Date of Issuance - January 11, 2019

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION **RESOLUTION E-4954**
January 10, 2019

R E S O L U T I O N

Resolution E-4954. Authorizing Southern California Edison's continued operation of the Tehachapi Storage Project.

PROPOSED OUTCOME:

- Approves Southern California Edison Company's requested relief in Advice Letter 3779-E for the Tehachapi Storage Project to continue operations. The TSP is an 8 megawatt, 4 hour (32 megawatt-hour) utility-scale lithium-ion battery energy storage system.

SAFETY CONSIDERATIONS:

- Energy storage can increase grid reliability and assist in the integration of variable output renewable energy resources, which produce climate benefits.
- SCE shall operate the energy storage facilities in accordance with prudent and safe electrical practices.

ESTIMATED COST:

- This Resolution is expected to result in net-zero costs to ratepayers. It is expected that total market benefits will pay for total energy storage operating costs.

By Advice Letter 3779-E, Filed on April 12, 2018.

SUMMARY

This Resolution approves Southern California Edison Company's (SCE's) requested relief in Advice Letter (AL) 3779-E to continue operations of its Tehachapi Storage Project (TSP). The TSP is an 8 megawatt (MW), 4 hour (32

megawatt-hour, MWh) utility-scale lithium-ion battery energy storage system. Considering that there is funding remaining for continued operation, and a funding surplus of $6.821 million is expected after system decommission is completed in 2027, the Commission finds that it is prudent to continue operation of the TSP. This Resolution reaffirms the provisions of Resolution E-4809 that SCE is to use a portion or all of the remaining funding amount, not to exceed the original pre-authorized funding of $25.978 million, to support project activities, and shall use economic benefits from market participation to offset annual operations and maintenance (O&M) costs. This Resolution also reminds SCE that in accordance with regulatory principles the Commission expects SCE to operate all aspects of the TSP to maximize ratepayer benefits and net revenue from market participation.

BACKGROUND

On September 10, 2009, the California Public Utilities Commission (CPUC or Commission) issued Decision (D.) 09-09-029 requiring SCE to file a Tier 3 AL to recover SCE's cost share for the TSP smart grid project. The TSP is an 8 megawatt (MW), 4 hour (32 megawatt-hour, MWh) utility-scale lithium-ion battery energy storage system (BESS) located in SCE's Monolith Substation, 100 miles northeast of Los Angeles within the Tehachapi Wind Resource Area. The purpose of the TSP is to evaluate utility-scale BESS for purposes of improving grid performance and integrating renewable wind energy generation resources into the grid.

On June 20, 2010, SCE submitted a Tier 3 AL, AL 2482-E, to comply with the provisions of D.09-09-029, which included a showing that the United States Department of Energy (DOE) had selected the project to receive an award, a showing that the project furthers benefits to SCE's ratepayers, a showing that the requested incremental ratepayer funding for the project did not exceed $30 million, a showing that ratepayer funding did not exceed 50 percent of the total projects costs, and a showing that SCE had sought third party funding in addition to DOE funding.[1] SCE requested a maximum of $25,978,264 for the project, which was below the $30 million and 50 percent threshold. This cost share was matched by federal stimulus funding of $24,978,264 awarded by the DOE under the American Recovery and Reinvestment Act (ARRA), $1,000,000 in co-funding awarded by the California Energy Commission (CEC), and $5,261,627 in third-party vendor contribution. The total project cost was $57,218,155.

On August 12, 2010 the Commission concluded that the TSP met the requirements specified by D.09-09-029 and issued Resolution E-4355 approving SCE's TSP request in AL 2482-E to recover up to a maximum of $25,978,264 for the TSP.

Resolution E-4355 also required SCE to:

- Investigate the feasibility of continued operation of the TSP facility beyond the projected five-year demonstration life, including a comparison of the costs and benefits of continued operational activities versus the costs and benefits of decommissioning the facility at the end of the initial project period; and
- Provide the Commission with a report on its investigation of the feasibility of continued TSP operations versus decommissioning, via a Tier 3 AL.

On March 21, 2016, SCE submitted AL 3384-E, to comply with the requirements of Resolution E-4355.

AL 3384-E contained a comparison of the costs and benefits of continued operational activities versus the costs and benefits of facility decommissioning. SCE provided three options for the TSP: (1) Continue Operations and move the point of interconnection to an existing, available, permanent position on the Monolith 12 kV operating bus, (2) Continue Operations and move the point of

[1] SCE 's Tehachapi Storage Project, Continued Operation Feasibility (Advice Letter 3384-E), p.1.

interconnection to a new, permanent position on the Monolith 66 kV operating bus, and (3) Facility Decommissioning. SCE explained that continued operation at the existing 66 kV connection point was not an option for continued operation of TSP as it places an unacceptable burden on long term grid operations.

Under Option 1 (Continue Operations and move the point of interconnection to the 12 kV bus), and Option 2 (Continue Operations and move the point of interconnection to the 66 kV bus) funds would be required for relocation of the interconnection. Under Option 1 the funds for annual O&M would be offset by the forecast net benefit from market participation. Under Option 2 the funds for annual O&M would only be partially offset by the forecast net benefit from market participation. SCE stated that the net market benefits are lower under Option 2 as compared to Option 1 because market operations would be suspended until completion of the interconnection upgrades—expansion of the 66kV bus was required.

Under Option 3 (Facility Decommissioning) decommissioning costs would have been covered by the remaining funds.

SCE's recommendation was for the TSP to continue operations and permanently move the point of interconnection to the Monolith 12 kV bus (Option 1). Option 1 was identified as the most cost-effective option for continued operations of the TSP because net market benefits are higher than those under Option 2. SCE stated that "there is remaining available funding under the authorized funding to cover planning, development, construction, operations and maintenance, and future decommissioning costs"[2] and that "current forecast net market benefits would nearly offset operations and maintenance costs."[3] Any future revenues that exceed costs would be returned to ratepayers. SCE stated "Any revenue

[2] Advice Letter 3384-E, p. 8.

[3] Advice Letter 3384-E, p. 8.

shortfalls or excesses collected up to the authorized funding amount would be collected from or returned to ratepayers."[4]

On December 15, 2016, the Commission issued Resolution E-4809 authorizing SCE to continue operations of its TSP, and to move the point of interconnection to the Monolith 12 kilovolt (kV) operating bus.[5] Resolution E-4809 also clarified that SCE is to use a portion or all of the remaining funding amount, not to exceed the original pre-authorized funding of $25.978 million, to support project activities arising from the option selected and allows SCE to use economic benefits from market participation to offset annual O&M costs. Resolution E-4809 also required SCE to file a Tier 3 AL, on April 1 of each year, to either justify continue operation of TSP or recommend facility decommissioning in the event that market benefits do not offset O&M costs in the preceding year, or if the pre-authorized funding is exceeded.

Advice Letter 3779-E

On April 2, 2018, SCE submitted AL 3779-E to comply with the requirements of Resolution E-4809 and explain why the TSP's continue operations as a resource is beneficial for grid reliability and is economically feasible. The instant Resolution responds to this AL.

In AL 3779-E SCE explained why the TSP only earned revenue for one month (December) in 2017, which resulted in operating expenses for the year that substantially exceeded revenue. On December 31, 2016, the original contract under which the project asset was operated and maintained expired. SCE states that it began activities for entering a new contract in December 2015, but

4 Advice Letter 3384-E, p. 6.

5 Early stages of construction are underway and the transition is expected to occur in the second half of 2019. The system though will remain in operation until construction is nearly complete. (Advice Letter 3779-E, p. 6)

negotiations took longer than expected.[6] Without a new contract in place to maintain the unit, SCE chose to take the TSP offline. New contracts were executed on October 18, 2017. The TSP returned to service on November 9, 2017 after completing system inspections, repairs, and operational checks. SCE began a series of standby and capacity tests to verify system stability and delineate system operation. These were completed by the end of November 2017, at which time the TSP resumed market operations for the remainder of the year. Due to these reasons, the TSP was only able to record a month of market participation in 2017.

The pre-authorized funding for the TSP was $25.978 million. The total costs through 2016 (i.e., the balance of the Smart Grid American Recovery and Reinvestment Act Memorandum Account (SGARRAMA), which tracks costs related to the TSP), was $20.581 million.[7] This leaves a balance of $5.397 million of funding available as of the end of 2016, before accounting for market benefits. Recorded market benefits, which were tracked in a separate account,[8] were $0.694 million in 2016. In 2017, due to being offline for much of the year, SCE recorded market benefits for the TSP of $0.095 million[9] and costs of $0.583 million, for a net cost of $0.488 million. Subtracting the net cost of $0.488 million incurred in 2017 provides a funding amount of $5.603 million for continued operations as of the end of 2017.

[6] Energy Division Data Request Set Advice Letter 3779-E ED SCE-01, November 16, 2018.

[7] In accordance with Resolution E-4355, SCE transferred the December 31, 2016 balance of $20.581 million in the SGARRAMA to the distribution subaccount of the Base Revenue Requirement Balancing Account and Preliminary Statement Part N. 32; SGARRAMA was thus eliminated from SCE's tariffs.

[8] Market benefits were recorded, apparently starting in 2016, in the Base Revenue Balancing Account (BRRBA).

[9] Advice Letter 3779-E, p. 3

Based on recent observed market benefits of the TSP, SCE expects that actual recorded revenues should exceed the TSP Continued Operations O&M cost. Specifically, SCE forecasts benefits of $8.608 million and expenses of $7.390 million total for the years 2018-2027. Considering the funding amount of $5.603 as of the end of 2017, this would leave a funding surplus of $6.821 million after system decommission is completed in 2027.

NOTICE

Notice of AL 3779-E was made by publication in the Commission's Daily Calendar. SCE states that a copy of the AL 3779-E was mailed and distributed in accordance with Section 4 of General Order 96-B.

PROTESTS

SCE's AL 3779-E was not protested.

DISCUSSION

SCE should continue operation of the TSP.

In AL 3779-E, SCE explained the reasons market benefits did not offset expenses in the year 2017. SCE explained the benefits of continued operation of the TSP.

The benefits for continued operations include:[10]

- Long-term evaluation of grid-connected lithium-ion battery technology; and
- Experience and knowledge of managing energy storage system as grid resources.

SCE also explained that there is a remaining funding source of $5.603 million for continued operations and a funding surplus of $6.821 million is expected after

[10] Advice Letter 3779-E, p. 4-5.

system decommission is completed in 2027. The Commission concludes that the circumstances causing market benefits not to offset expenses in the year 2017 are unique and not likely to be repeated. Therefore, considering that there is funding remaining, the Commission finds that it is prudent to continue investing the remainder of the already authorized funds, if revenues are not sufficient, to continue operation of the TSP.

Concerns About the TSP Being Offline

The Commission is concerned that the TSP was offline for 11 months in 2017 and no revenue was generated during this time. If revenue of $95,000 for the one month of operation in 2017 was average, approximately $1,045,000 of revenue was foregone. D. 09-09-029 states "for projects proposed by the utilities and located in California, it is reasonable to expect there should be direct benefits to California ratepayers."[11] Furthermore, Resolution E-4809 stated "This Resolution is expected to result in net-zero costs to ratepayers. It is expected that Total Market Benefits will pay for Total Energy Storage Operating Costs."

In Resolution E-4809 the Commission authorized continued operation of the TSP by relying on SCE's representations in AL 3384-E, which predicted higher revenue from the battery that would almost completely offset operating expenses.[12] Due to the TSP being offline, the 2017 operating expenses of $583,000 greatly exceeded the 2017 revenue of $95,000.

Although pre-authorized ratepayer funding of approximately $5.603 million remains to cover annual battery operating expenses that exceed revenues, if revenues are sufficient to cover operating expenses, then the $5.603 million will

[11] D. 09-09-029, p. 12

[12] In A.L. 3384-E, SCE represented to the Commission that it expected annual revenue to continue to offset or nearly offset, all annual operating expenses, and this was the basis of Commission approval in Res. E-4809 for continued operation of TPS.

not be needed for this purpose, and all funds remaining at the end of the battery's life (minus $1.74 million estimated for de-commissioning and plus all annual revenues that exceeded operating costs) will be credited to ratepayers. In AL 3779-E, SCE indicates that annual revenue will only exceed operating expenses by a fairly small amount by 2027 (annual of revenue of $8.608 million exceeds annual operating expenses of $7.390 million by about $1.218 million). This makes it important to maximize net profits from the TSP and minimize any time when the TSP is not operating. In this Resolution, the Commission is relying on SCE's estimates in approving continued operations – if the future revenue was not expected to exceed expenses, then it would be appropriate to further evaluate the costs and benefits of continued operation of the battery, and we might reach a different conclusion.[13] Therefore, we remind SCE that in accordance with regulatory principles we expect SCE to operate all aspects of the TSP to maximize ratepayer benefits and net revenue from market participation and under least-cost dispatch.

SCE does not, as part of this AL, provide information to evaluate whether it gave sufficient priority and attention to negotiating and executing the new support contract to avoid taking the TSP out of service for most of 2017. The Commission recognizes that there are some circumstances outside the utilities' control. But, as mentioned above, we are concerned that the TSP was offline for most of 2017, and this was not in the best interest to ratepayers. If SCE did not act prudently in contract solicitation and negotiations, the 2017 operating expenses (in whole or in part) should not be recovered from ratepayers. It appears that much of the 2017 operating expenses were to maintain an unused asset. We do not agree that expenses to keep the TSP offline and then re-starting it was a useful expenditure of ratepayer funding. We strongly prefer that this situation never again occurs.

[13] Resolution E-4809 required SCE to file a Tier 3 AL, on April 1 of each year, to either justify continue operation of TSP or recommend facility decommissioning in the event that market benefits do not offset O&M costs in the preceding year.

Therefore:

1) If any new or extended contracts with third parties are necessary to keep operating the TSP, SCE must begin soliciting and negotiating those contracts sufficiently in advance, and must give priority to concluding those negotiations, to ensure that the contracts are executed in time to avoid any period of non-operation of the TSP.
2) SCE's request for recovery of its TSP spending in its current 2017 Energy Resource Recovery Account (ERRA)[14] Compliance Proceeding (Application 18-03-016) should be examined to determine the reasonableness for SCE to recover the 2017 TSP operating expenses (in whole or in part) from ratepayers, or whether a refund or adjustment is necessary. SCE should be able to fully explain that the battery was not operated for 11 months in 2017 and describe its efforts to avoid this period of non-operation. A similar review should take place in SCE's 2018 ERRA Compliance filing or any future ERRA Compliance when the TSP is offline.

SCE is required to follow the same reporting requirements as set forth by Resolution E-4809.

Resolution E-4809 set forth requirements for continued operations of the TSP. These requirements include:

- SCE is required to file a Tier 3 Advice Letter seeking Commission approval to either justify continued operation of the TSP or recommend decommissioning the TSP should Total Market Revenues not offset Operations and Maintenance Costs or if the pre-authorized funding is exceeded.

[14] An annual ERRA Compliance proceeding reviews the utility's compliance in the preceding year regarding energy resource contract administration, least-cost dispatch, fuel procurement, and the ERRA balancing account.

- SCE shall use the remaining funds, not to exceed the $25.978 million cap, to offset costs required to interconnect the TSP to the 12 kV bus.
- SCE is instructed to file a Tier 1 Advice Letter informing the Commission of Total Market Benefits and Total Energy Storage Costs on April 1 for every year where Market Benefits exceed Total Energy Storage Costs.

The conditions explained in AL 3779-E do not affect the requirement of Resolution E-4809. SCE is instructed to continue following the requirements per Resolution E-4809.

COMMENTS

This is an uncontested matter in which the resolution grants the relief requested. Accordingly, pursuant to PU Code 311(g)(2), the otherwise applicable 30-day period for public review and comment is being waived.

FINDINGS

1. Commission Resolution E-4809 directed Southern California Edison Company to file an Advice Letter seeking authority for continued operation of the TSP facility should market benefits be less than O&M costs.
2. Resolution E-4809 clarified that SCE is to use a portion or all of the remaining funding amount, not to exceed the original pre-authorized funding of $25.978 million, to support project activities arising from the option selected and allows SCE to use economic benefits from market participation to offset annual O&M costs.
3. Resolution E-4809 required SCE to file a Tier 3 AL, on April 1 of each year, to either justify continue operation of TSP or recommend facility decommissioning in the event that market benefits do not offset O&M costs in the preceding year, or if the pre-authorized funding is exceeded.
4. Southern California Edison filed Advice Letter 3779-E to meet the requirements set forth in Resolution E-4809.
5. Market benefits did not offset expenses in the year 2017.
6. At the conclusion of the DOE ARRA project all third-party contracts for maintaining and supporting the project asset were terminated, and new contracts were needed.

7. Negotiations for new contracts were not completed before the expiration of the contracts under the ARRA program. Without adequate vendor support, SCE chose to take the TSP off-line until these contracts were fully executed.
8. SCE did not provide satisfactory evidence to determine whether SCE gave sufficient priority and attention to negotiating and executing the new support contract needed to avoid taking the battery out of service for most of 2017.
9. The new contracts were executed on October 18, 2017. The TSP returned to service on November 9, 2017.
10. SCE began a series of standby and capacity tests to verify system stability and delineate system operation. These were completed by the end of November 2017, at which time the TSP resumed market operations for the remainder of the year.
11. The circumstances causing market benefits not to offset expenses in the year 2017 are unique.
12. SCE forecasts benefits of $8.608 million and expenses of $7.390 million total for the years 2018-2027.
13. The balance in the SGARRAMA is $20.581 million, which is below the authorized maximum funding amount of $25.978 million as of December 31, 2016.
14. Remaining funding for continued operations, including market benefits from January 2016 through December 2017, is $5.603 million.
15. A funding surplus of $6.821 million is expected after system decommission is completed in 2027.
16. Considering that there is funding remaining, and SCE forecasts benefits exceeding expenses for the years 2018-2027, the Commission finds that it is prudent to invest the remainder of the already authorized funds, if revenues are not sufficient, to continue operation of the TSP.
17. The requirements of Resolution E-4809 do not change and will continue to apply.

THEREFORE IT IS ORDERED THAT:

1. The request of the Southern California Edison Company to continue operations of the Tehachapi Storage Project as requested in Advice Letter 3779-E is approved.

2. SCE must operate the battery to maximize ratepayer benefits and net revenue, and under least cost-dispatch. This includes ensuring any future contract solicitations and negotiations are given priority and conducted in a timely manner to ensure the Tehachapi Storage Project is not taken offline.

3. SCE must justify, in the Energy Resource Recovery Account Compliance proceeding for 2017 and future years, its cost recovery of expenses for any time the Tehachapi Storage Project is offline.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on January 10, 2019; the following Commissioners voting favorably thereon:

/s/ _ALICE STEBBINS_
ALICE STEBBINS
Executive Director

MICHAEL PICKER
President
LIANE M. RANDOLPH
MARTHA GUZMAN ACEVES
CLIFFORD RECHTSCHAFFEN
Commissioners