

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Joint Application Of Southern California Edison Company (U 338 E), Pacific Gas And Electric Company (U 39-E), And San Diego Gas & Electric Company (U 902-E) For Approval Of The Research Administration Plan For The Electric Program Investment Charge.

Application 19-04-026
(Filed April 23, 2019)

**RESPONSE OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
TO THE JOINT APPLICATION OF SOUTHERN CALIFORNIA EDISON COMPANY
(U 338-E), PACIFIC GAS AND ELECTRIC COMPANY (U 39-E), AND SAN DIEGO
GAS & ELECTRIC COMPANY (U 902-E) FOR APPROVAL OF THE RESEARCH
ADMINISTRATION PLAN FOR THE ELECTRIC PROGRAM INVESTMENT
CHARGE**

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In accordance with Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), the California Energy Storage Alliance (“CESA”)¹ hereby submits this response to the *Joint Application of Southern California Edison Company (U 338-E), Pacific*

¹ 174 Power Global, 8minutenergy Renewables, Able Grid Energy Solutions, Advanced Microgrid Solutions, Aggreko, Alligant Scientific, LLC, AltaGas Services, Amber Kinetics, Ameresco, American Honda Motor Company, Inc., Avangrid Renewables, Axiom Exergy, Better Energies, Boston Energy Trading & Marketing, Brenmiller Energy, Bright Energy Storage Technologies, Brookfield Renewables, Carbon Solutions Group, Clean Energy Associates, ConEd Battery Development, Customized Energy Solutions, Dimension Renewable Energy, Doosan GridTech, Eagle Crest Energy Company, East Penn Manufacturing Company, EDF Renewable Energy, eMotorWerks, Inc., Enel X North America, Energport, Energy Vault, Engie Storage, E.ON Climate & Renewables North America, esVolta, Fluence, Form Energy, General Electric Company, Greensmith Energy, Gridwiz Inc., Hecate Grid LLC, Highview Power, Ingersoll Rand, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Lendlease Energy Development, LG Chem Power, Inc., Lockheed Martin Advanced Energy Storage LLC, LS Energy Solutions, LS Power Development, LLC, Magnum CAES, Malta Inc, NantEnergy, National Grid, NEC Energy Solutions, Inc., NextEra Energy Resources, NEXTracker, NGK Insulators, Ltd., Nuvve, Pattern Energy, Pintail Power, Plus Power, Primus Power, PolyJoule, Quidnet Energy, Range Energy Storage Systems, Recurrent Energy, RES Americas, SNC-Lavalin, Soltage, Southwest Generation, Stem, STOREME, Inc., Sunrun, Swell Energy, Tenaska, Inc., Tesla, True North Venture Partners, Viridity Energy, VRB Energy, WattTime, and Wellhead Electric. 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>).

Gas and Electric Company (U 39-E), and San Diego Gas & Electric Company (U 902-E) for Approval of the Research Administration Plan for the Electric Program Investment Charge (“Application”), filed on April 23, 2019.

I. INTRODUCTION.

The Electric Program Investment Charge (“EPIC”) Program represents an important program in California to not only advance energy innovation but also to support the state’s energy and environmental goals and to deliver ratepayer benefits. In the Joint Application, Southern California Edison Company (“SCE”) proposes a new initiative, Beyond Lithium-Ion Energy Storage Demonstration, to replace another project, which SCE found to not provide sufficient learnings.² CESA appreciates and supports SCE’s proposed new initiative as it aligns with the core values of the EPIC Program in that innovation is needed to commercialize new energy storage technologies, long-duration storage in particular, to ensure that the state has the ‘tools’ to cost-effectively meet the state’s deep decarbonization goals through 2030 and 2045 pursuant to Senate Bill (“SB”) 350 and SB 100.

Furthermore, CESA is an industry trade association representing over 80 companies in the energy storage ecosystem, which includes technology manufacturers, integrators, and developers of technologies beyond lithium-ion batteries. These technologies encompass compressed air energy storage, liquid air energy storage, electrochemical energy storage (*e.g.*, flow and zinc-air batteries), thermal energy storage, flywheel batteries, gravitational storage, and electrolytic hydrogen storage, among others. Thus, CESA and our members look forward to engaging SCE as

² Joint Application at pp. 34-35.

it moves forward with the proposed initiative, if approved by the Commission, and we appreciate the engagement activities planned for this and all other EPIC project initiatives.³

II. AN INITIATIVE TO SUPPORT NEW ENERGY STORAGE TECHNOLOGIES IS VITAL TO ACHIEVE THE STATE’S POLICY GOALS.

From a technology demonstration perspective, greater support and attention is needed for new and emerging energy storage technologies beyond lithium-ion battery storage, which typically comprised over 95% of non-pumped-hydro storage deployment over the past several years.⁴ There is significant merit to promoting diversity in storage solutions via innovation-focused programs such as the EPIC Program. Specifically, SCE's Beyond Lithium-Ion Demonstration Project is an important first step to bring new storage technologies to the market. CESA agrees with SCE's justification that this new initiative is a high priority that provides ratepayer benefits, as these new technologies face gaps in pilot and deployment opportunities that are necessary to commercialize new technologies.⁵

CESA believes a diverse marketplace of energy storage solutions will reduce overall risks on ratepayers and continue to enhance electric system reliability. The Massachusetts Institute of Technology (“MIT”) recently assessed how the emerging lithium-ion procurement pattern may indicate a ‘technology lock-in’ that is “a characteristic pattern in the history of technology in which one ‘dominant design’ drives out alternatives that would perform the same function.”⁶ A reasonable diversity in energy storage providers, technologies, supply chains, and capabilities

³ *Ibid*, p. 14.

⁴ GTM Research U.S. Energy Storage Monitor Q4 2016 Executive Summary.

⁵ Joint Application at Appendix E pp. 3-4.

⁶ “Energy Storage for the Grid: Policy Options for Sustaining Innovation”, Hart (George Mason University), Bonvillian (MIT), and Austin (Johns Hopkins University), April 2018. <http://energy.mit.edu/wp-content/uploads/2018/04/Energy-Storage-for-the-Grid.pdf>

would thus be supported by this initiative. Ongoing innovation of an array of solutions sufficient to meet the array of future grid conditions or needs is both pragmatic and prescient. The array of expected grid challenges is very broad, ranging from the need for energy storage systems to meet peak demand, to dynamic demand response solutions, to broad and deep cycling systems that can support more serious reliability contingencies, renewables integration, or back-up power needs, etc. Furthermore, the pace of change in the electric system is very rapid, with the state seeing an increased focus and urgency for resiliency applications in light of various climate-change risks.

In particular, CESA recommends a focus on long-duration use cases to identify beyond lithium-ion technologies that could be supported in SCE's initiative. Long-duration storage was identified as part of the 'optimal' resource mix in the more aggressive greenhouse gas ("GHG") emission reduction scenario (*i.e.*, 28 million metric tons ["MMT"] CO₂ by 2030) in the 2017-2018 modeling done in the Integrated Resources Plan ("IRP") proceeding (R.16-02-007). Since the IRP only modeled few storage technology types, bulk pumped hydro storage ("PHS") served as an imperfect proxy variable for long-duration storage resources,⁷ where more than 1,000 MW was selected as part of the optimal resource mix, demonstrating at least in part the value of long-duration storage resources. Innovation for such long-duration technologies will likely be needed not only at or before 2030 but potentially needed at a greater level beyond 2030 and through 2045. Therefore, in CESA's view, one of California's highest value uses of EPIC funds and greatest opportunities to lower electric system costs in the long-run is to support innovation in longer-duration storage technologies that will be necessary tools to meet SB 350, SB 100, and other state goals (*e.g.*, resiliency).

⁷ Cost structures and performance characteristics for PHS resources can be vastly different from other long-duration storage technologies. For example, PHS resources could be adjusted to have 6-hour minimum durations in the model. In addition, the model used in the IRP only allowed for intra-day, not multi-day, optimizations, thus overlooking potential benefits of investing in multi-day storage technologies.

III. A FOCUS ON COMMERCIAL DEPLOYMENT, NOT JUST DEMONSTRATION, OF NEW ENERGY STORAGE TECHNOLOGIES IS NEEDED FROM THE COMMISSION.

CESA is very appreciative of SCE's forward thinking on the need to expand the energy storage toolkit beyond just lithium-ion batteries and values initiatives such as the one proposed by SCE that support pre-commercial technologies to cross the 'chasm' to demonstration. This is an important first step to bring new technologies to the market, but a focus on commercial procurement of demonstrated new energy storage technologies is also needed to fully commercialize new technologies. Until actual commercial procurement of beyond-lithium-ion storage resources occur, and these technologies have an opportunity to scale, these technologies will stall at the pilot and demonstration stage.

As a result, in conjunction with this Joint Application, the Commission should also prioritize opening a new Energy Storage Rulemaking that is focused on, among a host of other issues, developing an energy storage procurement framework to bring new, lower-cost, longer-duration energy storage technologies to market. In comments in A.18-02-016, *et al.*, CESA outlined some of the barriers faced by newly demonstrated and/or commercialized systems, as well as some established solutions with limited deployments, which hold promise as energy storage technologies for certain use cases but are unable to or struggle to compete in nearer-term solicitations. In light of these challenges, CESA recommended a new procurement plan for emerging energy storage technologies but intended to serve as a mid-term procurement target to help support the initial commercial entry of new storage technologies.⁸ Specific barriers and a more detailed procurement framework would need to be identified and developed, respectively.

⁸ *Comments of the California Energy Storage Alliance to Assigned Commissioner's and Assigned Administrative Law Judges' Ruling Requesting Comments on Issues Pertaining to Energy Storage Technology Diversity*, filed on August 28, 2018 in A.18-02-016, *et al* at pp. 7-8.

CESA thus urges the Commission to consider a new Energy Storage Rulemaking as well as our proposed emerging energy storage technology focused procurement framework in order to build on the efforts of SCE's proposed initiative and bring technologies that may emerge from SCE's proposed initiative or elsewhere to market. In doing so, the Commission will ensure that a diverse energy storage toolkit does indeed emerge to address the state's long-term energy and environmental goals at an affordable cost.

IV. CONCLUSION.

CESA appreciates the opportunity to submit this response to the Joint Applications and looks forward to collaborating with the Commission and the utilities in this proceeding.

Respectfully submitted,



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