BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements.	Rulemaking 16-02-007 (Filed February 11, 2016)

COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON INDIVIDUAL LOAD-SERVING ENTITY INTEGRATED RESOURCE PLANS

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In accordance with the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the California Energy Storage Alliance ("CESA")[1] hereby submits these comments on individual load-serving entity ("LSE") Integrated Resource Plans ("IRPs") filed on August 1, 2018. Pursuant to the *Amended Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge* ("Scoping Memo") filed by Assigned Commissioner Liane M. Randolph and Administrative Law Judge ("ALJ") Julie A. Fitch on May 14, 2018 and the *E-Mail Ruling Confirming Deadline for Comments on Integrated Resource Plans, and*

[1] 8minutenergy Renewables, Able Grid Energy Solutions, Advanced Microgrid Solutions, AltaGas Services, Amber Kinetics, American Honda Motor Company, Inc., Axiom Exergy, Brenmiller Energy, Bright Energy Storage Technologies, Brookfield Renewables, Carbon Solutions Group, Centrica Business Solutions, Consolidated Edison Development, Inc., Customized Energy Solutions, Dimension Renewable Energy, Doosan GridTech, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, EDF Renewable Energy, ElectrIQ Power, eMotorWerks, Inc., Enel, Energport, ENGIE, E.ON Climate & Renewables North America, esVolta, Fluence Energy, GAF, General Electric Company, Greensmith Energy, Ingersoll Rand, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Iteros, Johnson Controls, Lendlease Energy Development, LG Chem Power, Inc., Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, Magnum CAES, Mercedes-Benz Energy, NantEnergy, National Grid, NEC Energy Solutions, Inc., NextEra Energy Resources, NEXTracker, NGK Insulators, Ltd., NRG Energy, Inc., Parker Hannifin Corporation, Pintail Power, Primus Power, Range Energy Storage Systems, Recurrent Energy, Renewable Energy Systems (RES), Sempra Renewables, Sharp Electronics Corporation, SNC Lavalin, Southwest Generation, Sovereign Energy, Stem, STOREME, Inc., Sunrun, Swell Energy, True North Venture Partners, Viridity Energy, VRB Energy, Wellhead Electric, and Younicos. The views expressed in these Comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. (http://storagealliance.org).

Requesting Structure and Page Limit ("Ruling") the *Administrative Law Judge's Ruling Directing Responses to Attached Questions on Working Group One Report and Granting, in Part, the IREC Motion to Modify Schedule* ("Ruling"), filed by ALJ Julie A. Fitch on August 23, 2018, CESA timely submits these comments on September 12, 2018.

I. INTRODUCTION.

Senate Bill ("SB") 100, signed into law on September 10, 2018, sets the stage for California to further pursue greenhouse gas ("GHG") emission reductions from the electric sector and to lead the world in such efforts. The Integrated Resources Planning ("IRP") process presents a key means to achieve those ends by identifying the optimal resource mix to achieve both these clean energy and electric system reliability goals. While IRPs may take the form of 'paper-planning' documents, the real-world effects of these plans can be crucial to our system reliability. Critical leadership was provided by Commission staff and significant contributions were made by many stakeholders in developing the inaugural IRP process and in conducting complex modeling, which resulted in the adoption of a Reference System Plan ("RSP") that pushed the state's electric sector to pursue GHG emission reduction goals that were, at the time, above and beyond current business-as-usual ("BAU") trajectory. CESA is proud to be part of this effort and continue the state's fight against climate change.

Thus, with the approval of SB 100, CESA believes that the Commission should recalibrate the 42 million metric ton ("MMT") of GHG emissions by 2030 to become the new BAU scenario, which means it may not reflect the extent of the challenges and realities associated with likely future grid conditions. Further, the Governor's Executive Order earlier this year[2] indicates greater

[2] "Governor Brown Takes Action to Increase Zero-Emission Vehicles, Fund New Climate Investments." January 26, 2018. https://www.gov.ca.gov/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/

electrification of transportation and building loads are expected as well. To this end, CESA strongly recommends the Commission adopt a more stringent policy scenario, such as the "Pathways Scenario" as modeled by Southern California Edison Company ("SCE") for an electric-sector target of 28-30 MMT of GHG emissions by 2030.[3].

CESA also believes the IRP *process* reasonably align assumptions among load-serving entities ("LSEs"), ensure 'compliance' with the Reference System Plan, and direct appropriate actions such that the aggregate of the LSE Plans meets the statutory and policy objectives of SB 350 and the guidance provided by the Reference System Plan that identified the optimal resource mix to achieve the aforementioned objectives. Otherwise, CESA finds reduced utility in adopting a Preferred System Plan that may have limited consistency with the Reference System Plan.

Finally, the Reference System Plan highlighted the cost-effectiveness of early procurement to take advantage of expiring federal tax credits. Thus, there may be some no-regrets amount of procurement (not the full amount selected by RESOLVE) that can be directed or authorized to be taken by LSEs to hedge against different future scenarios and mitigate some risks tied to policy uncertainties, to be consistent in part with the Reference System Plan. This point stands even though some stakeholders, including CESA, highlighted RESOLVE limitations while recommending improvements and refinements to the model to better reflect real-world conditions and possibilities.[4] Even if imperfect, RESOLVE captured many legitimate complexities of the grid and presented several key actionable insights, including the prudence of some early 'no-regrets' procurement of renewable resources (potentially along with some paired energy storage)

[3] *Ibid*, p. 13.

[4] For example, CESA has previously recommended improvements to resource cost assumptions, adjustments to the assumption of existing resources remaining in the baseline of resources through 2030, optimization of distributed energy resources ("DERs") and hybrid resources such as solar-plus-storage and gas-plus-storage, and consideration of new candidate resource types such as compressed air energy storage ("CAES"), among other areas of improvement.

to continue to make progress toward our renewable and climate goals through 2030. CESA believes the benefits calculated through the Reference System Plan should inform procurements, even if load migration and cost allocation uncertainties, among other issues cited in Decision ("D.") 18-02-018, prompt concern about directing procurement at this time.

As requested in the August 23, 2018 Ruling, CESA provides our observations and comments on broader themes for such LSE plans in Section III of these comments. While the Ruling also invited comments on individual LSE plans using a set structure, CESA focuses on these broader observations and themes that may support the Commission in evaluating and aggregating individual LSE Plans.

II. COMMENTS ON INDIVIDUAL LSE PLANS.

Due to the large number of LSE plans, the recent formation and launch of some LSEs, and the redaction of many components of the plans for other LSEs, CESA offers comments on key observations on broader themes for from LSE plans in Section III of these comments. Where possible, CESA also categorized information in accordance with the August 23, 2018 Ruling that requested parties categorized comments on the individual LSE plans by: (1) narrative LSE plan to discuss the overarching strategy of the individual plans; (2) Clean Net Short ("CNS") Calculator results to assess the key results from the LSEs' modeling; and (3) baseline and new resource data filings.

III. COMMENTS ON COMMON THEMES OR ISSUES ACROSS MULTIPLE LSE PLANS.

A. The aggregate energy storage procured or identified in the LSE Plans do not add up to the optimal amounts of energy storage selected in RESOLVE.

As shown in Attachment 1 of these comments, CESA observes that the aggregate of new incremental energy storage resources selected by the LSEs in their conforming portfolios is less

than the amount recommended as 'optimal' in the Reference System Plan. For example, across the LSE Plans where CESA was able to find and collect data on new energy storage resources, CESA found that only 653.73 MW of new incremental energy storage was identified. Even after including the 567.5 MW of energy storage projects procured by Pacific Gas and Electric Company ("PG&E") pursuant to Resolution E-4909,[5] numbers that seem to have been redacted in their New Resource file, the new total would only amount to 1,221 MW, far short of the 2,219 MW of energy storage selected by RESOLVE under the 42 MMT by 2030 scenario using the updated 2017 Integrated Energy Policy Report ("IEPR") assumptions. While some deviation from the Reference System Plan may be warranted due to some of the limitations or potential errors/biases of RESOLVE and/or due to LSEs pursuing their own procurement strategies in line with their internal goals and policies, such a large deviation from the Reference System Plan should raise some concerns for the Commission. Further, though some of this deviation may be explained by a potentially incomplete dataset or information provided by some LSEs,[6] CESA suspects that these gaps may amount to a small amount relative to the approximately 44% shortfall from the Reference System Plan numbers.

Given these deviations, the Commission should develop a process for reconciling material deviations from the Reference System Plan to some degree; otherwise, CESA sees reduced utility in conducting RESOLVE modeling to optimize resource selection at a system level. This may

[5] CESA further notes that the full 567.5 MW of energy storage procured pursuant Resolution E-4909 should not be considered as new, incremental energy storage additions in the IRP modeling in developing the Preferred System Plan, as some of the Resolution E-4909 procurements will count towards PG&E's AB 2514 procurement mandate, which is already in the baseline of resources.

[6] Some LSEs only presented their intended procurement amounts in narrative form and thus their procurement amounts for energy storage are not captured in the aggregated table in Attachment 1. Bear Valley Electric Service ("BVES"), for example, indicated that they plan to procure 5 MW of battery storage to pair with an 8-MW solar resource, but this information was not entered into CESA's aggregated table due to the lack of complete information in accordance to the New Resource template.

involve identifying deficiencies in the modeling of aggregated LSE Plans and then giving LSEs an opportunity to adjust their LSE Plans to correct any deficiencies that may be attributed to their LSE Plans. CESA is open to different approaches and respects that there are complex policy, process, and technical modeling issues that must be considered in creating a reasonable reconciliation process, but persistent and sizable deviations present a potential barrier for the state to achieve its clean energy and climate goals.

B. LSEs should work together to align their load forecasts and align expectations for resource transfers.

CESA found it challenging to review LSE Plans due to some limited clarity on how much load forecasts were aligned and how much each LSE was dependent on existing versus new incremental Renewable Portfolio Standard ("RPS") and Resource Adequacy ("RA") resources, creating potential double-counting concerns of the same resources in multiple LSE Plans, which only serve to overestimate the GHG emission reduction and reliability benefits of the grid. For example, some LSEs like Marin Clean Energy ("MCE") used their internal load forecasts in developing their *conforming* portfolio, while PG&E only used their internal load forecasts in developing their *preferred* portfolio, which may create potential gaps or overlap of load being assumed to migrate between bundled and unbundled service. Consistency may be needed in allowing for the use of internal load forecasts in only the preferred or alternative portfolio, or a process preceding the LSE Plans may be needed to align load forecasts and expectations. Likewise, CESA found it difficult to determine how much each LSE was depending on 'spot' RPS or RA sales to meet their obligations. Thus, CESA is concerned that incorrect assumptions on the transfer of RPS or RA contracts may again lead to gaps and overlaps of the same resources. Similar consistency is needed to align expectations of these sales between LSEs.

C. Imports from the Pacific Northwest should be checked for GHG accounting, technical feasibility, and uncontracted availability while considering how energy storage can complement these out-of-state resources.

Across many of the LSE Plans and based on presentations at the August 7, 2018 IRP workshop, CESA observed significant reliance in aggregate on Pacific Northwest hydro resources to achieve their GHG emissions benchmarks. While this may be a reasonable pathway to achieve GHG emissions reductions, CESA recommends that the Commission check the GHG accounting, technical feasibility, and uncontracted availability of relying on Pacific Northwest hydro resources to achieve the IRP objectives. Dating back to the energy crisis of 2000-2001, reliance on out-of-state capacity has always come with additional safeguards to ensure the full resource need is met with available and deliverable 'steel in the ground'. Transmission rights purchases may need to be part of resource planning for out-of-CAISO resources.

Some consideration of resource shuffling concerns should be undertaken. As CESA understands it, RESOLVE accounts for Western Electricity Coordinating Council ("WECC") wide GHG emissions to some degree by accounting for how out-of-state resources such as Wyoming and New Mexico wind can support California's IRP goals. CESA seeks to further understand how WECC-wide GHG emission effects are accounted for using RESOLVE to ensure that there is no resource shuffling such that California achieves its GHG objectives with out-of-state resources while non-California states may end up contracting with more GHG-intensive resources for the displaced resource.[7] Importantly, CESA believes that new, incremental resources built for the purposes of meeting the IRP goals are more clear-cut ways to ensure incremental GHG emission reductions, with less GHG accounting complexities.

[7] Wolfram, Catherine. "What Are You Getting If You Buy Clean Electricity?" Energy Institute Blog, published on August 27, 2018. https://energyathaas.wordpress.com/2018/08/27/what-are-you-getting-if-you-buy-clean-electricity/

Second, the technical feasibility of importing electricity from the Pacific Northwest and uncontracted availability of Pacific Northwest hydro resources should be validated. Specifically, the availability of transmission infrastructure and other technical limits connecting the Pacific Northwest and California should be considered in verifying the feasibility of how much each LSE can assume to be able to purchase from these resources.[8] Similarly, the uncontracted availability of Pacific Northwest Hydro should be estimated and assessed.[9] Naturally, the Commission will need to spot-check that planned purchases from Pacific Northwest hydro resources do not indicate unintentional oversubscription. The Commission may also wish to consider other opportunity costs faced by these out-of-state resources, which likely have other off-takers looking to purchase their zero-carbon electricity.

Finally, the Commission may also wish to consider how energy storage investments could be made to enhance the capabilities and availability of Pacific Northwest hydro resources as well. More availability and greater feasibility of importing Pacific Northwest hydro electricity generation may be made possible through the development of smartly located energy storage projects, including pumped storage reservoirs, that provide additional operational flexibility and allow for these resources to not necessarily be limited by water availability. In doing so, the availability and feasibility of relying on Pacific Northwest hydro resources may increase.

[8] One assessment estimated available transmission capacity to be around 600 MW to 900 MW of firm transmission, and there may be other sources where this information can be attained. See, for example: Florescu, Peter and Jack Pead. "Realizing the Value of Bonneville Power Administration's Flexible Hydroelectric Assets." M-RCBG Associate Working Paper Series, No. 91. May 2018. p. 24.

[9] For example, the same assessment estimated the uncontracted availability of Pacific Northwest Hydro at 900 MW of average uncontracted flexible resource at the disposal of Bonneville Power Administration ("BPA"), with 500 MW available for real-time dispatch. See reference in above footnote.

D. SCE's proposed Reliability Threshold Mechanism is reasonable in concept but should be modified to allow for establish 'staged' thresholds that provide longer and more flexible procurement timelines.

In light of the IRP modeling limitations of assuming all existing generation resources will remain online through 2030, SCE proposed a Reliability Threshold Mechanism to allow for the expedited procurement of flexible energy storage resources to address critical reliability conditions, which may stem from the unplanned economic retirement of gas generation resources or various 'unplanned' events.[10] CESA agrees that these reliability risks are present, as evidenced by the state's intensifying heat waves, the need to contract for uneconomic existing resources under Reliability Must Run ("RMR") and Capacity Procurement Mechanism ("CPM") agreements, and other factors, such as risks related to Aliso Canyon gas storage limitations and pipeline outages. CESA agrees with SCE that energy storage resources have demonstrated the ability to not only provide the flexibility and fast-response capabilities needed to provide critical reliability services but also to deliver at scale and on an expedited procurement timeline during emergency situations or for unplanned events, such as with the Aliso Canyon Energy Storage ("ACES") Request for Offers ("RFO") and PG&E's Resolution E-4909 procurements. In many ways, SCE appropriately characterizes energy storage as the 'backstop technology' for many of the state's unplanned grid events.

While supportive of the role of energy storage in SCE's proposed Reliability Threshold Mechanism, CESA generally recommends that proper planning with uncertainty margins is helpful to avoiding last-minute procurement needs. Avoiding reliability crises should be the main goal of the IRP. That said, a Reliability Threshold Mechanism is prudent to develop. CESA recommends such a mechanism be modified to allow for more 'staged' thresholds to begin the consideration of

[10] *Integrated Resource Plan of Southern California Edison Company (U 338-E)*, filed on August 1, 2018, pp. 126-134.

energy storage procurement. Though many of the events described above could reasonably be defined as 'unplanned', many of these cases can also be considered 'expected' to some degree, as SCE, the Commission, and other stakeholders become increasingly aware of the risks. For example, many are aware of the market and policy conditions in which low capacity factor and low efficiency gas generators are operating in, which are being dispatched with less frequency, are faced with lower wholesale market prices in many parts of the day due to the growth of zero-marginal-cost renewable resources, and are faced with statewide policies to reduce the environmental burden faced by disadvantaged communities. The same reasonable expectation may apply to some generators dependent on the Aliso Canyon gas storage facility. The challenge will be in sufficiently estimating when and which units will likely require displacement by energy storage resources. Study efforts to identify at-risk units are already underway in the 2018-2019 Transmission Planning Process ("TPP")[11] and, to some degree, in the Commission's investigation to minimize or eliminate the Aliso Canyon facility (I.17-02-002)[12] to provide a reasonable expectation of near-term, least-regrets actions can be taken in the IRP proceeding.

CESA raises the above points to recommend establishing a spectrum of reliability thresholds that could be set to trigger energy storage procurement to mitigate and reduce reliability risks from unplanned but reasonably expected events. This approach would differ slightly from some of the 'hard' thresholds proposed by SCE, such as additional unplanned natural gas-fired generation retirement(s) cumulatively greater than 360 MW and an event that occurs causing Aliso Canyon (other SoCalGas natural gas storage facility) capacity to drop below current allowed

[11] See the CAISO's "Local Capacity Requirement Potential Reduction Study," presentation on April 18, 2018. http://www.caiso.com/Documents/Presentation-LocalCapacityRequirementReductionStudy.pdf

[12] CESA understands that I.17-02-002 is not looking at replacement resources in Phase 1 and is only looking at whether and how gas limitations or elimination at Aliso Canyon affect the electric and gas grid. However, the IRP proceeding may benefit from assessing some of the electric reliability risks tied to Aliso Canyon limitations or elimination and consider actions here.

capacity (30.4 BCF) or other SoCalGas natural gas storage facility. Instead, as an example, an impact assessment by the Commission and actual procurement of some portion of the at-risk resources could be triggered by unplanned retirements greater than 100 MW (less than SCE's proposed 360 MW) with longer solicitation timelines, knowing that there are still risks for additional retirements in the same area that may trigger additional procurement on much shorter timeframes. While hard thresholds could still trigger expedited procurement, as SCE has proposed, there may be additional 'softer' triggers that the Commission could consider to allow for more flexibility and time for the solicitation and procurement cycle. Energy storage market participants have demonstrated the ability to respond in expeditious fashion (*i.e.*, in as little as eight months in the ACES RFO), but procurement in this fashion may be unsustainable as a 'mainstream' procurement tool. For one, such procurements limit participation in the solicitations from a broader marketplace, thereby reducing the ability to find the most cost-effective offers. CESA believes that a reasonable balance can be achieved by creating a more flexible yet still expeditious procurement mechanism could be developed.

Finally, robust competition among project developers promotes competitive outcomes. To this end, it may be prudent to direct competition among all providers, utility-owned and third-party owned, in any solicitation, which can be better achieved through proactive planning and supports more cost-competitive outcomes. CESA understands that some utility-owned projects may have certain advantages in having deployment flexibility and being able to take advantage of utility-owned land, especially during emergency situations, and thus supports the concept of some appropriate cap on utility-owned energy storage when a reliability threshold is exceeded. Still, proactive planning should afford procurements with the opportunity to solicit third-party offers too. Notwithstanding the needs of the situation, the Commission may also wish to consider the

development of a 'lock-step' procurement structure between utility-owned and third-party-owned energy storage projects to continue to foster a competitive marketplace for energy storage solutions.

E. Stakeholder review of LSE Plans would be aided by consistent formats and making supporting documents more accessible.

CESA found many challenges in reviewing some of the LSE Plans. Some LSEs did not present the Excel files for their Baseline Resource and New Resource templates or the Clean Net Short ("CNS") GHG Calculator. Others presented their results spreadsheets as an attachment in PDF filing, creating challenges for stakeholders in quickly and easily aggregating the results on their own. With 44 LSEs now filing LSE Plans, with more LSEs likely forming in the near future, CESA recommends that the next IRP cycle require LSEs to present information in a more consistent and accessible way to support stakeholder review.

IV. REQUEST FOR EVIDENTIARY HEARINGS.

The Ruling requested stakeholder comment on the need for evidentiary hearings. CESA does not believe evidentiary hearings are needed at this time, considering there are still higher-level alignment, formatting, compliance/verification, and process issues that must be worked out in this first-ever IRP process. Furthermore, the 2019 IRP process will kick off later this year. At the same time, the Commission may wish to consider holding evidentiary hearings to consider early procurement issues.

V. CONCLUSION.

CESA appreciates the opportunity to submit these comments on the LSEs' IRP plans and looks forward to working with the Commission and stakeholders in this proceeding to ensure that the IRP process identifies the optimal resource mix in a timely and reasonable manner to cost-effectively achieve the state's ambitious climate goals.

Respectfully submitted,

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ATTACHMENT 1:
New Energy Storage Resource Additions from Conforming Portfolios from LSE Plans

LSE_Name	New_Resource_Type	Other_New_Descriptic	Location	Year_Beg	Year_End	Nameplate_M	AnnualEnergy_GV	Tech_Sub_Typ	SolarPV_Inv	Storage_Depth_MW	Storage_Efficien	FCI
Apple Valley Choice Energy	CAISO_New_Li_Battery		CAISO_System	2021	2031	3	0			12	0.85	1
Apple Valley Choice Energy	CAISO_New_Li_Battery		CAISO_System	2028	2038	2	0			8	0.9	1
Clean Power San Francisco	CAISO_New_Li_Battery	BVIRPModel LIBatterySto	CAISO_System	2024	2044	6.5				5.98	0.92	1
Desert Community Energy	CAISO_New_Li_Battery		CAISO_System	2022	2050	3.45	-1232			13.8	0.85	1
Desert Community Energy	CAISO_New_Li_Battery		CAISO_System	2030	2050	12.5	-5088			49.8	0.85	1
East Bay Community Energy	CAISO_New_Li_Battery		CAISO_System	2021	2045	13	0			52	0.85	1
Los Angeles Community Choice	CAISO_New_Li_Battery		CAISO_System	2019	2028	27	39			108	0.85	
Los Angeles Community Choice	CAISO_New_Li_Battery		CAISO_System	2029	2036	27	39			108	0.85	
Marin Clean Energy	CAISO_New_Li_Battery	Battery Storage	GreaterBayArea	2022	2040	18	ve energy deliveries					
Marin Clean Energy	CAISO_New_Li_Battery	Battery Storage	NorthCoastNor	2026	2040	20	ve energy deliveries					
Marin Clean Energy	CAISO_New_Li_Battery	Battery Storage	Kern	2030	2040	40	ve energy deliveries					
Monterey Bay Community Powe	CAISO_New_Li_Battery	Recurrent RE Slate Batter	CAISO_System	2021	2036	45	0		1.2	180	0.86	1
Monterey Bay Community Powe	CAISO_New_Li_Battery	EDF Bar 13 Battery Storage	CAISO_System	2021	2041	40	0		1.2	160	0.86	1
Monterey Bay Community Powe	CAISO_New_Li_Battery	TBD Battery Storage PPA	CAISO_System	2022	2037	45	0		1.2	180	0.86	1
Monterey Bay Community Powe	CAISO_New_Li_Battery	TBD Battery Storage PPA	CAISO_System	2026	2041	15	0		1.2	60	0.86	1
Pacific Gas and Electric	CAISO_New_Li_Battery		CAISO_System									0
Pacific Gas and Electric	CAISO_New_Li_Battery		CAISO_System									0
Pacific Gas and Electric	CAISO_New_Li_Battery		CAISO_System									0
Pacific Gas and Electric	CAISO_New_Li_Battery		CAISO_System									0
Pico Rivera Innovative Municipal	CAISO_New_Li_Battery	TBD Battery Storage PPA	CAISO_System	2021	2036	1	0		1.2	4	0.86	1
Pico Rivera Innovative Municipal	CAISO_New_Li_Battery	TBD Battery Storage PPA	CAISO_System	2025	2040	1	0		1.2	4	0.86	1
Pioneer Community Energy	CAISO_New_Li_Battery	TBD Battery Storage PPA	CAISO_System	2021	2036	3	0		1.2	12	0.86	1
Pioneer Community Energy	CAISO_New_Li_Battery	TBD Battery Storage PPA	CAISO_System	2025	2040	1	0		1.2	4	0.86	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2020		30				40	0.89	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2020		20				20	0.89	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2020		10				10	0.89	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2021		10				10	0.89	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2021		10				10	0.89	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2021		10				10	0.89	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2021		10				10	0.89	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2022		22				22	0.89	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2023		22				22	0.89	1
San Diego Gas and Electric	CAISO_New_Li_Battery		SanDiegoImper	2024		22				22	0.89	1
San Jacinto Power	CAISO_New_Li_Battery	TBD Battery Storage PPA	CAISO_System	2021	2036	3	0		1.2	12	0.86	1
San Jacinto Power	CAISO_New_Li_Battery	TBD Battery Storage PPA	CAISO_System	2025	2040	1	0		1.2	4	0.86	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2021	2021	4.9	-2			5	0.85	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2022	2022	4.9	-2			5	0.85	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2023	2023	4.8	-2			5	0.85	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2024	2024	4.8	-2			5	0.85	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2025	2025	4.7	-2			5	0.85	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2026	2026	4.8	-2			5	0.85	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2027	2027	4.6	-2			5	0.85	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2028	2028	4.6	-2			5	0.85	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2029	2029	4.6	-2			5	0.85	1
San Jose City	CAISO_New_Li_Battery		GreaterBayArea	2030	2030	4.6	-2			5	0.85	1
Silicon Valley Clean Energy	CAISO_New_Li_Battery	BAR 13 (EDF)	CAISO_System	2021	2041	40	0			160	0.86	1
Silicon Valley Clean Energy	CAISO_New_Li_Battery	RE Slate (Recurrent)	CAISO_System	2021	2036	45	0			180		1
Sonoma Clean Power	CAISO_New_Li_Battery	Battery in Central_Valley	CAISO_System	2023	2043	5				20	0.85	1
ValleyCleanEnergyAlliance	CAISO_New_Li_Battery		CAISO_System	2024	2040	3				12	0.85	
ValleyCleanEnergyAlliance	CAISO_New_Li_Battery		CAISO_System	2030	2040	20				80	0.85	