso Canyon facility and the possibility that it may not return to service, CESA understands that this grid reliability issue could extend beyond year-end 2016 as well. CESA is prepared to help mobilize its member companies to take immediate action to address these short-term and long-term grid reliability issues.

CESA commends the staffs of the California Public Utilities Commission (CPUC), California Energy Commission (CEC), California Independent System Operator (CAISO), and Los Angeles Department of Water and Power (Joint Agencies) – for their careful and detailed analysis of the impacts of the Aliso Canyon facility's gas storage limitations. While CESA largely agrees with the Joint Agencies' risk assessment and supports its 18 recommended actions, CESA recommends that the Joint Agencies consider further near-term energy storage solutions to address both short-term and long-term grid needs in the LA Basin. In particular, energy storage systems have fast-ramping, load shifting, and other capabilities to reduce the reliance on or ramping from the 17 natural gas-fired generation plants, which constitute roughly 60% of natural gas demand for a typical summer load day in the LA Basin. In

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¹ Joint Agency Action Plan, p. 15.



Many energy storage technologies are currently available and cost-effective, and have the advantages of being quickly deployable, modular, and dispatchable. For these reasons, energy storage represents a well-suited technological solution to help address the LA Basin grid reliability issue – in addition to the Joint Agencies' 18 recommended actions.

CESA has identified among 11 member companies over 22 MW (74 MWh) of energy storage capacity that could be available by August 1, 2016 and 225 MW (681 MWh) of energy storage capacity that could be available by December 1, 2016, if the appropriate regulatory approvals and actions are taken by the CPUC and interconnection and site hosting support are provided by the utilities. The capacity figures available for August 1 represent energy storage resources in the affected LA Basin area that are currently in the pipeline for delivery pending regulatory approval, or are already installed to provide other grid and/or customer services but could be re-purposed for reliability purposes. The capacity figures available for December 1 represent potential new energy storage project capacity that could be deployed with siting assistance (likely to be co-located at existing generation facilities) and accelerated regulatory approval and interconnection. This forecasted can be installed and operational in the LA Basin by the specified dates above only through the following support actions:

- 1. Act on the applications for rehearing that have stalled the preferred resources authorized in Southern California Edison Company's (SCE) 2013 Local Capacity Requirements (LCR) Request for Offers (RFO).
- 2. Ensure that customer-sited energy storage can participate in utilities' demand response (DR) programs.
- 3. Accelerate interconnection processes, site identification, and hosting approval.

CESA also requests that the Joint Agencies begin consideration and development of additional mitigation measures to account for the potential for the grid reliability situation in Aliso Canyon extending beyond 2016. These mitigation measures require immediate action and include:

- 1. Authorize additional preferred resources procurement pursuant to the recent RFOs for investor-owned utilities (IOUs) and publicly-owned utilities (POUs), respectively.
- 2. Authorize procurement of energy storage to be co-located at existing generation facilities.
- 3. Authorize locational adders to incentivize siting of energy storage in affected LA Basin areas and create a specific PV-plus-storage rebate program for the impacted area.
- 4. Launch a Storage Auction Mechanism (SAM) or other storage procurement pathway for energy storage projects modeled after the Renewable Auction Mechanism (RAM).

CESA finally recommends that the Joint Agencies and the affected utilities disseminate detailed information on the specific reliability and ramping needs to replace the capacity provided by the operating natural gas-fired plants. In doing so, companies can optimize their configurations, operational profile, and contracts to ensure that the specified needs are met reliably and in a timely fashion. Such information should include potential reductions in gas use to meet minimum generation needs in the LA Basin if energy storage can meet a portion of the operational and reliability needs.



The Aliso Canyon situation highlights the need to diversify away from an over-reliance on natural gas

The serious grid reliability issues that have resulted from the limited capacity of a single gas storage facility show an urgent need to diversify the fleet mix serving the LA Basin. Building on the planned fleet in the LA Basin, energy storage represents a cost-effective non-wires alternative that can hedge against the risk of constrained gas supplies. In addition to providing fast-ramping capabilities, energy storage resources also provide reliability advantages in being able to be quickly sited and constructed in geographically diverse locations and in providing multiple services from the same asset. Energy storage integrated with renewable energy also has the added benefit of reducing environmental impacts as compared to traditional infrastructure or gas-fired generation that depends on this gas infrastructure, which is an especially important consideration in light of the state's greenhouse gas (GHG) emission goals and the LA Basin's air quality goals. The California Air Resources Board (ARB) presently estimate that 100,000 metric tons of methane emissions due to the Aliso Canyon gas leak² – a risk that is non-existent with energy storage resources charged with renewable energy.

Energy storage technologies are commercially available today. A recent Lazard study, for example, showed that *unsubsidized* energy storage solutions at the low-end of the cost curve were just moderately more expensive than gas peaker plants. Over the next five years, with projected median capital cost declines of 38% for flow batteries (down to \$196/kWh) and 47% for lithium-ion batteries (down to \$211/kWh), the most competitive energy storage technologies are projected to reach *unsubsidized* 'levelized costs of storage' on par with gas peaker plants (\$165 to \$218 per kWh).³

Overall, energy storage is a viable, cost-effective alternative due to its advantages in efficiency, ramping rate, and response rate, as well as its potential to deliver more than peaker substitution value, such as daily energy shifting, T&D investment deferral, reserve capacity, and frequency regulation. Simulations run by Electric Power Research Institute (EPRI) in 2013 validated such a conclusion by showing that most use cases resulted in benefit-to-cost ratios greater than one over the lifetime of an energy storage system, using CPUC assumptions.⁴

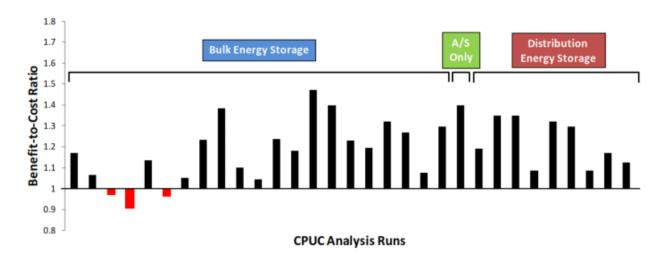
² Aliso Canyon Methane Leak Climate Impacts Mitigation Program, prepared by the Air Resources Board, March 14, 2016, p. 4.

³ Lazard's Levelized Cost of Storage Analysis – Version 1.0, Lazard, November 2015, pp. 11, 18.

⁴ Cost-Effectiveness of Energy Storage in California: Application of the EPRI Energy Storage Valuation Tool to Inform the California Public Utilities Commission Proceeding R.10-12-007, technical update by EPRI, June 2013. http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002001162



Figure 1: EPRI 2013 Cost-Effectiveness of Energy Storage in California



CESA thus urges the Joint Agencies to look ahead and consider energy storage solutions for 2017 and beyond to avoid another Aliso Canyon-type situation.

The Joint Action Plan should include energy storage as a short-term mitigation measure

While supporting the Joint Agencies' 18 recommendations, CESA believes that energy storage solutions represent an important short-term mitigation measure that was not mentioned in the Joint Action Plan but should be included in the suite of mitigation measures.

Given the modularity and flexible siting capabilities of energy storage projects, energy storage represents a viable short-term and mid-term mitigation measure in the LA Basin that can be quickly deployed. There are energy storage resources that are currently operational and have interconnection agreements already in place to serve customer needs that could be *immediately* accelerated or repurposed to meet grid reliability needs by summer and winter 2016, given the right incentives. Alternatively, there is also energy storage capacity in the queue through the Self-Generation Incentive Program or through recent utility procurements that could be accelerated to serve grid reliability needs by winter 2016.

Finally, new energy storage also is also needed and should be deployed through new utility procurements or facilitated through new rebate programs dedicated specifically to address the needs of the LA Basin. An analysis of 73 operational electric and thermal energy storage projects in the United States showed how approximately 30% of these projects proceeded from contractual agreement to online status within 12 months. 5 By comparison, the American Electric Power estimates

⁵ CESA analysis of the *DOE Global Energy Storage Database*. The analysis looked at operational energy storage projects in the United States that used electric or thermal energy storage technologies. A subset of these projects was used due to incomplete data in the "Announcement Date" and "Commissioning Date" fields. "Announcement Date" was used as a proxy for contractual agreement.



that the construction lead time for simple-cycle gas plants is 18 to 30 months, and 36 months on average for combined-cycle plants. Construction and commissioning of new natural gas pipelines could take up to 36 months, while building new transmission lines has historically taken years due to siting constraints and permitting processes. Meanwhile, building new underground natural gas storage is likely inappropriate for numerous reasons. Unlike conventional infrastructure, new energy storage systems would realistically deliver by summer 2017, thereby representing a cost-effective and reliable mid-term mitigation measure if the LA Basin grid reliability issues extended beyond 2016.

In a survey of 11 member companies in response to the situation in the LA Basin, CESA identified 22 MW and 74 MWh of energy storage capacity that could be installed by August 1 if the appropriate regulatory approvals and 'support actions' are taken by the CPUC and interconnection and site hosting support are provided by the utilities. These support actions would need to be provided in an extremely timely manner – i.e., within the next two months. In addition, the same 11 member companies indicated that they could realistically have 225 MW and 681 MWh of energy storage installations by December 1 given the similar support actions, and far more in subsequent years.

Table 1: CESA Member Survey of Energy Storage Installations

Installations by August 1 (Facilitated)		Installations by December 1 (Facilitated)	
MW	MWh	MW	MWh
22	74	225	681

Some of CESA's members have noted that much more manufacturing capability exists than what was identified in CESA's narrowly-focused survey. Given sufficient incentives or procurement authorization to the utilities, CESA's members indicated that they could contract with alternative energy storage manufacturers to deliver many hundreds of megawatts of energy storage by summer 2017 if orders are placed with four to six months lead time.

Given the immediate and/or quick-turnaround availability of energy storage capacity that could serve grid reliability needs in the LA Basin, CESA recommends the following support actions to realize these deployments.

Immediately approve the preferred resources authorized in SCE's 2013 LCR RFO

There are approximately 261 MW in energy storage contracts resulting from SCE's 2013 LCR RFO

 $\underline{https://www.aep.com/about/IssuesAndPositions/Generation/Technologies/NaturalGas.aspx}$

http://www.energy.gov/sites/prod/files/2015/08/f26/Transmission%20Data%20Review%20August%202015.pdf

http://www.eia.gov/pub/oil gas/natural gas/analysis publications/ngpipeline/undrgrnd storage.html

⁶ Natural Gas Technology, American Electric Power.

⁷ Natural Gas Pipeline Development and Expansion, U.S. Energy Information Administration. http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/develop.html

⁸ Annual U.S. Transmission Data Review, U.S. Department of Energy, August 2015, pp. 5-9.

⁹ Underground Natural Gas Storage, U.S. Energy Information Administration.



that could be approved and accelerated for year-end delivery in the LA Basin. Most of the procured energy storage capacity is presently set to come online in 2019, with some coming in earlier in 2017 and 2018. The contracts for energy storage projects located in the LA Basin could be re-purposed to address the 2016 near-term summer and winter reliability requirement. New interim terms and conditions would need to be negotiated that set operational parameters to prioritize reliability service. Currently, these contracts are being held up by applications for rehearing, which appear likely to preclude SCE from authorizing expenses to accelerate the installation timing. The CPUC should therefore authorize SCE to recover its costs related to accelerating the online time of energy storage LCR contracts by means memorandum account, which would be appropriate given the urgency of the LA Basin's situation.

Ensure that customer-sited energy storage can participate in utilities' DR programs

The CPUC recently issued a ruling on March 23, 2016, that directed SCE to take immediate steps to enhance their demand response efforts. Demand response resources represent a viable short-term mitigation measure given their low deployment and capital costs. SCE responded with a proposal to that focused on increasing marketing and outreach efforts to potential customers in its existing DR programs (e.g., Base Interruptible Program, Summer Discount Plan) as well as delaying retirements of select DR programs (e.g., Peak Time Rebate, Demand Bidding Program). However, this proposal did not specify how energy storage could be included in the proposal despite energy storage having the advantages of being dispatchable on a frequent basis, quickly deployable, and fast-responding to real-time signals. The SCE proposal could be expanded to better allow energy storage resources to provide DR services during peak and emergency events and could value energy storage resources within its DR program for their high dispatchability. SCE should consider re-purposing existing and planned energy storage resources in the LA Basin for reliability DR purposes.

Additional energy storage resources could be procured to provide reliability DR services through bilateral contract negotiations, another preferred resources procurement authorization (similar to the one done through the 2013 LCR RFO), and/or a custom demand response auction mechanism ("DRAM") as suggested in the Ruling. While the timing of these processes would need to be strongly managed and quickly processed to provide benefits prior to 2017, planning now for the procurement of these new DR resources provides both normal benefits as well as a hedge against any potential for the Aliso Canyon challenges to extend into 2017.

Similarly, LADWP manages a Flex Alert and several pilot DR programs that could be expanded to better allow energy storage participation in these programs.

¹⁰ Southern California Edison Company's (U 338-E) Proposal in Response to Assigned Commissioner's Ruling Directing Activities in Response to Natural Gas Leak at Aliso Canyon Storage, submitted on April 4, 2016.



Accelerate interconnection processes, site identification, and hosting approval

Interconnection and permitting processes are a source of delay in quickly deploying energy storage solutions to mitigate the grid reliability concerns in the LA Basin. Utilities have typically taken 5-6 months to conduct their interconnection study review and present upgrade requirements to applicants — a timeframe that could be reduced in light of Aliso Canyon. This is in addition to the typical one-year timeframe of installing interconnection upgrades, which also could also be reduced.

Meanwhile, the fragmented permitting processes of different jurisdictions has led to permitting burdens for developers in understanding each jurisdiction's processes and has led to delays in obtaining permits in a timely manner and at reasonable costs. Several municipalities like the City of Los Angeles and County of Los Angeles have unique permitting requirements associated with their testing labs or special listing requirements that add to the administrative burden in terms of time and cost in obtaining a permit while adding little to improve installation safety. For example, the City of Los Angeles runs their own testing lab requiring manufacturers to update the approved testing report for their components on an annual basis, which is difficult for developers to maintain for a single jurisdiction. A comprehensive and transparent process focusing on key components in the system that impact line safety would expedite the process.

Furthermore, every authority having jurisdiction (AHJ) operates as an autonomous jurisdiction setting their own permit costs, interdepartmental permit requirements, and duration expectations. Some hire third-party reviewing agencies, while others set different permit process requirements (e.g., fire approval) that must be obtained from different departments. Developers have historically had difficulty in determining what the permitting process is for each AHJ, understanding what their key design requirements are (e.g., site exposure, wind speed), and understanding what the permit will cost and how long it will take to get it approved. Standardization of over-the-counter approval processes and upfront permitting guidelines would improve permitting processes by creating cost, requirement, and timeline certainty for developers that would also accelerate deployment.

In addition to interconnection and permitting, customer-sited energy storage developers also require assistance in customer acquisition, a process that typically takes up to eight months when developers are marketing to new customers. Considering the reach and existing customer relationship channels of utilities, these developers would benefit significantly from assistance from the utilities in the sales cycle of acquiring new customers.

Finally, utilities and government agencies could accelerate site identification and hosting approval for energy storage on property and facilities that they own in areas in most need of local reliability services. The utilities could allow third parties to co-locate and interconnect their energy storage at their substations and facilities, and the same could be done by local and state governments on property that they own.



Longer term mitigation measures should also be considered and developed but requires immediate support actions

Immediately authorize additional preferred resources procurement

There is some chance that the grid reliability issues in the LA Basin extend beyond 2016 and into 2017. The Joint Agencies should therefore be proactive and operate under worst-case scenario assumptions in authorizing additional preferred resources in the LA Basin that could be deployed and operational by summer 2017. The lessons from the recent LCR procurements could be applied to expeditiously solicit and evaluate bids and negotiate contracts, but CESA notes that this authorization would need to begin within the next two months to account for regulatory and bidding processes, contract negotiations, and manufacturing lead time.

Issue a ruling to procure energy storage to be co-located at existing generation facilities

There are existing generation facilities serving the LA Basin that could benefit from improved efficiencies and dispatchability with the co-location of energy storage. For gas-fired generation, energy storage could reduce the requirement to burn gas for reliability, limit the need to withdraw gas from the Aliso Canyon facility, and increase the efficiency of the plants when they are running. However, even with interconnection capacity in place, the interconnection process for co-located energy storage resources typically take 6-12 months depending on the project size. The CAISO should evaluate its transmission interconnection process and identify opportunities for streamlining that would allow expedited energy storage interconnection in the LA Basin. This mitigation measure is most realistically one that could be delivered by summer 2017.

Create a locational adder to incentivize siting of energy storage in affected LA Basin areas and create a specific PV-plus-storage rebate program for the impacted area

The Energy Division proposed a locational adder in SGIP payments to support the program's ability to support the grid where it is most needed, which CESA has agreed with in its comments on the Energy Division's Staff Proposal. While the Distributed Resources Plan (R.14-08-013) proceeding is in the process of developing a Locational Net Benefits Analysis (LNBA) to determine location-specific avoided costs and benefits of distributed energy resources, the LNBA methodology is not likely to be finalized until the completion of five demonstration project by year-end 2016, which are designed to validate the methodology. In the near-term given the urgency of the grid reliability issues in the LA Basin, the CPUC should consider instituting an emergency locational incentive in the SGIP program that could be later revised and informed by the more complete LNBA calculations from the DRP proceeding, or be created separate as part of another program (e.g., utilities' demand response

¹¹ ED Staff Proposal to Modify the Self-Generation Incentive Program Pursuant to SB 861 and the Commission's Own Motion, submitted on November 23, 2015, p. 35.

¹² Comments of the California Energy Storage Alliance on the Energy Division Staff Proposal to Modify the Self-Generation Incentive Program, submitted on January 7, 2016, p. 13.



programs). While creating a locational adder will assist to deploy more energy storage, what is needed is a dedicated rebate program targeting PV-plus-storage systems to support reliability concerns in the LA Basin. Such a new rebate program will take time to develop so CESA recommends such a program as a longer term mitigation measure.

Launch a Storage Auction Mechanism modeled after the Renewable Auction Mechanism

The RAM was adopted in 2010 and has created a simplified market-based procurement process for smaller RPS-eligible generation. The RAM has been designed to facilitate quick and simple transactions through streamlined approval processes and standardized non-negotiable contracts, while also providing the investor-owned utilities with the flexibility to determine the need for a RAM solicitation to meet a CPUC-authorized need, such as RPS or LCR needs. Developers simply bid the lowest prices that they are willing to accept to develop renewable projects. This mechanism has been important in quickly procuring and deploying renewables and has been a smart way to find the market competitive price for renewable projects.

Already in its sixth auction, the RAM design could be replicated for a similar Storage Auction Mechanism (SAM) that uses *pro forma* contracts developed in SCE's 2013 LCR RFO as a baseline template to craft a new standardized contract that would be used in the SAM. The *pro forma* contracts would need to be updated to meet LA Basin grid reliability needs and draw from lessons learned from SCE and contract winners to inform the changes needed. In addition, the utilities and developers would need to quickly negotiate operational parameters and configurations that could be standardized for streamlined approval to meet the short-term reliability need in the LA Basin. The SAM would also need to specify that projects must be located in the LA Basin and be operational by summer 2017. Through a SAM, energy storage could also be quickly deployed to address a grid reliability need within a year and would simultaneously minimize costs. However, CESA recognizes that it will take some time to develop a SAM. Therefore, CESA recommends the SAM as a longer-term solution to grid reliability issues in the LA Basin.

More detailed information is required on grid reliability and ramping needs and reducing minimum gas generation needs

To support developers in proposing energy storage mitigation solutions, more information is needed from the Joint Agencies. Developers need greater technical and system specificity on grid reliability and ramping needs for new or re-purposed capacity in order to prepare energy storage systems and projects – information that was not provided in the Joint Action Plan. This information includes but is not limited to generation duration and capacity, response times, control and dispatch requirements, and siting.

Additionally, energy storage has the potential to reduce minimum gas generation requirements in the LA Basin – thus reducing daily gas use and making better use of solar and wind renewables. Studies to indicate the feasibility, costs, and benefits of energy storage to reduce minimum gas generation requirements that are needed to perform planning and procurement.



Conclusion

CESA understands the scale and size of the grid reliability problem and is prepared to help mobilize its membership base to address these issues. As highlighted above, there are a number of short-term and mid-term mitigation measures that could be pursued that use existing and/or new energy storage capacity. Energy storage can be sited in more geographically diverse locations and deployed on accelerated timeframes while providing reliability and ramping needs in the gasconstrained LA Basin. Therefore, the Joint Agencies should strongly consider energy storage alongside its 18 other recommended mitigation measures.

CESA looks forward to continuing to work with the Joint Agencies and stakeholders in response to this urgent situation and thanks the Energy Commission for its consideration of these comments.

Very truly yours,

Janice Lin, Executive Director California Energy Storage Alliance

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