PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Agenda ID #21490
ENERGY DIVISION **RESOLUTION E-5261**
April 27, 2023

R E S O L U T I O N

Resolution E-5261. Pacific Gas and Electric Company. Plan to Develop a Clean Substation Microgrid Project and Associated Procurement Contract with Energy Vault.

PROPOSED OUTCOME:

- Approves Pacific Gas and Electric's (PG&E) plan to develop a Clean Substation Microgrid Pilot Project to mitigate transmission-level Public Safety Power Shutoffs at the Calistoga substation, as required by D.21-01-018 and Resolution E-5164.

SAFETY CONSIDERATIONS:

- The project involves the trucking and storage of hydrogen fuel, and the development of a substation-level microgrid, which may present safety risks. PG&E has evaluated these potential risks as detailed in its advice letter and reply to protests.
- This resolution is expected to reduce the use of diesel generators as temporary generation during PSPS events, thus reducing harmful air pollutants like particulate matter and NOx.

ESTIMATED COST:

- The project is covered by a one-way balancing account limited to $46.3 million covering the 10.5-year life of the project. The use of these funds was approved in D.21-01-018.

By Advice Letter 6808-E, Filed on December 30, 2022.

SUMMARY

This Resolution approves Pacific Gas and Electric (PG&E) Advice Letter (AL) 6808-E. In D.21-01-018, as amended in Resolution E-5164, the Commission ordered PG&E to start the transition to clean backup generation by pursuing at least one clean substation microgrid project for Public Safety Power Shutoff (PSPS) mitigation. This resolution approves PG&E's plan to develop that project at the Calistoga substation, and the associated procurement contract with Energy Vault. PG&E proposes an 8.5-megawatt microgrid capable of powering the Calistoga substation for 48 hours, and thus keeping the substation energized during a PSPS event effecting the transmission system that normally powers the substation. The microgrid would be developed by Energy Vault in coordination with PG&E and would operate for 10.5 years starting in 2024. The microgrid would combine a battery energy storage system with a fuel cell fueled by green hydrogen. This project would be the first long-term, clean energy, substation microgrid in the PG&E service territory. Forecasted costs for the project fall below the benchmarks set in D.21-08-018, and the costs would be covered by a one-way balancing account capped at $46.3 million dollars. This Resolution also requires PG&E to submit reports on the pilot project, detailing the actual costs incurred, its technical performance, and any lessons learned, and to encourage the use of project resources during normal grid conditions.

BACKGROUND

On January 21, 2021, the CPUC issued D.21-01-018, which included an Appendix with guidelines for utilities seeking to reserve temporary generation to mitigate PSPS events. These guidelines had the aim of keeping the lights on during broader grid outages while starting the transition towards clean backup generation. Section I.2 of that Appendix aims specifically to "start the transition towards clean generation," and requires that a utility reserving temporary generation pursue at least one clean substation microgrid project as an alternative to diesel backup generation. In its Tier 2 Advice Letter seeking to reserve temporary generation, the utility must either (1) "document its plans to establish clean substation microgrid projects located at, or able to serve, at least one substation," or, (2) "document the specific conditions [for clean substation pilots] that have not been met." [1]

[1] Decision 21-01-018, Page A-4.

PG&E did reserve temporary generation in 2021, and then submitted Advice Letter 6204-E on June 9, 2021 that aimed to document specific conditions that were not met to pursue a Clean Substation Microgrid (CSM) project. Resolution E-5164 disposed of that Advice Letter. The resolution, however, found PG&E had not adequately documented specific conditions that made a CSM project infeasible. The resolution provided further direction for the CSM RFO and required that PG&E file a Tier 3 Advice Letter by April 2022 detailing specific plans to develop a CSM pilot project. Resolution E-5164 required that the Advice Letter include documentation of PG&E's CSM Request for Proposals, estimate the costs of the project, and request that the Commission approve the project funded through a balancing account according to D.21-01-018.

By a letter dated April 11, 2022, the Commission extended the deadline to file this Advice Letter to July 31, 2022. On July 7, 2022, PGE submitted an additional extension request, outlining the reasons a further extension of time was required to determine the feasibility of the project before signing a contract. On August 1, 2022, the Commission by letter granted PG&E's extension of time, setting a new deadline of December 31, 2022, for its advice letter and extending other deadlines for the project to 2024.

In compliance with that deadline, PG&E submitted AL 6808-E outlining its proposed CSM pilot project at the Calistoga substation and requesting approval for the associated contract with Energy Vault. PG&E selected Calistoga because, according to PG&E's 10-year Lookback Analysis, the Calistoga substation has one of the highest frequencies of modeled direct impacts with safe-to-energize customers. PG&E selected Energy Vault from a bidding process in which Energy Vault and three other companies offered a total of eight microgrid proposals.[2] The proposed project includes a hydrogen fuel cell and a lithium-ion battery energy storage system powering a microgrid at the Calistoga substation, operating by June 1, 2024 and for a period of 10.5 years. The proposed microgrid would have a capacity of 8.5 megawatts (MW) and be capable of providing 293 megawatt-hours (MWhs) of electricity over a 48-hour period.[3]

NOTICE

Notice of AL 6808-E was made by publication in the Commission's Daily Calendar. PG&E states that a copy of the Advice Letter was mailed and distributed in accordance with Section 4 of General Order 96-B.

[2] AL 6808-E at 7.

[3] AL 6808-E at 12.

PROTESTS

Advice Letter 6808-E was protested.

PG&E's Advice Letter 6808-E was timely protested by the Public Advocates Office (PAO) on January 19, 2023. Marin Clean Energy (MCE) submitted a response to the Advice Letter.

PG&E responded to the protest of PAO and the response of MCE on January 26, 2023.

PAO Protest – January 19, 2023

In its protest, PAO recommends that PG&E be required to supplement its Advice Letter to justify PG&E's determination that the Calistoga Project is technically feasible, safe, and cost-effective as required by D.21-01-018. PAO argues that PG&E has not adequately compared the proposed clean substation microgrid to potential grid hardening alternatives, that PG&E fails to demonstrate the technical feasibility of the project and instead defers responsibilities to Energy Vault, and that PG&E fails to adequately demonstrate the project is financially competitive because the price of hydrogen fuel could vary.

PAO also argues that the Commission should require PG&E to provide annual reports on the proposed project beginning one year after the project's in-service date, including the actual costs and technical performance of the project.

MCE Response – January 19, 2023

In its response, MCE expressed its general support for the Calistoga clean substation microgrid project, noting that it appreciates the innovative nature of the project and thinks it can serve as an example for future clean substation microgrids. MCE also offered several recommendations for the project. First, MCE recommended that PG&E consider cleaner options than diesel trucks to transport the green hydrogen. Second, MCE recommended PG&E be required to share lessons learned from the project. Third, MCE recommended PG&E consider how to use the clean substation microgrid resources outside of PSPS events, and noted that the option to operate the project under a limited number of courtesy dispatches moves in this direction.

PG&E Reply to Protests – January 26, 2023

In its reply to the protest and response, PG&E argues that its Advice Letter should be approved without further filings because it meets all requirements and is aligned with Commission and State policies.

In its response to PAO, PG&E argues that PAO's assertions of non-compliance with D.21-01-018 are incorrect. PG&E notes that it complied with the site selection criteria in D.21-01-018, confirming that PG&E does not have ongoing, planned or proposed grid hardening investments that would significantly reduce the risk of transmission-level PSPS at this substation over the next 10 years, as required by the Decision. PG&E also points out that it rejected other potential sites based on this exact analysis of alternative hardening investments. PG&E argues that the project is technically feasible and notes that its engineers determined that the project is a capable of meeting the technical requirements from D.21-01-018. The main grid-forming resource for the microgrid would be a battery energy storage system and related inverter, which are mature technologies which PG&E has used for similar projects in the past. PG&E also employed multiple levels of review to assess the safety of the project, as detailed in confidential sections of its reply. Finally, PG&E argues that the project is financially competitive and falls below both of the cost-effectiveness benchmarks set in the D.21-01-018.

In its response to MCE, PG&E notes MCE's general support of the projects. PG&E argues that no commercially viable alternative to the use of diesel trucks to deliver hydrogen currently exists. PG&E also notes that it has no objection to the clean substation microgrid resources operating while connected to the larger grid, i.e. 'blue sky' operation. PG&E has not prohibited this type of use, and if Energy Vault deems it cost effective, it may request to sell 'blue sky' products at a future date.

PG&E also notes that it does not oppose an additional reporting requirement to document the actual costs from the project as compared to cost forecasts. PG&E considers existing environmental performance reporting requirements from D.22-11-009 to apply to this project as a multi-season substation microgrid.[4]

[4] D.22-22-009 adopted a framework for substation microgrid resiliency solutions to mitigate public safety power shutoffs in PG&E territory.

DISCUSSION

The Commission has reviewed the Advice Letter and the protests, and finds that PG&E's CSM pilot project reasonably follows earlier Commission direction and should be approved. In this section, we respond to various issues raised by party protests, and confirm that the project meets the conditions set out in D.21-01-018.

Specifically, D.21-01-018 required PG&E "to document its plans to establish clean substation microgrid projects located at, or able to serve, at least one substation" and laid out the following conditions for Clean Substation Microgrid (CSM) pilot projects, which will be referenced below:

> **2.1.** Projects may be either mobile or stationary, and either temporary or permanent.
> **2.2.** Projects that involve stationary installation of generation at a substation for longer than 3 years can only be pursued at substations where, with high confidence:
>
> a. Transmission lines serving the substation may be de-energized because of the fire risk, despite safe-to-energize load at the substation. The probability of transmission-level power loss affecting otherwise safe-to-energize load is relatively high and expected to persist; and
> b. Either, the utility does not have ongoing, planned, or proposed grid hardening investments that would significantly reduce the risk of de-energization at this substation over the next 10 years;
> c. Or, alternatively, the cost of proposed grid hardening investments exceed $10 million multiplied by the peak substation load in MW, and a permanent microgrid would replace the need for grid hardening.
>
> **2.3.** Proposed projects must be judged technically feasible, safe, and financially competitive by the utility. At minimum, these solutions should meet the following requirements:
>
> a. Design should be capable of islanding for 48 hours.
> b. Design should be able to black start the substation load.
> c. Design should meet cold load pickup requirements.
> d. Design must meet frequency and frequency response requirements.
> e. Design should meet protection requirements or include protection upgrades.

f. The cost of the project to ratepayers may not exceed twice the expected cost of utilizing backup diesel generation over the contract period. In total, the cost may not exceed the expected cost of 20 years of diesel rental and operation.

2.4. Proposed solutions should meet the following general criteria:

a. If safe to do so, it is permissible for a subset of the project generation and/or storage resources to enter operation before the entire project is completed, allowing the project to progress in stages.

b. By the 2022 fire season, September 1, 2022 [Extended to 2024 by Executive Director letter on August 1, 2022], emission from islanding the substation during PSPS events should be significantly reduced, including:

i. At least a 90 percent reduction in PM emissions and NOx emissions compared to what would have been emitted if large Tier 2 Diesel Generators had been used instead of the project.

ii. Greenhouse gas emissions roughly equivalent to, or less than, emissions from the current grid mix.

iii. Although only criteria (b) above need to be met by the [2024] fire season, as an interim milestone, completed permanent projects must demonstrate a fully renewable microgrid.

iv. The project may be capable of export during normal conditions, but it is not required to do so.

2.5. Total cost of all projects over their expected useful life may not exceed $350 million.[5]

PG&E's proposal for a stationary and permanent (i.e., 10.5 year) microgrid at the Calistoga substation meets condition 2.1 and triggers condition 2.2.

Calistoga is an adequate location for the Clean Substation Microgrid Pilot required by D.21-01-018.

PG&E has adequately demonstrated the probability of a long-term need for a CSM solution at the Calistoga Substation, as required by condition 2.2 listed above.

[5] D.21-01-018, Appendix A, Pages A-4 and A-5.

Specifically, PG&E used its historical lookback analysis to confirm that "the probability of transmission-level power loss affecting otherwise safe-to-energize load is relatively high and expected to persist" for the Calistoga substation, and added that there are no ongoing, planned, or proposed projects that would significantly mitigate that risk. The Calistoga substation has eight direct transmission-level impacts in the 2021 update of the historic lookback analysis submitted to the Commission,[6] and PG&E argues Calistoga is the only substation that (1) faces a high number of direct impacts, (2) meets basic feasibility criteria, such as having land availability, and (3) does not have an alternative potential mitigation. In the 2022 update to the historic lookback analysis, Calistoga continued to face five direct transmission-level impacts.[7] PG&E has also sought the input of local stakeholders, including the City of Calistoga and MCE, as part of its solicitation. The City of Calistoga wrote a letter of support for the project,[8] and MCE noted its support in its response.

The pilot project has reasonably been deemed technologically feasible by PG&E.

In its protest, PAO argues that PG&E fails to demonstrate that its proposed CSM project is technologically feasible, noting that the project includes emerging technologies and that PG&E does not demonstrate that Energy Vault has sufficient experience in with hydrogen fuel cells. However, D.21-01-018 explicitly states that "this opportunity is intended to be open to projects that are novel or not commercially tested."[9] In other words, the Decision allows PG&E to pursue novel projects as long as PG&E uses its judgment to reject projects that it deems technologically infeasible. In its reply, PG&E argues that the project is technically feasible and notes that its engineers determined that the project is a capable of meeting the technical requirements from D.21-01-018. As noted above, the main grid-forming resource for the microgrid would be a battery energy storage system and related inverter, which are mature technologies that PG&E has used for similar projects in the past. Based on its evaluation, PG&E judged the proposed project capable of meeting the minimum technical criteria set forth in condition 2.3 listed above. These criteria include being capable of islanding for 48 hours, being able to black start the substation load, meeting cold load pickup requirements,

[6] PG&E 10-Year Historic Lookback 2021 Update, Supplemental Testimony in Application 21-06-022 submitted December, 2021.
[7] Compliance filing from PG&E following Ordering Paragraph 1 of D.22-11-009, submitted February 16, 2023.
[8] PG&E AL 6808-E, Appendix J.
[9] D.21-08-009, page A-4.

meeting frequency and frequency response requirements, and meeting protection requirements or including protection upgrades. PG&E also conducted related studies, including a study of the inverter's capability to meet many of these technical requirements. The project represents a novel combination of multiple generation sources capable of powering an entire substation, with infrastructure owned in part by third parties and in party by PG&E, and it will likely further the transition to cleaner sources of substation microgrid generation.

The pilot project meets the other requirements laid out in D.21-01-018.

Protests did not contest that PG&E's proposal meets many of the requirements laid out in D.21-08-018. The Commission confirms that PG&E has adequately documented its plan to develop at least one CSM project. This project, as a permanent, stationary project, meets the broad requirements of condition 2.1 listed above. The Calistoga CSM Project is expected to achieve at least a 90 percent reduction in PM emissions and NOx emissions compared to what would have been emitted if large Tier 2 Diesel Generators had been used instead, while also achieving greenhouse gas emissions roughly equivalent to, or less than, emissions from the current grid mix. The completed Calistoga CSM Project will demonstrate a fully renewable microgrid, consistent with Appendix A to D.21-01-018. Thus, the project meets the requirements of condition 2.4 listed above. The contract between PG&E and Energy Vault provides for an Initial Delivery Date of June 1, 2024, which is consistent with the partially and fully operational timelines set forth in Resolution E-5164, as those deadlines were most recently extended by letter from the Commission's Executive Director on August 1, 2022.[10] Alongside the initial delivery date specified in the contract, it is reasonable for the contract terms to allow for day-for-day extensions to the initial delivery date under certain circumstances, or for the payment of daily damages by Energy Vault in the event of certain other circumstances, given the complexity and novelty of the project.

The project meets the cost-effectiveness benchmarks from D.21-01-018.

The forecasted cost of the Calistoga CSM project does not exceed twice the expected cost of utilizing backup diesel generation over the contract period, and does not exceed the expected cost of 20 years of diesel rental and operation, the cost benchmark from condition 2.3.f listed above. In addition, the forecasted project costs fall below PG&E's

[10] Letter served August 1, 2022, to the R. 19-09-009 Service List.

prorated cost cap of $46.3 million. This cap reflects the smaller scope of this project compared to the $350 million cost cap set in condition 2.5 listed above, which was based on the possibility of three CSM projects occurring at large substations instead of the single project proposed here. To the extent the total actual expenses for the Calistoga CSM project are equal to or less than the prorated $46.3 million balancing account cap, it is reasonable for PG&E to recover the actual costs and associated revenue requirement without further reasonableness review.

In its protest PAO notes that, because the cost of hydrogen fuel on the market is variable and subject to change, PG&E's forecasts may be inaccurate and thus the project may end up exceeding the Decision's cost benchmarks based on diesel generation. We note that elements of any cost forecast may be imprecise, including the forecasted cost of utilizing backup diesel generation that defines these very cost benchmarks. Most actual projects will include some form of variable costs that cannot be perfectly anticipated in advance. Despite this uncertainty, forecasting costs remains useful and even necessary. Without a specific objection to PG&E's forecast or a demonstration that it underestimates true costs, we choose not to reject PG&E's forecasts simply based on inherent uncertainty. We note that the costs for the project are ultimately limited by the cap of $46.3 million on the related one-way balancing account.

In addition, no parties protested PG&E's plan for cost recovery and cost allocation. Absent any protest on these issues, and after considering PG&E's plan for cost recovery and cost allocation, we find PG&E's proposal broadly reasonable. It is reasonable for PG&E to recover the incremental costs it has incurred in 2021-2022 to solicit the current contract and to begin development of the Calistoga CSM Project. For costs incurred during the period of 2023–2026, it is reasonable for PG&E to annually transfer the balance of the Clean Substation Microgrid Program Subaccount of the Microgrids Balancing Account (MGBA) to the Distribution Revenue Adjustment Mechanism (DRAM) in order to recover the actual costs and associated revenue requirement in distribution rates through the Annual Electric True-up advice letter process. After this period, it is reasonable for PG&E to include these costs in its General Rate Case. Additionally, it is reasonable for PG&E to recover all expenditures for the Calistoga CSM project as expense to simplify the revenue requirement calculation and cost recovery, and to allocate the Calistoga CSM Project costs using the special revenue allocation methodology associated with wildfire mitigation efforts. If actual construction costs exceed the forecasts provided here upon completion of the initial construction of the Calistoga CSM Project, it is reasonable for PG&E to file a Tier 1 Advice Letter informing the Commission and presenting the forecasted costs at completion compared to the established balancing account cap. Finally, given the

parallel and coordinated development of the Calistoga CSM Project by PG&E and by Energy Vault, we find it reasonable for PG&E to proceed immediately upon approval with its own scope of work. It is reasonable for PG&E to recover the then-incurred costs for its scope of work even if Energy Vault terminates the contract or fails to fulfill its obligations, so long as PG&E reasonably mitigates the stranding of assets and other expense costs after the time it receives notice that the Energy Vault scope of work will fail or terminate.

PG&E should report on the cost, performance, and learnings from this pilot project.

In its response, MCE recommended that PG&E be required to share lessons learned from developing this project.[11] Relatedly, in its protest, PAO recommends PG&E be required to provide annual reports on the project beginning one year after the project's in-service date. Specifically, PAO requested these reports describe the actual cost and technical performance of the Calistoga project, including any test failures. PG&E had no objections to these reporting requirements, only noting that it already plans to report on the project's environmental performance. We find these reporting requirements to be reasonable.

PG&E should work with Energy Vault and the Energy Division to encourage the use of project resources, in particular the battery energy storage system, during normal grid conditions.

In its response, MCE encouraged the Commission and PG&E to consider how the resources in this microgrid project can be used year-round. In its reply, PG&E noted that it allowed the use of microgrid resources during normal grid conditions in the Request for Offer for the project, either as a part of the contract or separately from the contract as long as it did not conflict with the primary obligation of providing backup power during PSPS events.[12] PG&E also noted it does not currently expect Energy Vault to utilize microgrid resources during normal grid conditions, but it has no objection with Energy Vault proposing this use at a future date. The logistics and costs of procuring and delivering renewable hydrogen for use during normal grid conditions may be prohibitive, but we note that the use of the project battery energy storage system during normal grid conditions seems reasonable as long as it does not conflict with Energy Vault's primary obligations. As such, we find it reasonable to direct PG&E to work with Energy Vault and the Energy Division to encourage the use of the battery

[11] MCE Response at 2.

[12] PG&E Reply at 11.

energy storage system during normal grid conditions, understanding that this will not be explicitly covered under the current contract terms.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this Resolution must be served on all parties and subject to at least 30 days public review. Any comments are due within 20 days of the date of its mailing and publication on the Commission's website and in accordance with any instructions accompanying the notice. Section 311(g)(2) provides that this 30-day review period and 20-day comment period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day review and 20-day comment period for the draft of this resolution was neither waived nor reduced. Accordingly, this draft resolution was mailed to parties for comments, and will be placed on the Commission's agenda no earlier than 30 days from today.

FINDINGS

1. PG&E has adequately documented its plan to develop at least one CSM Pilot Project pursuant to Section 2 of Appendix A to D.21-01-018.
2. The Calistoga CSM Project would demonstrate a novel combination of third party-owned, clean generation technologies in combination with existing utility infrastructure, and it will further the transition to cleaner sources of substation microgrid generation.
3. As a permanent, stationary CSM project, the Calistoga CSM Project meets condition 2.1 of Section 2 of Appendix A to D.21-01-018.
4. As a permanent (i.e., long-term) CSM project, PG&E has adequately demonstrated the probability for a long-term need for a CSM solution at the Calistoga Substation and has therefore met condition 2.2 of Section 2 of Appendix A to D.21-01-018.
5. PG&E has reasonably judged the Calistoga CSM Project to be technically feasible, safe, and financially competitive, meeting the minimum technical criteria set forth in condition 2.3 of Section 2 of Appendix A to D.21-01-018.
6. The forecasted cost of the Calistoga CSM Project to ratepayers does not exceed twice the expected cost of utilizing backup diesel generation over the contract period, consistent with condition 2.3 of Section 2 of Appendix A to D.21-01-018.

7. In total, the forecasted cost of the Calistoga CSM Project does not exceed the expected cost of 20 years of diesel rental and operation, consistent with condition 2.3 of Section 2 of Appendix A to D.21-01-018.
8. The Calistoga CSM Project is expected to achieve at least a 90 percent reduction in PM emissions and NOx emissions compared to what would have been emitted if large Tier 2 Diesel Generators had been used instead of the project, consistent with Appendix A to D.21-01-018.
9. The Calistoga CSM Project is expected to achieve greenhouse gas emissions roughly equivalent to, or less than, emissions from the current grid mix, consistent with Appendix A to D.21-01-018.
10. The completed Calistoga CSM Project will demonstrate a fully renewable microgrid, consistent with Appendix A to D.21-01-018 as further elaborated by Resolution E-5164.
11. PG&E has sought the input of local stakeholders, including the City of Calistoga and Marin Clean Energy, as part of its solicitation and initial study processes.
12. The Calistoga CSM Project has received support from local community stakeholders.
13. The total cost of the Calistoga CSM Project is not expected to exceed PG&E's proposed prorated balancing account cap of $46.3 million, leaving it well below the total cap for the Pilot Program of $350 million established in condition 2.5 of Section 2 of Appendix A to D.21-01-018.
14. To the extent the total actual expenses for the Calistoga CSM project are equal to or less than the prorated $46.3 million balancing account cap, it is reasonable for PG&E to recover, without further reasonableness review, the actual costs and associated revenue requirement.
15. If costs exceed the forecasted total cost of the Calistoga CSM Project detailed in Confidential Appendix E of the Advice Letter, then upon completion of the initial construction of the Calistoga CSM Project, it is reasonable for PG&E to file a Tier 1 Advice Letter to present the forecasted costs at completion and a comparison to the established balancing account cap.
16. It is reasonable for PG&E to recover the incremental costs it has incurred in 2021-2022 to solicit the DGEMS contract and to begin development of the Calistoga CSM Project because these costs were incurred following approval by the Commission of the Clean Substation Microgrid Pilot Program in D.21-01-018 and the approval to establish a Clean Substation Microgrid Program Subaccount in the Microgrids Balancing Account in February 2021. These incremental incurred costs should be subject to the one-way cap on the Clean Substation Microgrid Program Subaccount established in this Advice Letter and should be recovered via a true-up of rates through PG&E's Annual Electric True-Up filing for 2024.

17. For costs incurred during the period of 2023–2026, it is reasonable for PG&E to annually transfer the balance of the Clean Substation Microgrid Program Subaccount of the MGBA to the DRAM in order to recover the actual costs and associated revenue requirement in distribution rates through the Annual Electric True-Up advice letter process.
18. Beginning with the 2027 General Rate Case cycle, it is reasonable for PG&E to include the revenue requirement for the Calistoga CSM Project in its General Rate Case application for recovery through distribution rates.
19. It is reasonable, on a non-precedential basis, for PG&E to recover all expenditures for the Calistoga CSM project as expense to simplify the revenue requirement calculation and cost recovery.
20. It is reasonable to allocate the Calistoga CSM Project costs using the special revenue allocation methodology that was originally approved in Phase II of PG&E's 2020 General Rate Case, D.21-11-016, for costs associated with wildfire mitigation efforts.
21. Given the parallel and coordinated development of the Calistoga CSM Project by PG&E and by Energy Vault, it is reasonable for PG&E to proceed immediately upon approval with its scope of work. It is reasonable for PG&E to recover the then-incurred costs for its scope of work in the event that the Energy Vault scope of work is terminated or otherwise fails to function as anticipated, so long as PG&E reasonably mitigates the stranding of assets and other expense costs after the time, if any, at which it receives notice that the Energy Vault scope of work will fail or terminate.
22. The contract between PG&E and Energy Vault provides for an Initial Delivery Date of June 1, 2024, which is consistent with the partially and fully operational timelines set forth in Resolution E-5164 as those deadlines were most recently extended by letter from the Commission's Executive Director on August 1, 2022.
23. Contract terms that allow day-for-day extensions to the Initial Delivery Date under certain circumstances described in the contract terms, or for the payment of daily damages by Energy Vault in the event of certain other circumstances described in the contract terms, are reasonable given the complexity and novelty of the pilot project and the relatively limited additional time that may be allowed under these contract provisions.
24. It is reasonable for PG&E to submit yearly reports, beginning one year after the Calistoga project's in-service date and continuing for the life of the project, detailing the project's actual cost and technical performance, and summarizing lessons learned.

25. It is reasonable for PG&E to work with both Energy Vault and the Energy Division to encourage the use of project resources, in particular the battery energy storage system, during normal grid conditions.

THEREFORE IT IS ORDERED THAT:

1. Pacific Gas and Electric Company's plan to develop a clean substation microgrid project and the associated procurement contract with Energy Vault, as described in Advice Letter 6808-E, is approved.
2. As noted in PG&E's advice letter, the one-way balancing account for the project and all associated costs is capped at $46.3 million.
3. PG&E must submit yearly reports, beginning one year after the Calistoga project's in-service date and continuing for the life of the project, detailing the project's actual cost and technical performance, and summarizing lessons learned related to clean substation microgrid development. These reports may be combined with PG&E's other filings on temporary generation or clean substation microgrids, and should be submitted via Compliance Filing with the Energy Division and to the R.19-09-009 Service List.
4. PG&E should encourage Energy Vault to utilize the project battery energy storage system during normal grid conditions, and should meet with Energy Division to discuss using the microgrid resources during normal grid conditions.

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 April 27, 2023; the following Commissioners voting favorably thereon:

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Rachel Peterson
Executive Director