Decision **PROPOSED DECISION OF ALJ STEVENS** **(Mailed 2/26/2019)**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of San Diego Gas & Electric Company (U902E) for Approval of its 2018 Energy Storage Procurement and Investment Plan.	Application 18-02-016
And Related Matter.	Application 18-03-001 Application 18-03-002

DECISION IMPLEMENTING THE AB 2868 ENERGY STORAGE PROGRAM AND INVESTMENT FRAMEWORK AND APPROVING AB 2868 APPLICATIONS WITH MODIFICATION

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DECISION IMPLEMENTING THE AB 2868 ENERGY STORAGE PROGRAM AND INVESTMENT FRAMEWORK AND APPROVING AB 2868 APPLICATIONS WITH MODIFICATION

Summary

This decision adopts the Assembly Bill (AB) 2868 components of the Applications of San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company with modification. Direction is provided to the three Applicants regarding how to seek future approvals for energy storage projects pursuant to AB 2868. The behind-the-retail-meter thermal storage program proposal of Pacific Gas and Electric Company is granted with the requested rate recovery mechanism. The front of the meter investment proposals of the three Applicants are not granted as proposed. Additionally, the behind the meter programs proposed by San Diego Gas & Electric Company and Southern California Edison Company are not granted as proposed. This decision allows and encourages the three Applicants to hold requests for offers for front of the meter energy storage resources that conform to the direction included in Appendix A of this Decision. Further, the Applicants are invited to propose additional programs pursuant to Assembly Bill 2868.

1. Background

Assembly Bill (AB) 2868, signed into law on September 26, 2016, adds Sections 2838.2 and 2838.3 to the Public Utilities Code. It directs the Commission, in consultation with the California Air Resources Board and the Energy Commission, to direct the three Investor Owned Utilities (IOU) to file applications for programs and investments to accelerate widespread deployment of distributed energy storage systems to achieve ratepayer benefits, reduce dependence on petroleum, meet air quality standards, and reduce emissions of greenhouse gases.

The total capacity of the programs and investments in distributed energy storage systems approved by the Commission pursuant to AB 2868 is not to exceed 500 megawatts (MW), divided equally among Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E). In accordance with AB 2868, in Decision (D.) 17-04-039 the Commission directed the IOUs to file applications for programs and investments to accelerate widespread deployment of distributed energy storage systems, above and beyond the 1,325 MW AB 2514 target.

The Commission directed PG&E, SCE, and SDG&E to each incorporate proposal for programs and investments for up to 166.66 MW of distributed energy storage systems into their 2018 energy storage procurement plans. D.17-04-039 required the IOUs to hold at least two public workshops and a preview session in consultation with Commission staff to solicit feedback from stakeholders on definitions of terms, evaluating projects against the statutory criteria, and the IOUs' proposals for distributed energy storage systems.

The two workshops and the preview session were held jointly between PG&E, SCE, and SDG&E at the Commission's San Francisco office on September 14, October 17, and December 15, 2017, respectively.

On February 28, 2018 SDG&E filed Application (A) 18-00-016, and on March 1, 2018 PG&E and SCE filed A.18-03-001 and A.18-03-002 respectively, seeking Commission resolution on issues pertaining to AB 2514 and AB 2868.

Regarding SDG&E's Application, the Public Advocates Office of the Public Utilities Commission (Cal Advocates) [1], California Energy Storage Alliance (CESA); Alliance for Retail Energy Markets/Direct Access Customer Coalition (AReM/DACC); LS Power Development, LLC (LS Power); and California Solar and Storage Association filed and served protests on April 6, 2018. Sunrun, Inc./California Housing Partnership Corporation/Grid Alternatives; Tesla, Inc.; and Coalition of California Utility Employees (CUE) filed and served responses to SDG&E's Application on April 6, 2018. SDG&E filed and served a reply to the protests and responses on April 16, 2018.

Regarding PG&E's Application, Green Power Institute filed and served a response on April 2, 2018. Silicon Valley Clean Energy/Sonoma Clean Power/Marin Clean Energy/Peninsula Clean Energy (CCA Parties), CESA, AReM/DACC, Cal Advocates, and the California Solar and Storage Association filed and served protests on April 6, 2018. Tesla, Inc. and Coalition of California Utility Employees filed and served responses to PG&E's Application on April 6, 2018. PG&E filed and served a reply to the protests and responses on April 16, 2018.

Regarding SCE's Application, CESA, Cal Advocates, AREM/DACC, and California Solar and Storage Association filed and served protests on April 6, 2018. California Choice Energy Authority; Tesla, Inc.; Sunrun, Inc./California Housing Partnership Corporation/Grid Alternatives; and the Coalition of California Utility Employees filed and served responses to SCE's

[1] The Office of Ratepayer Advocates was renamed the Public Advocates Office of the Public Utilities Commission pursuant to Senate Bill (SB) 854, which the Governor approved on June 27, 2018.

Application on April 6, 2018. Green Power Institute tendered a response for filing on April 9, 2018; this response was not timely and was rejected by the Docket Office. SCE filed and served a reply to the protests and responses on April 16, 2018.

The Commission held a prehearing conference (PHC) on May 1, 2018 to determine parties, discuss the scope, the schedule, and other procedural matters. In the scoping ruling filed and served on May 24, 2018, the assigned Commissioner consolidated the three Applications and bifurcated the issues into two tracks, one that addresses AB 2514 issues and a second that addresses AB 2868 issues. Issues pertaining to AB 2514 were resolved in D.18-10-036.

On April 24, 2018, Administrative Law Judge (ALJ) Stevens granted party status to The Utility Reform Network (TURN). On June 14, ALJ Stevens granted party status to Small Business Utility Advocates (SBUA). On August 10, 2018, ALJ Stevens granted party status to Natural Resources Defense Council (NRDC). On August 14, 2018, ALJ Stevens granted party status to Megawatt Storage Farms, Inc. and Hydrostor Inc. On September 7, 2018, ALJ Stevens granted party status to Southern California Gas Company; ESS Tech, Inc.; National Fuel Cell Research Center; San Diego County Water Authority; and City of San Diego. On September 13, 2018, ALJ Stevens granted party status to California Hydrogen Business Council.

Pertaining to AB 2868 issues, SDG&E; PG&E; SCE; Cal Advocates; CUE; TURN; LS Power Development, LLC; SBUA; CESA; DACC/AReM; and CCA Parties filed and served opening briefs on October 05, 2018. On October 11, 2018, Green Power Institute filed and served reply briefs. On October 19, 2018, SDG&E; PG&E; SCE; Cal Advocates; LS Power; TURN; CUE; NRDC; SBUA; DACC/AReM and CCA Parties jointly; and CESA filed and served reply briefs on

October19, 2018.

1.1. SDG&E

SDG&E proposes programs and investments for up to 166.66 MW of distributed energy storage systems.

SDG&E proposes utility owned energy storage projects, both circuit and service level microgrid energy storage projects within the distribution grid, which provide multiple-use applications where possible, including microgrid islanding for selected critical public sector facilities. SDG&E additionally proposes a project evaluation and weighting methodology. SDG&E requests approval of a cost recovery mechanism in this application and the ability to seek contract approval through an Advice Letter process.

SDG&E also proposes a low-income customer program supporting behind the meter distributed energy storage systems, to be owned by third parties, including customers.

SDG&E proposes to recover $284.6 million over the span of 50 years, 2018-2068, as a revenue requirement.[2] SDG&E indicates that the life of the proposed projects are 20 years.[3]

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[2] Exhibit SDGE-08A at MW-1.

[3] Exhibit SDGE-06A at EB-8, EB-11, and EB-12.

1.2. PG&E

PG&E's proposed 2018 AB 2868 Storage Investments and Programs include four categories of distribution-connected storage investments. The four categories include (1) deploying energy storage in the North Bay to improve fire resilience, (2) supporting local capacity requirements, (3) support reliability for customers in low-income and disadvantaged communities, and (4) support transportation electrification. PG&E's proposal seeks approval of a cost recovery mechanism in this application and provides that as PG&E identifies any specific investment within a category, it will submit a Tier 3 advice letter to the Commission seeking approval to move forward with the identified investment, up to the 166.66 MW statutory cap.

PG&E indicates it has identified a near-term opportunity to improve resiliency with the North Bay Wildfire rebuilding efforts and is exploring the role that distributed energy storage can play in wildfire safety and resiliency.

For its front of the meter proposal, at this time PG&E is not proposing the procurement of specific projects at a specific cost, rather it is proposing a framework that would then allow it to conduct an RFO and propose future projects through an Advice Letter process.

PG&E's proposed 2018 AB 2868 Storage Investments and Programs also include one behind the meter storage program, for up to five MW of behind the meter thermal storage. PG&E requests Commission authority to spend up to approximately $6.4 million in connection with this program during the period from 2019 through 2025. PG&E's proposal provides that prior to moving forward with the program, PG&E will submit a Tier 3 advice letter with the Commission providing additional program details and seeking final approval to move forward with the program.

Finally, PG&E also proposes to be authorized to move forward with additional investments, beyond the categories of investments identified in this application, by filing a subsequent application for approval of additional categories of investments and programs, subject to PG&E's overall AB 2868 limit of 166.66 MW.

1.3. SCE

SCE proposes (1) investments in Local Energy Storage and Management System, which will place utility-owned energy storage at substations to assist with renewable integration; and (2) an incentive program for energy storage installed at multifamily affordable housing. SCE is requesting approval of cost recovery mechanisms in this application and approval of a $9,816,236 budget to implement its customer incentive program.

2. Issues Before the Commission

The scoping ruling identified the following issues:

- Should PG&E's, SCE's, and SDG&E's proposed AB 2868 Program and Investment plans be adopted?
- Are the program designs of the proposed AB 2868 plans reasonable and in the public interest?
- Do the proposed AB 2868 plans comply with D.17-04-039 and other Commission energy storage decisions?
- Do the proposed AB 2868 plans satisfy the Commission's direction that they incorporate proposals for programs and investments up to 166.66 MW of distributed energy storage into their 2018 energy storage procurement plans per D.17-04-039?
    - Do the proposed AB 2868 plans comply with the energy storage requirements set forth in Pub. Util. Code Sections 2838.2 and 2838.3? Including:
    - Do the plans ensure minimized overall costs, maximized overall benefits, result in ratepayer benefit,

and not unreasonably limit or impair the ability of non-utility enterprises to market and deploy energy storage systems?

- Do the plans prioritize programs and investments of distributed energy storage systems to public sector and low-income customers?
- Do the plans reduce dependence on petroleum, meet air quality standards, and reduce greenhouse gas emissions?
- Do the plans effectively incorporate the use of energy storage management systems?
- What is the appropriate procedural mechanism (Application or Tier 3 advice letter) for approval of investments that result from AB 2868 procurement?
- Is safety properly addressed in the utilities' plans for investments and programs? Will the utilities' proposed plans ensure safe and reliable delivery of energy to customers?
- Should the utilities' proposed cost recovery methodologies be approved?

3. Discussion and Analysis

3.1. Should SDG&E's, PG&E's, and SCE's proposed AB 2868 Program and Investment plans be adopted or modified?

Pub. Util. Code Section 2838.2(c)(1) states "The commission may approve, or modify and approve, programs and investments of an electrical corporation in distributed energy storage systems with appropriate energy storage management systems and reasonable mechanisms for cost recovery, if they are consistent with the requirements of this section and do not unreasonably limit or impair the ability of nonutility enterprises to market and deploy energy storage systems."

This section addresses the narrow question of whether the Commission should approve or modify and approve the portion of the Applications that

address the investor owned utilities' programs and investments pursuant to AB 2868. The Commission will address the more complex details of the Applications in other sections of this decision.

The three investor owned utilities, SDG&E, PG&E, and SCE assert that their respective proposed AB 2868 Programs and Investment Plans should be adopted without modification.

CUE asserts that SDG&E's plan should be approved as written. CUE recommends modifications that should be applied to PG&E and SCE's applications prior to approval.

CESA, SBUA, TURN, DACC/AReM, and the CCA parties asserts that there should be modifications applied to the Applications of all three investor owned utilities.

Cal Advocates recommends that the Commission deny the three Applications. In the event that the Commission does not deny the Applications, Cal Advocates makes recommendations for modification.

NRDC is supportive of a narrow aspect of PG&E's Application and remains silent on other aspects of these consolidated proceedings.

Considering the weight of the record supporting modifications to the Applications, in this Decision the Commission will direct modifications that are consistent with the record of these proceedings.

3.2. Are the program designs of the proposed AB 2868 plans reasonable and in the public interest?

3.2.1. SDG&E

SDG&E proposes to procure 100 MW of storage for seven circuit-level microgrid projects. SDG&E requests a cost cap for the 7 projects, which has an estimated revenue requirement of $284.6 million.[4]

SDG&E also proposes a three-year pilot program to deploy behind the meter storage at Expanded California Alternate Rates for Energy (CARE) facilities for a cost of approximately $2 million.

3.2.1.1. SDG&E's microgrid proposal, including the stakeholder and community involvement for site selection

SDG&E's proposes procurement, pursuant to AB 2868, of seven projects that island particular public sector facilities.[5] The proposed projects are sized to island the entire capacity of the circuit for which the facilities are connected. SDG&E explains this in its testimony:

> A typical SDG&E 12 kV distribution feeder is rated for 10 MW of capacity. In order to seamlessly island the predetermined microgrid load, the energy storage system must have the capability to briefly island the entire circuit while remote controlled distribution switches shed noncritical load. Therefore, an energy storage system with 10 MW of capacity was proposed.[6]

According to SDG&E, "All seven investments will focus on providing backup power capabilities by using microgrid design and technology to support public sector customers."[7]

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[4] SDG&E Application at 4.

[5] Exhibit SDGE-05A at Table SP-1, SP-3, and SP-4.

[6] Exhibit TURN-01 at 9.

[7] Exhibit SDGE-05A at SP-1.

The utility states that "[t]he primary use case for these projects is to provide backup power and enhance circuit resiliency to critical public-sector facilities and to prioritized locations in low-income communities."

SDG&E claims that storage investment will result in the following benefits:

- The ability to "island" critical public-sector facilities (including state facilities, hospitals, and fire stations) such that, if an outage occurs, the facilities will continue to have access to electricity;
- Help "integrate renewables," particularly solar energy;
- Reduce GHG emissions;
- Reduce dependence on petroleum by offsetting backup diesel generation; and
- Provide resource adequacy if the resource qualifies, as well as other market revenues.[8]

SDG&E proposes to construct the seven utility owned facilities through build-own-transfer agreements following a request for proposal (RFP) process. SDG&E indicated in its opening briefs that it issued a request for information (RFI) on February 12, 2018 and a subsequent RFP on April 6, 2018.[9] The description of benefits for each of the seven projects is very similar, despite varying locations of the storage device.

Name	Location	Project Size	Cost	Online Date
Kearny	San Diego, CA	30 MW, 40 MWh	Proposes Recovery of	December 31, 2019

[8] Exhibit SDGE-05A at SP-5 (island critical public-sector facilities); SP-6 (integrate renewables, reduce GHG emissions, reduce dependence on petroleum); SP-6 and SP-7 (resource adequacy).

[9] SDG&E Opening Brief on AB 2868 Issues at 79.

Melrose	Vista, CA	20 MW, 20 MWh	$284.6 million over the span of 50 years, 2018-2068.[10] Proposed life of projects is 20 years.[11]	December 31, 2019
Boulevard	Boulevard, CA	10 MW, 10 MWh		December 31, 2019
Paradise	Skyline, San Diego, CA	10 MW, 10 MWh		December 31, 2020
Clairemont	Clairemont, San Diego, CA	10 MW, 10 MWh		December 31, 2020
Elliot	Tierrasanta, San Diego, CA	10 MW, 10 MWh		December 31, 2020
Santee	Eastern San Diego County, CA	10 MW, 10 MWh		December 31, 2020

For all projects, SDG&E proposes the facilities will be able to participate in the California Independent System Operator (CAISO) market used to provide local resource adequacy to the extent these resources qualify for resource adequacy. SDG&E also expects CAISO participation to generate energy market revenues.

SDG&E also provided a proposed weighting methodology for the selection of investments pursuant to AB 2868.[12]

In SDG&E's proposal for future project selection, approximately 50% of the weighting is given to those attributes that align with the goals of AB 2868. These are reducing GHG emissions, reducing dependence on petroleum, and meeting air quality standards. Integrating renewables is included in the evaluation as it was stated as a guiding principal in D.14-10-045.[24] Approximately 20% of the weighting is given to the priority customers stated in AB 2868, namely public sector and

[10] Exhibit SDGE-08A at MW-1.

[11] Exhibit SDGE-06A at EB-8, EB-11, and EB-12.

[12] Exhibit SDGE-02 at SJ-23.

low-income. Approximately 30% of the weighting is given to attributes that maximize ratepayer benefits, namely the number of facilities served by the microgrid, whether the energy storage asset can participate in energy markets to generate revenues as a standalone asset, and whether the energy storage asset meets an RA/LCR need.

SDG&E requests Commission approval to seek future energy storage project approvals as projects meeting the goals of the statute are identified, some of which may filed as Tier 3 Advice Letter.

3.2.1.1.1. SDG&E's proposed Kearny project

The proposed Kearny circuit-level energy storage project is a proposed 30 MW, 40 MWh energy storage project located on SDG&E's Kearny Operations Center in San Diego, California. The Kearny energy storage project will be constructed on existing SDG&E land within the boundaries of an existing SDG&E Operations Center and adjacent to Kearny substation.

SDG&E proposes the project to have the capability to island multiple public-sector facilities including the City of San Diego Metropolitan Operations Center, Polinsky Children's Center, the California State Police and Border Division headquarters, and the County Office of Emergency Services & Sheriff, during a system disturbance, providing back-up power resiliency.

3.2.1.1.2. SDG&E's proposed Melrose project

The proposed Melrose circuit-level energy storage project is a 20 MW, 20 MWh energy storage project located in Vista, California. The Melrose energy storage project is proposed to be constructed on existing SDG&E land and will interconnect to Melrose substation.

SDG&E proposes that the Melrose facility will have the capability to island critical public-sector facilities including the Civic Center, Fire Station 6,

Vista Courthouse, Vista Library Cool Zone, Vista Detention Facility and San Diego County Sheriff's Department during a system disturbance, thus providing back-up power resiliency.

3.2.1.1.3. SDG&E's proposed Boulevard project

The proposed Boulevard circuit-level energy storage project is a 10 MW, 10 MWh energy storage project located in Boulevard, California. The Boulevard area is rural desert along the Mexican border near eastern San Diego County and is a designated low-income community. The Boulevard energy storage project is proposed to be constructed on existing SDG&E land and will interconnect at the Boulevard substation. The Boulevard facility is proposed to have the capability to island critical preselected load including the County Sheriff Department, San Diego County Fire Station, Boulevard Border Patrol Station, Campo Reservation Fire Station, and CAL Fire White Star during a system disturbance thus providing them back-up power resiliency.

3.2.1.1.4. SDG&E's proposed Paradise project

The proposed Paradise circuit-level energy storage project is a 10 MW, 10 MWh energy storage project located in Skyline, San Diego, California. Skyline is a hilly neighborhood in Southeastern San Diego and is a designated low-income community. The Paradise energy storage project is proposed to be constructed on existing SDG&E land and will interconnect at the Paradise substation. The Paradise facility is proposed to have the capability to island pre-determined load, including Fire Station 51 and South East Division Police department during a system disturbance thus providing back-up power resiliency.

3.2.1.1.5. SDG&E's proposed Clairemont project

The proposed Clairemont circuit-level energy storage project is a 10 MW,

10 MWh energy storage project located in Clairemont, San Diego, California. Clairemont is a community within the City of San Diego. The Clairemont energy storage project is proposed to be constructed on existing SDG&E land adjacent to Clairemont substation and will interconnect to one circuit at the Clairemont substation. The Clairemont facility will have the capability to island pre-determined load including Balboa Branch Library (Cool Zone) and Fire Station 36 during a system disturbance thus providing back-up power grid resiliency.

3.2.1.1.6. SDG&E's proposed Elliot project

The proposed Elliot circuit-level energy storage project is a 10 MW, 10 MWh energy storage system located in Tierrasanta, San Diego, California. Tierrasanta is a community in the northeastern part of San Diego. The Elliot energy storage project is proposed to be constructed on existing SDG&E land and will interconnect to the Elliot substation. The Elliot facility is proposed to have the capability to island predetermined load including Fire Station 39 and Tierrasanta Public Library during a system disturbance. Fire Station 39 serves Tierrasanta and the surrounding areas. The Tierrasanta Public Library is a designated cool zone.

3.2.1.1.7. SDG&E's proposed Santee project

The proposed Santee circuit-level energy storage project is a 10 MW, 10 MWh energy storage project located in Santee, California. Santee is located in eastern San Diego County. The Santee energy storage project is proposed to be constructed on existing SDG&E land and will interconnect at the Santee substation. The Santee facility is proposed to have the capability to island critical predetermined load including a City of Santee Fire Station and Padre Dam Northcote pump station during a system disturbance thus providing back-up power resiliency.

3.2.1.2. Party positions of the microgrid proposal and weighting methodology

TURN argues that SDG&E's approach is unreasonable.

TURN recommends that the Commission limit the size of SDG&E's microgrid projects to the size necessary to serve the peak load of the critical facilities for one hour of backup, plus an additional 25% of capacity for any incidental load. TURN also proposes a cost cap for these projects, presented in TURN's confidential testimony, which is based on this sizing and a lower cost per MWh, as explained below.

TURN asserts first that the entire circuit does not need to be islanded in order to provide backup for specific facilities.[13] TURN believes that SDG&E should have sought to island only the portion of the circuit related to the facilities which it has deemed critical. TURN's testimony indicated that "even if one assumes, conservatively, that the storage facility should be capable of islanding the peak load of each circuit, SDG&E could procure around one-half of the storage it has proposed.[14]

TURN asserts that SDG&E has failed to demonstrate the reasonableness of sizing the system to island the entire circuit, rather than just the "critical" facility load. TURN argues its examination of the critical facility peak loads compared with the size of SDG&E's proposed storage system demonstrates how excessive it would be to adopt SDG&E's proposal.

TURN also indicates it believes the cost cap SDG&E is proposing appears high. TURN evaluated the reasonableness of SDG&E's cost cap by comparing SDG&E's dollar per MW and MWh cost cap to a recent Energy Information Administration (EIA) report containing average cost for medium-duration systems

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[13] Exhibit TURN-01 at 9.

[14] Exhibit TURN-01 at 9.

(.5 hour – 2 hour). The average cost per MWh shown by EIA is $1,350,000.[15] TURN cautions EIA's estimates are likely conservative (high) for two reasons – 1) battery costs can be expected to decline by 2019 or 2020, when SDG&E will procure storage which is not factored into these estimates; and 2) SDG&E should be able to procure storage towards the lower end of the range (rather than the average) if it procures the storage in a competitive solicitation. SBUA indicates that it believes SDG&E has provided detailed proposals that are fundamentally ill-conceived.[16] SBUA indicates it is in concurrence with other parties including Cal Advocates, TURN, and LS Power, in arguing that SDG&E has little to prove that their programs are cost effective or are the preferable method for it to maximize benefits and minimize costs.[17]

SBUA notes that SDG&E indicates that its projects do not need to be cost effective and that the burden of proof is, instead, "minimize overall costs and maximize overall benefits."[18] SBUA argues that even beyond the validity of SDG&E's argument about cost effectiveness, the utility meets neither standard. SBUA indicates it seems inconceivable that SDG&E can be minimizing costs when it oversized its substation storage projects by orders of magnitude.

LS Power indicates that SDG&E's refusal to consider nonutility ownership of storage projects impairs fair competition.[19] LS Power argues that SDG&E's arbitrary prohibition of independent ownership of AB 2868 facilities by definition

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[15] Exhibit TURN-01 at 14.

[16] SBUA Reply Rrief on AB 2868 Issues at 9.

[17] SBUA Reply Brief on AB 2868 Issues at 9.

[18] SDG&E Opening Brief on AB 2868 Issues at 25.

[19] LS Power Opening Brief on AB 2868 Issues at 1.

excludes storage providers from competing to provide, from their own storage facilities, the critical facility and other storage services that SDG&E reserves for its utility owned projects. LS Power asserts that by eliminating nonutility-owned projects from the AB 2868 program, SDG&E defies AB 2868's instruction that its storage programs are not supposed to "unreasonably impair or limit the ability of nonutility enterprises to market and deploy energy storage systems." LS Power asserts that many nonutility storage developers' business models include ownership and operation of storage projects. LS Power suggests that by eliminating the possibility of other parties' ownership, SDG&E eliminates a significant proportion of the experienced developers and operators of storage projects.

LS Power goes further and indicates that its Vista project, a non-utility owned project, could provide the same benefit that SDG&E is claiming from the Melrose project. LS Power indicates "The Vista project can provide all the services SDG&E claims for its proposed Melrose project and additional wholesale market and reliability benefits. All that the Vista project lacks is an opportunity to compete fairly to provide the resiliency benefits to the identified public facilities, to SDG&E's customers, and to the larger CAISO grid."[20] LS Power draws the conclusion that SDG&E does not need to own all of the energy storage projects to achieve the same benefit, and potentially greater benefit, from non-utility energy storage providers.

[20] Exhibit LS-01 at 6-7.

CESA does not support the adoption of SDG&E's proposed program and investment plans without modifications to allow for competition by third party owned energy storage systems.[21]

Cal Advocates asserts that SDG&E's proposed microgrid projects are not cost effective and therefore, should be denied.[22] Cal Advocates urges that SDG&E failed to demonstrate that its proposed projects will result in ratepayer benefits because its proposed project benefits are uncertain and may not sufficiently offset its proposed microgrid projects' net present value.[23] Cal Advocates concludes that the proposed microgrids are not cost effective and SDG&E's evaluation methodology is unreasonable. Cal Advocates notes that the burden of proof rests with SDG&E to affirmatively show that their requests to recover funds from ratepayers are just and reasonable, and compliant with applicable law, such as the Commission's decisions governing energy storage.

Cal Advocates indicates that its position is that SDG&E has not met the burden that these proposed microgrid projects are reasonable.

Regarding SDG&E's proposed weighting methodology, CESA indicated it had no issue with the proposed statutory weighting approach.

3.2.1.3. Commission Determination on SDG&E's microgrid proposal

SDG&E may move forward with an RFO for the identified projects, provided it adheres to the guidelines set in Appendix A.

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[21] CESA Opening Brief on AB 2868 Issues at 3.

[22] Exhibit ORA-03 at 3-4.

[23] Exhibit ORA-03 at 6.

SDG&E has identified specific circuits on its system that may benefit from microgrid capabilities with energy storage acting as a backup in the event of the loss of service. SDG&E has identified specific public sector entities that may benefit from this heightened reliability. SDG&E is asking the Commission to provide authority for rate recovery from the assets it will select through a solicitation for build-own-transfer assets.

We are compelled by the intervenor positions that SDG&E's requests do not meet the threshold necessary for the Commission to make a reasonableness determination. In turn, the Commission does not grant rate recovery for the requested utility owned projects at the seven proposed project sites. However, SDG&E may propose rate recovery as a part of a follow up Application that conforms to Appendix A. SDG&E is encouraged to submit an Application for rate recovery for projects that conform to the guidelines provided in Appendix A no later than December 31, 2019.

We agree with Cal Advocates that that SDG&E has not met its burden to demonstrate that its proposed microgrid projects are reasonable.

SBUA also made a compelling showing that SDG&E's proposal to forego a cost effectiveness showing for these projects is not reasonable.

TURN also provided sufficient evidence to bring into question the reasonableness of the sizing of the energy storage projects; this is especially concerning as the proposed projects are solely utility owned projects.

LS Power also made a significant showing that casts doubt onto the necessity or reasonableness of SDG&E limiting this RFO to utility owned projects only. LS Power went as far to identify an existing third party owned project that appears to be able to provide the same benefit stream that one of SD&E's proposed utility owned projects would provide.

We are compelled by LS Power's analysis that it would be unreasonable for SDG&E to restrict the RFO to only utility owned projects or to projects located on utility owned property.

CESA also urged the Commission not to ignore the potential for third party storage providers to have the opportunity to provide greater value than the narrow set of utility owned projects proposed by SDG&E.

The guidelines that the Commission has set forth in Appendix A address the concerns of the parties. With a transparent and open RFO process that allows third party and utility owned projects to compete side by side, the concerns about the utility limiting the procurement to only utility owned resources is addressed. Further, parties introduced concern about the reasonableness of the cost and sizing of the proposed projects. SDG&E must make a reasonableness showing that the projects are cost effective at the time that SDG&E submits the contracts to the Commission for approval.

SDG&E indicated it has already held an RFP, on April 6, 2018, for utility owned projects that it is seeking approval for pursuant to AB 2868. This RFP does not likely adhere to the direction provided by the Commission in this decision, including Appendix A. In order to conserve resources, it would be unreasonable to require the participants of SDG&E's initial AB 2868 RFP to participate in a secondary RFP that adheres to this decision. Therefore, SDG&E may continue to consider the results of its initial RFP in conjunction with a future RFP that adheres to the guidance put forth in this decision. The results of these combined RFPs are not deemed reasonable by this Decision, however, SDG&E may use these combined results in a future Application it may submit with the Commission seeking approval of the projects.

Regarding SDG&E's proposed statutory weighting methodology, SDG&E set forth its reasoning and a fair approach to developing quantitative approaches to evaluate numerous qualitative values. For future Applications for contract approval, SDG&E may use this methodology to justify the reasonableness of its proposal so long as they also comply with this decision, including Appendix A, and any other statutory requirements of AB 2868.

3.2.1.4. SDG&E's proposed behind the meter storage for expanded CARE facilities

SDG&E proposes a $2 million, three-year pilot program designed to provide incentives for the purchase, installation and ongoing maintenance of up to 2 MW of energy storage to Expanded CARE facilities. One of the primary purposes of the program is to permanently shift load during peak periods.

Expanded CARE facilities include transitional housing (drug rehabilitation, half-way houses), short or long-term care facilities (hospice, nursing homes, children's and seniors' homes), group homes for physically or mentally disabled persons, or other nonprofit group living facilities. SDG&E indicates its proposed pilot program is designed to complement and serve participants of the California Solar Initiative (CSI) Multifamily Affordable Solar Housing (MASH) program and Solar on Multifamily Affordable Housing (SOMAH) program. SDG&E asserts that its proposed incentive would accelerate energy storage deployment at these Expanded CARE facilities. SDG&E requests Commission approval of a $2 million budget with a $75,000 per project cap for up to 2 MW.

The following is a summary of SDG&E's proposed pilot program:

- SDG&E proposes an incentive of $1.20/Watt hour to accelerate energy storage deployment at Expanded CARE facilities. The incentive will be capped at $75,000 or eligible costs consistent with Self Generation Incentive Program (SGIP), whichever is less, per facility to address the up-front costs of installation labor as well as the ongoing maintenance of the energy storage system for 10 years;
- SDG&E proposes a $2 million budget for the three-year pilot program for up to 10 MW. Under this budget, approximately 24 Expanded CARE facilities could participate; and
- SDG&E anticipates issuing a solicitation to identify a third-party implementer to administer a turnkey solution for this pilot program.

There are 683 Expanded CARE accounts in SDG&E's service area consisting of more than 100 unique customers. Of the 683 accounts, 14 are in Orange County and 669 are in San Diego County; 285 are in the inland and mountain climate zones, and more than 80 are in disadvantaged communities as defined by CalEnviroScreen's 25% most affected census tracts statewide.

To be eligible for the pilot program, SDG&E proposes the following criteria to minimize the burden on ratepayers and ensure that funds are maximized:

- Must be able to pair energy storage with an existing or new solar system;
- For new solar installations, must be a participant in MASH or SOMAH, which requires an energy efficiency audit, tenant notifications regarding the Energy Savings Assistance Program, allocation of bill credits to tenants, and adherence to the low-income rental definition in Pub Util. Code § 2852; and
- Must take service under TOU rate for common areas.

The distribution between incentive and non-incentive budget for the pilot program is proposed at 87.2% and 12.8% respectively, allocating $1,745,000 for incentives and $255,000 for administration, marketing and workforce education and training. SDG&E asserts the proposed administration cap of 10% of the budget is consistent with the administrative cap used in other proceedings such as energy efficiency.

3.2.1.4.1. Party Positions on SDG&E's proposed behind the meter storage for expanded CARE facilities

TURN indicated that it did not closely evaluate SDG&E's behind the meter proposal, although TURN indicated it supports SDG&E's intent to provide low-income facilities with backup power, if needed and beneficial to these participants.[24]

TURN does suggest that in order to decrease costs to ratepayers and provide for a more cost effective program design, the utilities should leverage funds from project participants (where applicable).[25]

TURN notes that the Commission has in other contexts required participant contributions, or assumed they will be required by the utility, particularly where a direct project participant stands to gain from ratepayer investment. For example, in a recent decision on electric vehicle (EV) infrastructure for medium-heavy duty vehicles, the Commission recognized the importance of participant contribution and directed that that all participants pay for a portion or all of the charging station cost:

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[24] Exhibit TURN-01 at 8.

[25] TURN Opening Brief on AB 2868 Issues at 10.

> To address these concerns, we direct PG&E and SCE to develop a rebate amount [for the charging station] […] not to exceed 50 percent of EVSE [Electric Vehicle Supply Equipment] costs, to apply to participants in DACs [disadvantaged communities].[26]

While SBUA does not respond directly to the economics of SDG&E's behind the meter proposal, it does suggest that energy storage sited closer to customer load provides more benefits than energy storage sited at the substation. Indeed, SBUA suggests the Commission should direct the IOUs to procure more customer sited storage.

3.2.1.4.2. Commission determination on SDG&E's proposed behind the meter storage for expanded CARE facilities

Parties do not significantly support nor reject this program, and upon closer evaluation it is clear that there is major overlap between this proposal and existing programs.

SDG&E's proposed program is very similar to the Commission's implementation of SGIP, and it is not apparent where there is different or unique value developed beyond existing programs.

The Commission has actively considered the development of, and has implemented, low-income incentives in SGIP through the SGIP Equity Budget. Rulemaking 12-11-005 developed a robust record regarding what is appropriate for the eligibility and incentive level for low-income participants in customer owned behind the meter energy storage. It is unreasonable to implement an additional program that differs narrowly from existing programs that the Commission developed through a holistic and complex stakeholder process.

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[26] D.18-05-040 at 95.

Implementing a mirror program so similar to SGIP with slightly different funding levels and eligibility criteria will pose an unreasonable administrative burden on both SDG&E and the Commission for oversight of the program.

SDG&E is welcome to propose additional customer sided programs pursuant to AB 2868, and is encouraged to do so expeditiously, but in doing so it must clearly differentiate the program from SGIP and additionally make a reasonable showing that the program, as developed, meets the criteria of AB 2868. The proposed program is not differentiated enough.

SDG&E's behind the meter program is not approved.

3.2.2. PG&E

PG&E provides an outline of storage investments it wishes to make pursuant to AB 2868. PG&E's proposed front of the meter investments include utility-owned storage to support

1. customer and community resiliency,
2. local capacity requirements,
3. system reliability, and
4. transportation electrification.

PG&E's proposed behind the meter program focuses on thermal storage. PG&E seeks authorization in this proceeding for up to the 166.66 MW limit for front of the meter investments and up to 5 MW for the behind the meter thermal storage program.

3.2.2.1. PG&E's Front of the Meter Energy Storage Investment proposal

PG&E is not proposing the procurement of specific projects at a specific cost, rather it is proposing a framework that would then allow it to conduct an RFO and propose future utility owned projects through an Advice Letter process.

PG&E's proposal provides that as PG&E identifies any specific investment within a category, it will submit a Tier 3 advice letter to the Commission seeking approval to move forward with the identified investment, up to the 166.66 MW statutory cap.

PG&E explains that its community resiliency proposal prioritizes investing in distribution-connected energy storage to support the reliability and resiliency needs of public-sector customers with critical operations that require a degree of electrical reliability higher than standard PG&E service.[27] PG&E proposes that these customers, consisting of entities such as military base installations, correctional facilities and public transportation stations, require enhanced reliability in the undertaking of their missions of national defense, public safety and/or public transportation.

PG&E proposes to support local capacity requirements (LCR) by prioritizing investments in distribution-connected energy storage located at PG&E substations or on existing PG&E land holdings. PG&E proposes that the energy storage asset could be utilized in lieu of other traditional investments to provide local capacity. The energy storage asset could also be utilized to limit the dependency on existing, older, or less efficient local area generating resources.[28]

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[27] Exhibit PGE-03 at 3-1.

[28] Exhibit PGE-03 at 4-2.

PG&E explains that its system reliability proposal will prioritize investments in distribution-connected energy storage resources to support and improve the reliability of its distribution grid.[29] The primary goal of this initiative is to improve the reliability of distribution service that PG&E provides to its customers by installing distribution-connected energy storage to enhance the reliability of distribution circuits that are served by transmission lines with historically low reliability ratings. PG&E explains that its Electric Vehicle Storage (EV-Storage) proposal will "prioritize investments in distribution-connected energy storage that more efficiently and effectively serve customers seeking to connect large loads of electric vehicle (EV) charging."[30] PG&E requests authorization "to consider front of the meter energy storage as an alternative to defer more complicated, expensive, or time-intensive traditional distribution capacity upgrades that may be triggered by large vehicle charging loads … potentially avoiding the need for multiple system upgrades."

3.2.2.2. Party Positions on PG&E's Front of the Meter Energy Storage Investment proposal

TURN asserts that PG&E did not provide sufficient information to substantiate proper evaluation of PG&E's proposal.

> There are no cost estimates, no specific site locations, no projection of benefits or impacts. While vague descriptions and buzzwords like "resiliency" abound, whether these projects will result in any tangible benefits is impossible to tell. The passage of AB 2868 should not be used by the utilities

[29] Exhibit PGE-03 at 5-1.

[30] Exhibit PGE-03 at 6-1.

> as an excuse for a lower level of detail and review than for any other investment.[31]

TURN also notes that "SDG&E and SCE managed to provide at least a minimum level of detail with which parties may be able to provide recommendations," while PG&E's showing does not meet a minimum standard for stakeholder review.

TURN recommends that the Commission direct PG&E to re-submit its AB 2868 application with specific site locations, costs, revenue requirement, and projections of benefits.

Regarding PG&E's EV proposal, TURN asserts that these storage projects "are for capacity upgrades that can already be funded through utility GRCs."[32] In rebuttal testimony, PG&E dismisses TURN's concern as "irrelevant to the eligibility of storage projects under AB 2868 that support transportation electrification," and points to Commission decisions funding transportation electrification projects outside of GRCs. TURN asserts that PG&E appears to misunderstand TURN's concerns about potential overlap with GRC capacity upgrade funding. TURN did not suggest that such projects should be categorically ineligible for AB 2868. Instead, TURN recommended that PG&E "provide an explanation and supporting evidence of how funding for the storage projects does not overlap or result in double-funding with GRC funding of capacity upgrades."

TURN takes issue with PG&E's suggestion that the EV-Storage investments would result in "GHG benefits" and "reduce dependence on petroleum." TURN asserts that "the capacity investment itself may have nothing to do with actual

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[31] Exhibit TURN-01 at 23.

[32] Exhibit TURN-01 at 24.

EV adoption, which does provide GHG benefits and reduce petroleum usage."

TURN asserts that the Commission has the discretion to determine whether to "approve or modify and approve" a utility's proposed AB 2868 "programs and investments" that are consistent with the requirements of AB 2868. The Commission is not required to approve such proposals. Indeed, the statute sets a cap on capacity at 500 MW but not a floor.[33] PG&E's showing includes a "mapping" of the statutory criteria to the EV-Storage proposal, in which PG&E asserts that these projects would reduce dependence on petroleum and reduce GHG emissions. Yet TURN notes that those benefits are associated with actual EV adoption, rather than the capacity investments. PG&E may be able to substantiate its claims once particular projects are more developed, but it has not done so in this proceeding. Accordingly, TURN recommends that the Commission should direct PG&E to provide evidence that its EV-Storage investments will cause reduced GHG emissions and reduced dependence on petroleum, if PG&E continues to assert those AB 2868 benefits when it updates its AB 2868 application. This information is relevant both to the consistency of PG&E's proposal with the requirements of AB 2868 and to whether the Commission should ultimately approve it as an AB 2868 project.

Cal Advocates argues that the Commission should reject PG&E's proposed front of the meter investment proposal because it is unreasonably vague in terms of project identification and evaluation. Cal Advocates asserts that the proposal only provides a vague outline of future procurement that does not provide detailed information or analyses. Cal Advocates notes that PG&E states that it has

[33] Pub. Util. Code Section 2838.2(c)(1).

identified a number of potential investments, yet does not describe these opportunities or discuss their possible costs and benefits.[34] Cal Advocates indicates that without sufficient information, the Commission has no ability to assess the reasonableness of a utility's application. Cal Advocates concludes that the Commission should deny PG&E's front of the meter investment proposal.

CESA recommends that "[m]ore detail is also needed on PG&E's proposal for further stakeholder review prior to adoption."[35]

3.2.2.3. Commission Determination on PG&E's Front of the Meter Energy Storage Investment proposal

We agree with CESA, Cal Advocates and TURN that PG&E's proposal is not sufficiently detailed to determine that it is reasonable. We agree with TURN that the passage of AB 2868 should not be used by the utilities as an excuse for a lower level of detail and review than for any other investment. TURN correctly points out an obvious missing aspects of PG&E's Application includes specific site locations, costs, revenue requirement, and projections of benefits. Additionally, PG&E has not made a sufficient showing that there is a public interest in limiting the procurement to utility owned projects, explicitly excluding third party owned projects.

This program, as proposed by PG&E, is not authorized. As with SDG&E, we are concerned that PG&E is only proposing that projects be located on utility owned property, foregoing potential higher value projects that are located at other parts of its circuit. PG&E may not move forward with its AB 2868 Storage Investments and Programs by filing Tier 3 advice letters as it proposed, nor is

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[34] Exhibit ORA-02 at 2-3 and 2-4.

[35] CESA Opening Brief on AB 2868 Issues at 3.

PG&E authorized to recover the costs of its proposed front of the meter proposal using its proposed ratemaking mechanisms.

In Appendix A of this decision we detail how the IOUs should propose specific projects to be approved pursuant to AB 2868.

PG&E may move forward with an RFO for projects that provide aspects of the values it proposes in this front of the meter program, and the Commission will consider the approval of specific contracts and the resulting rate recovery with the lens of the direction provided in Appendix A.

3.2.2.4. PG&E's Behind the Meter Program proposal

PG&E proposes a behind-the-meter thermal storage program with a goal to reduce peak load by up to 5 megawatts by 2025 using smart electric water heaters and/or smart control devices.[36] This program will provide incentives to customers to replace existing propane-based and electric resistance water heaters with hybrid heat pump water heaters in single family homes, multi-family homes, and small businesses, as well as incentives for digital communication controls and provide a pay-for-performance incentive to operate electric water heaters during off-peak hours (late evening, early morning and afternoon) and complement TOU tariffs. This load shift program will encourage participants to reduce or eliminate hot water heater load during peak evening hours, effectively storing energy and using it to provide hot water when there is increased congestion on the grid.

PG&E proposes that this program will target the following sets of customers:

[36] Exhibit PGE-03 at 7-1.

- Customers with electric resistance water heaters in low-income communities where a heat pump water heater digital communication platform and pay for performance incentive could reduce bills;
- Customers across the service territory with electric resistance water heaters where a digital communication platform and pay for performance incentive could reduce bills and shift load to off-peak periods;
- Customers in low-income communities with propane water heaters, where a heat pump water heater and pay for performance incentive could reduce site GHG emissions and overall energy costs; and
- Customers in low-income communities with propane water heaters in the San Joaquin Valley, via PG&E's proposed electrification pilots in response to the California Public Utilities Commission's (CPUC or Commission) Order Instituting Rulemaking (OIR) 15-03-010.

PG&E anticipates that a customer with one water heater in a single-family home will be able to realize a 0.5-0.8 kilowatt (kW) reduction in demand, and a 50-200 kWh reduction in energy annually, depending on incumbent fuel type.

PG&E will offer multiple options for customers to participate in this program and will require that customers joining the program be on the residential TOU rate that is being rolled out in 2019.

The options are as follows:

Option 1: Monetary pay-for-performance incentive to replace aging electric resistance or propane water heaters with smart heat pump water heaters and provide thermal storage, limiting water heating to off-peak hours, reducing or eliminating water heating during peak hours.

Option 2: Monetary pay-for-performance incentive to add control and communication equipment to existing electric water heaters to provide thermal

storage, limiting water heating to off-peak hours, reducing or eliminating water heating during peak hours.

PG&E will target low-income customers for this program who live in disadvantaged communities according to CalEnviroScreen 3.0, particularly those who are known to have propane water heaters. For those with electric resistance water heaters, PG&E will consider the entire electric service territory.

PG&E proposes that the administrators of this behind the meter thermal storage program will work closely with those administering the San Joaquin Valley pilots and the behind the meter thermal storage program is scaled to ensure customers who are fuel-switching under the San Joaquin pilots will also have the opportunity to enroll in this thermal storage program. This is particularly timely because the customers participating in the San Joaquin Valley program will have an appropriately upgraded panel, circuitry and wiring to accommodate a heat pump water heater.

The total proposed cost of the program is $6,316,996.

3.2.2.5. Party positions of PG&E's Behind the Meter Program proposal

NRDC strongly supports PG&E's proposed behind the meter thermal energy storage program. NRDC advocates that PG&E's behind the meter thermal storage program is aligned with the intent of AB 2868 and will deploy a technology in the California market that may be a vital tool to both reduce greenhouse gas emissions from buildings and to integrate renewable energy into the electric grid at lower cost by providing a flexible and affordable thermal storage resource.

Cal Advocates advocates that the Commission should not "conclude that water heaters with digital controls, as proposed in PG&E's AB 2868 Application,

are energy storage."[37] Cal Advocates indicates that water heaters with digital controls are analogous to V1G electric vehicles in that the benefit derived from the controlled heating is for the sole purpose of heating an individual customer's water at a later time.

NRDC opposes the position of Cal Advocates that PG&E's behind the meter thermal storage program proposal is not "energy storage," and urges the Commission to approve this investment proposal, which could lower costs borne by utility customers while also advancing the state's critical building decarbonization goals.

NRDC strongly opposes Cal Advocates' argument that the benefit derived "from the controlled heating is for the sole purpose of heating an individual customer's water at a later time."[38] NRDC argues that this is a gross oversimplification and ignores the potential benefits to all customers that can be gained from leveraging the energy storage inherent in grid-enabled electric water heaters. NRDC advocates that when smart water heaters reduce system peaks, enable renewable electricity integration, and help maintain grid stability, these benefits are shared by all customers in the form of reduced electric bills, and do not solely benefit the individual customer.

CESA disagrees with Cal Advocates, indicating its position that heat pump water heaters are eligible energy storage systems as defined by statute and past Commission decisions. CESA asserts that PG&E correctly notes that eligible energy storage systems must be capable of load shifting over time.

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[37] Public Advocates Office Opening Brief on AB 2868 Issues at 13.

[38] Public Advocates Office Opening Brief on AB 2868 Issues at 13.

CESA notes that further clarity was provided in subsequent Commission decisions that established that energy being absorbed or later discharged must be electrical or some other man-made process,[39] the energy storage function is not the direct load response itself, and the energy storage function should affect the state of the grid (*i.e.,* eliminating off-grid uses). CESA argues that heat pump water heaters meet the energy storage definition – *i.e.*, they store grid-supplied, man-made electricity, they have a separate storage medium (tank) from the end-use load (*e.g.,* cooking, cleaning, bathing, space heating), and they avoid electricity at a later time. CESA notes that thermal storage has already been approved and counted toward AB 2514 procurement targets as an eligible energy storage technology in SCE's 2013 Local Capacity Requirements (LCR) RFO, where ice storage systems were selected for many of the same reasons.

Contrary to Cal Advocates, SBUA recommends that the Commission approve PG&E's proposed behind the meter thermal energy storage program with only minor modifications.[40] SBUA requests that the Commission require that PG&E set aside a budget and specific outreach plan for small commercial customers in any approval of the utility's smart water heating pilot.

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[39] D.14-10-045 at 62.

[40] SBUA Opening Brief on AB 2868 Issues at 4.

3.2.2.6. Commission Determination on PG&E's Behind the Meter Program proposal

NRDC and CESA's analysis compellingly supports heat pump hot water heating thermal storage as a viable behind the meter option for energy storage. Considering that Pub. Util. Code Section 2835 explicitly defines the use of thermal storage for both "heating or cooling," it would contradict the governing law to exclude this form of storage.

PG&E has recognized the benefits that heat pump water heaters can provide, and the behind the meter thermal storage program that PG&E proposes is approved. PG&E's proposal brings unique value to customers that want to engage with behind the meter energy storage, within the guidance of AB 2868.

For these reasons, PG&E is authorized to move forward to spend up to approximately $6.4 Million in connection with PG&E's proposed behind the meter thermal storage program during the period from 2019 to 2025, subject to filing a subsequent Tier 3 advice letter for final approval of PG&E's program, and subject to a program cap of 5 MW. PG&E is directed to file the Tier 3 advice letter by September 30, 2019.

The Commission is not adopting a carve out for small businesses as advocated by SBUA. AB 2868 did not call out specific requirements for small businesses to receive a portion of the capacity authorized in this statute. However, PG&E, and the other IOUs, are welcome to work with SBUA and other stakeholders to develop programs that deploy energy storage projects for small businesses provided the programs meet the requirements of law and Commission decision.

3.2.3. SCE

SCE proposes two types of storage investments pursuant to AB 2868: 1) a local energy storage and management system proposal for facilities to be installed on circuits with low load factors, and 2) a rebate program for low-income MASH/SOMAH participants to purchase storage along with existing solar installations.

3.2.3.1. SCE's Local Energy Storage and Management System proposal

SCE proposes to launch an RFP for approximately 40 MW of utility-owned Local Energy Storage and Management Systems on its distribution system. SCE proposes that the energy storage be installed on sites where the systems will be available to assist in the integration of renewable resources at this time and may provide grid resiliency support at the local level in the future. The selected circuits currently have low load factors and are forecasted to have high levels of renewable generation. SCE proposes that initially the energy storage will be providing system renewable integration support by participating in the energy and ancillary services (AS) markets. By participating in energy and AS markets, SCE proposes that these energy storage resources will be able to provide system ramping support and/or over generation support depending on market conditions. SCE notes that the facilities will also be available to provide system and flexible RA. This will allow SCE to gain experience in how an energy storage system participating in the CAISO market can also support local renewable integration and distribution needs. SCE claims that to reduce overall cost, it will issue an RFP for the design, build, and transfer of turnkey energy storage systems that meet SCE's specifications. These systems will consist of an energy management system, a battery energy storage system, and associated integration infrastructure.

SCE indicates it employed load-factor research to identify candidate substations that could benefit from the deployment of energy storage to support renewable integration at the local level. SCE provided analysis that determined the substations with low monthly and yearly load factors and then screened these candidate sites for locations with currently deployed renewable resources and forecasted potential for increasing levels of such resources. SCE used the resulting information to prioritize locations with high levels of customers on California Alternate Rates for Energy (CARE) (as a proxy for low-income), relative to other candidate sites, as well as those located in Disadvantaged Communities.

The load factor proposal does not have a budget nor cost estimate, but SCE indicates that the facilities would all be utility-owned.

3.2.3.2. Party positions on the Local Energy Storage and Management System Proposal

CESA does not support adoption of SCE's proposed program and investment plans without modifications to allow for the competition of third party owned energy storage systems.[41]

TURN takes issue with some lacking detail in SCE's Application. As TURN indicates, SCE does not know exactly where it will install its proposed Local Energy Storage and Management Systems projects because it must conduct additional analysis at the tentative sites to verify their suitability.[42]

In TURN's testimony, it speaks to the value of procuring energy storage to increase a circuit's load factor.

> In general, the notion of procuring storage primarily to increase load factors and hosting capacity of circuits is likely of limited

[41] CESA Opening Brief on AB 2868 Issues at 3.

[42] SCE Opening Brief on AB 2868 Issues at 7.

> value. To the extent that a circuit requires greater hosting capacity, this may be funded through the utility's General Rate Case (GRC). Increasing the load factor of a circuit does not necessarily provide a benefit to customers, though reducing circuit peak may help avoid capacity upgrades (also funded in utility GRCs). Increasing system load factor may be beneficial (depending on the cost) but SCE's Local Energy Storage and Management Systems projects are targeted to the circuit-level, which a) may not be coincident with system peak and b) will likely have a limited impact at the system level. Regarding the general market benefits of storage, these may be true of any storage asset that bids into CAISO day-ahead markets. If the storage is needed or sufficiently economic, it will be built by third party developers. If the Commission sees an actual need for more storage to integrate renewables, it can order this procurement by comparing all resources in an integrated fashion in the IRP proceeding. These benefits have nothing to do with the primary reason for SCE's proposed procurement, increasing the load factor of certain circuits.[43]

TURN notes the fact that there may be a significant number of CARE customers or a certain area is relatively "disadvantaged" does not mean those customers will receive any significant benefit from the system. TURN indicated that SCE has provided no evidence that circuits with low load factors experience worse reliability. Further, any GHG or reduced criteria pollutants would not necessarily accrue to the specific area the storage is located in. TURN notes that SCE's vague claim that the storage may provide "backup power" is unsubstantiated and is unlikely to be significant, though a circuit-level analysis would be required to determine the number of minutes the storage asset could provide any kind of backup power, which SCE has not provided.

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[43] Exhibit TURN-01 at 20-21.

Despite these significant shortcomings in SCE's Local Energy Storage and Management Systems proposal, TURN believes that investments can be targeted to particular circuits with the greatest need, which would be those meeting the following two criteria:

- The circuit would require a hosting capacity or other type of utility upgrade (*e.g.* capacity) in the next 3 years that can be resolved or deferred by the storage facility; and
- There is a tangible reliability benefit to the customers connected to the circuit/substation due to the operation of the storage asset.[44]

TURN recommends the Commission approve 12 MW of circuit-level investment for circuits that meet the above general criteria. TURN indicates this targeted 12 MW authorization will support the statutory objective of accelerating the deployment of distributed energy storage systems that meet the statutory criteria (*e.g.,* achieving ratepayer benefits), while maximizing benefits and minimizing costs. TURN indicates an authorization of this amount will also allow the 4 MW MASH/SOMAH program to go forward at the size proposed by SCE without running afoul of AB 2868's requirement that behind the meter systems not exceed 25 percent of the approved capacity for programs and investments.

TURN notes that to the extent that SCE desires to implement additional load factor projects, beyond the 12 MW authorization, the Commission should require SCE to demonstrate project cost effectiveness in its request for approval. TURN recommends this requirement as a ratepayer protection because SCE's showing that Local Energy Storage and Management Systems projects actually result in "ratepayer benefits" is extremely weak.

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[44] Exhibit TURN-01 at 21.

In rebuttal testimony, SCE opposes any limit on Local Energy Storage and Management Systems projects and warns that ratepayers could be harmed by TURN's cost effectiveness proposal. SCE particularly takes issue with TURN's proposal that cost effectiveness be measured quantitatively on a net present value basis, whereas SCE proposes to use the Least-Cost-Best-Fit (LCBF) methodology to assess offers received through an RFP.

SBUA takes issues with SCE's Local Energy Storage and Management Systems proposal. SBUA indicates that SCE's touted benefits use word like "can" and "could." SBUA notes the benefits SCE touts are entirely speculative, however, because SCE does not make any commitments to operate Local Energy Storage and Management Systems in any particular way. SBUA agrees that storage could be used to do all of the things SCE notes. SCE has not, however, said if it intends to use Local Energy Storage and Management Systems to do any of these things. As SBUA notes, all that SCE says that it will do is operate in the CAISO markets.[45]

SBUA notes that this gap between technical potential of energy storage and proposed dispatch of storage is the fundamental shortcoming of the SCE proposal. SBUA asserts that SCE cannot know if its Local Energy Storage and Management Systems proposal will maximize benefits and minimize costs when it does not even provide a comprehensive list of how it intends to use its storage resources. SBUA notes SCE does not explore whether utility owned resources located closer to load (on distribution circuits for example) would provide additional benefits, or if third-party ownership would be lower cost. SCE does not provide any costs at all. Instead it says it will pursue its plan using a LCBF methodology. That may lead to

[45] SCE Opening Brief on AB 2868 Issues at 7.

the selection of projects meeting the proscribed goals with the highest NPV – it may not, however, maximize overall benefits and minimize overall costs.

SBUA asserts that SCE's proposal contains significant emissions shortcoming. SBUA points to specific language in SCE's brief:

> SCE's Local Energy Storage and Management Systems proposal reduces dependence on petroleum, helps to meet air quality standards, and reduces emissions of GHG. Specifically, Local Energy Storage and Management Systems projects could enable further renewable energy capacity on the system, thereby reducing the GHG emissions caused by the burning of fossil fuels, as well as improving air quality through reduced petroleum combustion. Moreover, making renewable generation available at the end of the day when peak load is experienced instead of at mid-day when the load is lower, further reduces dependence on relatively less clean energy.[46]

SBUA notes that SCE has not put forth any evidence indicating that how it intends to use its Local Energy Storage and Management Systems will reduce emissions. SBUA argues it has, instead, offered a single hypothetical dispatch mode which may reduce emissions, a dispatch mode that SCE does not necessarily intend to use. SBUA indicates SCE goes on to argue that the "Commission itself recently identified energy storage as one of the incremental resources that will contribute to GHG reductions in D.18-02-018[.]"[47] SBUA agrees that storage could be used to help reduce system emissions, but SBUA argues that SCE has not proved that its storage program will.

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[46] SCE Opening Brief on AB 2868 Issues at 11.

[47] SCE Opening Brief on AB 2868 Issues at 11.

Cal Advocates takes issue with SCE's proposal not ensuring cost effectiveness and the lack of clarity on what SCE proposes for its least-cost best-fit methodology. Cal Advocates notes that while some flexibility may be appropriate so that utilities may adapt procurement to align with an identified need, it is problematic that a utility presents vague or incomplete evaluation criteria and metrics. In the event that SCE's Application is approved, Cal Advocates believes that the Commission will be unable to discern whether SCE's selected contracts align with SCE's approved Application without such criteria and metrics identified.

Additionally, Cal Advocates raises concern that SCE did not substantiate its Local Energy Storage and Management Systems project's purported GHG benefits. Cal Advocates asserts that SCE does not explain how the specific siting of Local Energy Storage and Management Systems projects will improve the air quality of the locales they are situated in. Cal Advocates also indicates SCE fails to assess how SCE's prioritization of reliability issues will alter how it operates the energy storage systems contrary to what the market would otherwise dictate. SCE states that it will operate the resources to "provide a distribution service in conjunction with market participation, or solely rely on these systems as distribution asset if the need arises." Cal Advocates asserts this could lead to a situation in which the energy storage system is not charging when energy prices are low and discharging when prices are high. SCE's conflicting testimony illustrates the need for the Commission to deny its application.

3.2.3.3. Commission Determination on SCE's Local Energy Storage and Management Systems proposal

We agree with numerous parties that the benefits presented by SCE are too speculative. TURN makes a compelling case that SCE did not establish a solid link between load factor and circuit reliability. This brings into question whether installing this system level storage in areas with high penetration of CARE customers will meet the spirit of the statute that intended to prioritize the provision of energy storage systems for low-income customers.[48] Additionally, SBUA makes a compelling argument that SCE's touted benefits are too speculative, with any benefits beyond pure operation in the CASIO market qualified with soft words like "can" and "could."

At this time, the Commission cannot make a reasonableness determination on potential benefits that are entirely speculative with no recourse if the benefits do not materialize.

SBUA additionally points out with compelling reasoning that SCE cannot know if its Local Energy Storage and Management Systems proposal will maximize benefits and minimize costs when it does not even provide a comprehensive list of how it intends to use these storage resources. It does not explore whether utility owned resources located closer to load (on distribution circuits for example) would provide additional benefits, or if third-party ownership would be lower cost.

CESA also makes a valid point that there is no compelling information in SCE's Application that indicates why solely utility owned procurement should be considered.

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[48] Pub. Util. Code Section 2838.2(d)(2).

Cal Advocates makes a compelling argument that the procurement benefits and costs are too speculative for the Commission to authorize procurement under this proposal. Additionally, Cal Advocates makes an effective claim that there may or may not be GHG emission benefits from the procurement of this energy storage, and that SCE has the burden to make a stronger showing that the procurement will reduce GHG emissions before it should be authorized.

SCE may hold an RFO, consistent with Appendix A of this decision, in a way that addresses the reasoned concerns of the intervening parties. SCE must display that the procurement it proposes pursuant to AB 2868 is cost effective. Further, SCE must consider third party owned projects alongside utility owned projects. Additionally, SCE did not make a valid argument that the procurement resulting from AB 2868 must be on utility owned property.

We encourage SCE to include, in a future Application, considerations of how its proposed projects will allow for support of the heat pump water heater component of its San Joaquin Valley pilot projects as defined in D.18-12-015. SCE should submit the Application that includes the heat pump water heater component of the San Joaquin Valley pilot projects.

In its follow up Application that proposes actual projects, SCE must also make a showing that the projects it is proposing will reduce greenhouse gas emissions, consistent with AB 2868. Upon submission of future Applications, the Commission will consider cost recovery and a reasonableness determination of specific projects. The Commission encourages SCE to submit said follow up Application, consistent with Appendix A of this decision, no later than December 31, 2019.

The Commission does not approve the Local Energy Storage and Management Systems proposal as filed by SCE.

SCE is not authorized to recover the costs of its proposed AB 2868 Storage Investments and Programs front of the meter proposal using the ratemaking mechanisms that SCE proposes in this application for each category of investment.

The Commission provides guidance in Appendix A of this decision that details the direction the SCE should take when proposing specific projects to be considered by the Commission pursuant to AB 2868.

SCE may move forward with an RFO for projects that provide aspects of the values it proposes for this program, and the Commission will consider the approval of specific contracts and the resulting rate recovery with the lens of the direction provided in Appendix A.

3.2.3.4. SCE's MASH/SOMAH proposal

SCE proposes a program to provide incentives to multifamily dwelling (MFD) building owners on SCE's MASH or its SOMAH programs to install behind-the-meter energy storage systems. The MASH/SOMAH program would install approximately 4 MW of behind-the-meter energy storage capacity and have a budget of approximately $10 million.

SCE proposes combining storage with solar to provide MFD building owners and their tenants benefits by being able to store energy generated by their existing installed solar systems for export at times when electricity costs are high, leveraging Virtual Net Energy Metering (VNEM) and TOU rates to lower their electricity bills. The program will pay incentives in the form of a rebates to low-income MFD building owners who participate in MASH/SOMAH programs and choose to add energy storage systems to serve the MFD and its tenants. Although the incentives will be paid directly to building owners, the benefits of discharging the storage system during TOU peak times each day are expected to result in bill savings for all tenants and common areas.

SCE proposes to offer stepped incentive amounts between $0.75/Watt-hour (Wh) and $0.60/Wh, not to exceed the actual, reasonable cost of purchasing and installing an energy storage system including other incentives. The incentive steps will work in a manner similar to SGIP in that the incentive amount per Wh will decrease over time as more energy storage is installed through the incentive program. Incentive amounts will range from $0.75/Wh in Step 1 and decrease in increments of $0.05/Wh each step through Step 4 at $0.60/Wh. Edison proposes to end the program when funds are exhausted or the program is otherwise terminated by order of the Commission. The purpose of the stepped incentive approach is to effectively manage the total costs of the program while testing the effect of various incentive amounts on energy storage adoption among low-income MFD customers. Customers on this program will be eligible to leverage the Investment Tax Credit provided by the U.S. Federal Government worth 30 percent of total system cost when batteries are charged completely from solar generation. The proposed MASH/SOMAH Energy Storage program has similarities with the SGIP program, which also offers customer incentives for purchasing storage system. However, SCE notes that this program is targeted at building owners of MFDs that participate in the MASH or SOMAH programs and will offer higher incentive levels than the SGIP with the objective of achieving higher energy storage penetration for low-income customers residing in these MFDs.

SCE's MASH/SOMAH Energy Storage Program proposes an incentive amount for energy storage systems for MASH/SOMAH customers that is greater than current SGIP non-residential equity incentives. The highest incentive SCE is offering when combined with the Investment Tax Credit should cover the majority of system costs.

Incentives will then be stepped down to identify the incentive level at which participation by this customer segment can be maintained. Beyond the incentive, the benefit MASH/SOMAH building owners receive for installing energy storage is based on the virtual net energy metering allocation for any common areas.

Based on SCE's analysis, the high incentive amounts proposed in this program are needed in order for building owners to see a return on investment (ROI) within the useful life of the energy storage system.

Because total SGIP incentives are reduced by the full amount of any other IOU incentives, SCE proposes that customers will not be eligible to participate in both the SGIP and AB 2868 programs.

3.2.3.5. Party Positions on SCE's MASH/SOMAH proposal

TURN's testimony identified several areas of potential concern with the VNEM mechanism included in SCE's MASH/SOMAH proposal. Those issues included the sizing of the solar/storage facility; customer impacts from the requirement to be on a TOU rate; and how a successor NEM tariff, anticipated in 2019, would be integrated into the program.[49]

TURN indicates that in rebuttal testimony that SCE satisfactorily clarified all of the issues raised by TURN, with one exception related to potential adverse bill impacts for tenants who switch to a TOU rate when the building owner participates in the MASH/SOMAH energy storage program. SCE clarified that existing Commission regulations require mandatory TOU for building owners served on the MASH-VNM-ST tariff, but TOU is not mandatory for tenants. SCE also states,

[49] Exhibit TURN-01 at 20.

"However, only customers on TOU rates will receive benefits from the addition of storage."[50]

TURN indicates it is comforted by SCE's clarification that TOU will not be mandatory for tenants but continues to be concerned about potential adverse bill impacts for low-income tenants who switch from a tiered rate to a TOU rate. It is conceivable that some tenants could face a bill increase from switching to TOU and adding solar/storage, depending on load profile and the allocation of virtual net energy metering credits. For this reason, TURN recommends that SCE ensure that tenants receive information about potential bill impacts before they are transitioned so that they can make an informed decision about participation.

SBUA indicates it believes the SCE MASH/SOMAH proposal clearly offers real benefits to low-income customers.

3.2.3.6. Commission Determination on SCE's MASH/SOMAH proposal

This proposed program of SCE is very similar to the Commission's implementation of SGIP, and it is not apparent where there is different or unique value developed beyond existing programs.

SCE's behind the meter program is not approved.

The Commission has actively considered the development of, and has implemented, low-income incentives in SGIP through the SGIP Equity Budget. Rulemaking 12-11-005 developed a robust record regarding what is appropriate for the eligibility and incentive level for low-income participants in customer owned behind the meter energy storage. It is unreasonable to implement an additional

[50] Exhibit SCE-03 at 19.

program that differs narrowly from existing programs that the Commission developed through a holistic and complex stakeholder process.

Implementing an additional mirror program so similar to SGIP with slightly different funding levels and eligibility criteria will pose an unreasonable administrative burden on both SCE and the Commission for oversight of the program.

SCE is still welcome to propose additional customer side programs pursuant to AB 2868, but in doing so it must clearly differentiate the program from SGIP and additionally make a reasonableness showing that the program, as developed, meets the criteria of AB 2868. The proposed program is not differentiated enough.

On April 15, 2019, Commissioner Rechtschaffen released an Assigned Commissioner's Ruling in Rulemaking 12-11-005 requesting "party feedback on questions that will be used to guide implementation of Senate Bill (SB) 700 (Wiener, 2018)[51] and to consider other program modifications." We request that SCE (either alone or in conjunction with other IOUs) submit its MASH/SOMAH proposal in its response to the April 15, 2019 Assigned Commissioner's Ruling.

3.3. Do the proposed AB 2868 plans comply with D.17-04-039 and other Commission energy storage decisions, including the direction that they incorporate proposals for programs and investments up to 166.66 megawatt (MW) of distributed energy storage?

SDG&E, PG&E, and SCE all assert that their applications comply with D.17-04-039.

CESA asserts that the proposed AB 2868 plans comply with D.17.04-039.[52]

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[51] Stats. 2019, Ch. 839 (Wiener).

[52] CESA Opening Brief on AB 2868 Issues at 3.

Beyond the other issues addressed in this decision, the Commission affirms that the three applications comply with the narrow guidance provided in D.17-04-039.

3.4. Do the proposed AB 2868 plans comply with the energy storage requirements set forth in Pub. Util. Code Sections 2838.2 and 2838.3?

3.4.1. Do the plans ensure minimized overall costs, maximized overall benefits, achieve ratepayer benefit, and not unreasonably limit or impair the ability of non-utility enterprises to market and deploy energy storage systems?

3.4.1.1. Minimized overall costs and maximized overall benefits and achieve ratepayer benefit

The three Applications by the IOUs all claim that the proposals all will adhere to a least-cost best-fit methodology as a way of conforming with the statutory directive to minimize overall costs and maximize overall benefits.

SDG&E considers "minimize overall costs" to mean that the proposed program or investment for AB 2868 is designed to have minimum total costs over the life of the asset.[53] SDG&E considers "maximize overall benefits" to mean that any proposed program or investment for AB 2868 is designed to accomplish maximum total ratepayer benefits (as defined above) over the life of the asset(s).[54] SDG&E also speaks in its testimony to achieving ratepayer benefits and lists some potential benefits, including resiliency, local RA, and reliability.[55]

PG&E speaks to demonstrating ratepayer benefits, specifically the societal benefit of public sector facilities being able to continue operation during times of

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[53] Exhibit SDGE-02 at SJ-16.

[54] Exhibit SDGE-02 at SJ-15.

[55] Exhibit SDGE-02 at SJ-14.

power outages.[56] PG&E also discusses that it will minimize the costs during the engineering and construction phase of the projects, and it will increase benefit to ratepayers by operating the assets in the CAISO market while not providing reliability services.[57]

SCE indicates it will minimize the overall cost by using a RFP process to solicit bids for projects.[58] SCE indicates it will "will have flexibility to operate the systems in a manner that provides continuing grid benefits for the full life of the system to maximize customer benefits."[59]

A number of parties took issue with the IOUs' proposals for minimizing overall cost, maximizing overall benefits, and resulting in ratepayer benefit.

Cal Advocates argues that AB 2868 energy storage proposals must be cost effective and that requiring AB 2868 energy storage procurement to be cost effective does not frustrate the legislature's intent.[60] Rather, Cal Advocates argues that pursuant to Pub. Util. Code Section 2835, energy storage systems, whether mandated by AB 2514 or AB 2868 must be cost effective. Specifically, Section 2835 states, "[f]or purposes of this chapter, the following terms have the following meanings: (a)(3) An "energy storage system" shall be cost effective . . .."
Cal Advocates further argues that that Section 2838.2 requiring the utilities to "minimize overall costs and maximize overall benefits" does not weaken the requirement that each individual energy storage system procured must be cost

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[56] Exhibit PGE-03 at 3-5.

[57] Exhibit PGE-03 at 3-5.

[58] Exhibit SCE-01B at 35.

[59] Exhibit SCE-01B at 35.

[60] Public Advocates Office Opening Brief on AB 2868 Issues at 6.

effective, and thus, a utility's energy storage portfolio must be cost effective. Therefore, Cal Advocates concludes the Commission must assess the cost effectiveness of the IOUs proposed AB 2868 energy storage programs and investment when determining their reasonableness.[61]

LS Power asserts that the Commission should require a cost effectiveness requirement procurement resulting from AB 2868.

> "[T]he definition of "energy storage system" in section 2835(a)(3) requires the energy storage system to be cost-effective. SDG&E's argument that the definition of "distributed energy storage system" in section 2838.2(a)(1) does not require cost-effectiveness ignores the fact that the statutory definition of "energy storage system," which by implication is included in "distributed energy storage system," requires all energy storage systems, including those connected to the distribution system, to be cost effective."[62]
>
> "Moreover, nothing in AB 2868 reveals a legislative intent to excuse AB 2868 projects from the requirements and provisions of existing statutes on energy storage. LS Power asserts the Commission should reject SDG&E's strained effort to interpret AB 2868's provisions to in effect read out of the Public Utilities Code other statutory requirements for energy storage systems."[63]

SDG&E responds to the assertion that the commission should require cost effectiveness for the resulting procurement from AB 2868 arguing that cost effectiveness is not the correct metric and rather the Commission should only ensure that the procurement is conducted in a way that minimizes overall costs and maximizes overall benefit.

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[61] Public Advocates Office Opening Brief on AB 2868 Issues at 8.

[62] LS Power Opening Brief on AB 2868 Issues at 6.

[63] LS Power Opening Brief on AB 2868 Issues at 7.

SCE argues that the legislature did not intend to require a cost effectiveness requirement for the procurement resulting from AB 2868. SCE asserts in its reply brief that "Section 2835 was enacted six years before Section 2838.2 and 2838.3. To the extent the later enacted Section 2838.3 conflicts with Section 2835's cost effectiveness requirement, it controls because it supersedes and amends Section 2835 by implication as the more specific statute on the same subject."[64]

TURN notes that cost effectiveness is a useful framework for ensuring that ratepayers receive benefits from these projects. TURN also notes that least-cost best-fit alone is an insufficient standard to achieve this end. TURN is open to allowing the Commission to authorize 12 MW of procurement from SCE's proposal without a cost effectiveness requirement, although TURN indicates that the Commission can revisit the need to protect ratepayers with a cost effectiveness requirement, perhaps in time for the 2020 solicitation cycle.

Additionally for customer owned deployment, TURN recommends that projects receive at least 20% of total costs from participants, with the exception of projects targeted specifically to low-income customers, which should not require any participant contribution.[65] TURN's witness reasoned that leveraging the maximum amount of funds possible from site hosts to reduce ratepayer expenditure will allow each ratepayer dollar to go further, consistent with the directive in AB 2868 that the utilities "seek to minimize overall costs and maximize overall benefits"[66]

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[64] SCE Reply Brief on AB 2868 Issues at 12.

[65] Exhibit TURN-01 at 5.

[66] Exhibit TURN-01 at 5 (citing Pub. Util. Code Section 2838.2(b)).

Given the weight of the evidence, the Commission agrees that the investor owned utilities must demonstrate cost effectiveness for the resulting procurement from AB2868 to be considered reasonable, and thus recovered in rates.

As Cal Advocates and LS Power note, the statutory language of Pub. Util. Code Section 2835 states, "[f]or purposes of this chapter, the following terms have the following meanings: (a)(3) An "energy storage system" shall be cost effective…" Nothing in AB 2868 reveals a Legislative intent to excuse AB 2868 projects from the requirements and provisions of existing statutes on energy storage. Requiring that the procurement "minimize overall costs and maximize overall benefit" does not forego the requirement that the procurement be cost effective.

The IOUs shall include a rigorous cost effectiveness showing in their new applications that includes the net present value, net market value and least cost, best fit cost calculations as part of their AB 2868 project proposals. Any accounting of energy storage costs and benefits shall include potential energy market revenues and an IOU description of how these revenues contribute to the energy storage resources potential to minimize costs and maximize benefits to the ratepayer. The IOUs shall include a clear calculation of the net costs and benefits to the ratepayers of their proposed projects. The IOUs shall clearly identify all energy market revenues when establishing the cost effectiveness of energy storage projects and how this revenue is netted against the project costs.

The IOUs must reflect all eleven Multiple Use Application (MUA) rules set forth in Appendix A of D.18-01-003 in their 2018 storage procurement applications, standard contracts, and evaluation protocols. The IOUs shall identify all energy market revenues and describe how ratepayers will benefit from this additional revenue collection, including a description of the IOU proposed customer revenue

allocation method. The Commission retains the right to conduct a retroactive reasonableness review of benefits and wholesale market revenues generated through the market participation of these energy storage systems. Market benefits include, but are not limited to, energy arbitrage and GHG reduction, Ancillary Services, and Spinning Reserve.

This requirement for the procurement resulting from AB 2868 to be cost effective is reiterated in Appendix A of this decision and is required for any contracts presented to this Commission pursuant to AB 2868. Additionally, we agree with TURN that customer owned projects should receive at least 20% of total costs from participants, with the exception of projects targeted specifically to low-income customers.

It should be noted that AB 2868 creates a specific procedural pathway and timeline for IOUs to seek cost recovery for energy storage projects that meet certain conditions, including cost effectiveness. The scope of this decision, and the requirements it imposes on future applications, does not include energy storage projects for which IOUs seek cost recovery pursuant to authority other than that created by AB 2868.

3.4.1.2. The term "investments," as included in the statutory language of AB 2868, does not necessitate that the authorized energy storage resources be utility owned.

AB 2868 added to the Pub. Util. Code Section 2838.2(2)(c)(1) that reads that "the commission may approve, or modify and approve, *programs and investments*[67] of an electrical corporation in distributed energy storage systems … if they are consistent with the requirements of this section and do not unreasonably limit or

[67] Emphasis added.

impair the ability of nonutility enterprises to market and deploy energy storage systems."

Pub. Util. Code Section 2838.2(2)(c)(3) indicates that "the capacity authorized pursuant to paragraph (1) is in addition to any *investments*[68] authorized pursuant to Section 2836." Section 2836 was added by AB 2514, a law that has already been implemented by the Commission, beginning in D.13-10-040 where the Commission directed 1325 MW of energy storage capacity procurement. The Commission found in D.13-10-040 that no more than 50% of the energy storage capacity procurement authorized pursuant to Section 2836 may be from utility owned resources.

In this circumstance, section 2838 of the Public Utilities Code (added by AB 2868) refers to the procurement required in section 2836 of the Public Utilities Code (added by AB 2514) as an "investment." Applying deductive reasoning, the legislature refers to energy storage capacity procurement authorized in AB 2514 as an investment, which the Commission successfully determined should not be solely utility owned.

The investor owned utilities argue that the usage of the term investments in the authorizing statute indicate that the assets must be utility owned. SDG&E indicates that the plain words of AB 2868 require investments and that can only mean that the utility takes a financial interest in any project. SDG&E argues the phrase "not unreasonably limit" reinforces that the statute contemplates utility ownership because the words would be surplusage otherwise.

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[68] Emphasis added.

SCE asserts that AB 2868 is expressly limited to investments and programs. While "programs" certainly can refer to third party owned assets, SCE's interpretation of the term "investments" is as a reference to utility ownership or capital improvements of utility-owned infrastructure, not utility power procurement of energy storage from facilities owned by third parties.[69]

TURN argues that the Commission should dismiss the theory that AB 2868 precludes third-party contracting, as no such bright line between "procurement" and "programs and investments" exists. TURN notes that AB 2868 itself refers to "investments authorized pursuant to Section 2836," which is where the energy storage procurement requirements of AB 2514 (Skinner, 2010) are codified. Section 2836 required the Commission to adopt by October 1, 2013, "procurement targets" for cost effective energy storage systems for each load-serving entity, if the Commission determined such targets to be appropriate.[70] The result was the Commission's "Energy Storage Procurement Framework and Program" at issue in the AB 2514 phase of this proceeding, a "program" (as in AB 2868's "programs and investments") focused on the procurement of energy storage resources.[71]

Cal Advocates echoes TURN's assertions. Cal Advocates indicates that "investment" and "procurement" are used interchangeably between Pub. Util. Code Section 2838.2 to Section 2836 (*i.e.* procurement mandated under AB 2868 and 2514, respectively). From this, Cal Advocates asserts that the legislature did not intend to limit AB 2868 energy storage procurement to strictly utility-owned systems given Pub. Util. Code Section 2836.7(d)(2), which explicitly allows

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[69] SCE Reply Brief on AB 2868 Issues at 4.

[70] Pub. Util. Code Section 2836(a).

[71] D.17-04-039 at 2-3.

third-party owned storage to count towards the utilities' AB 2868 energy storage targets.

As the procurement authorized by AB 2514, also referred to the legislature as an investment, has been limited to 50% utility owned energy storage, there is no basis to conclude that the investments authorized by AB 2868 must be from utility owned projects.

The Commission is persuaded by TURN and Cal Advocates' simple and plain language interpretation of the relevant sections of the Public Utilities Code. Consistent with existing statute and Commission decisions, neither the term programs nor investments as used in AB 2868 limits the consideration or approval of energy storage resources to only utility owned projects. Additionally, for this reason, investments and programs will be used interchangeably with procurement in this decision.

This determination is reflected in Appendix A of this decision.

3.4.1.3. The Commission supports ratepayer benefit while not unreasonably limit or impair the ability of non-utility enterprises to market and deploy energy storage systems

The utility proposals are heavily weighted to utility ownership of the assets, with the exception being relatively small behind-the meter programs.[72]

SDG&E proposes to own the energy storage projects that result from the investments authorized in AB 2868. SDG&E proposes that for each project will be competitively bid out for third-party development (to supply equipment, technology, and to construct the projects) which will substantially encourage the ability of nonutility enterprises to market and deploy energy storage systems.

[72] Exhibit TURN-01 at 4.

PG&E proposes to select its AB 2868 distributed energy storage vendors through competitive solicitations for Engineering, Procurement, and Construction contracts that will ultimately be utility owned projects. PG&E asserts that its focus on front of the meter storage projects with competitive contracting is in line with AB 2868's requirement that these investments and programs should not unreasonably limit or impair the ability of non-utility enterprises to market and deploy energy storage systems.

PG&E asserts that under utility ownership, the risks that batteries may fail or degrade more quickly than expected, creating stranded assets, is mitigated through Long Term Performance and Maintenance Agreements (LTPMA) with the storage vendor. The LTPMA is structured to require maintenance and capacity augmentation over the life of the project to account for the project providing a set number of duty cycles a day. This ensures that the system capacity and duration will be maintained throughout the life of the project. PG&E indicates that because it will adhere to the number of duty cycles, the responsibility, risk, and associated costs for maintaining the capacity and duration of the energy storage facility are shifted to the vendor, not to PG&E ratepayers.

PG&E indicates that limiting the ability of the utility to own the investments and programs that result would have a negative effect on competition. PG&E asserts that restrictions would remove the ability of energy storage providers to work and collaborate directly with utilities, including on utility sites, to expand the innovative business and ownership models that can drive expanded choices in storage markets and also drive down costs.

SCE asserts that its proposal to own the investments resulting from AB 2868 authorized procurement does not impair the ability of non-utility enterprises to market energy storage. Rather, it asserts that its proposal will create direct

opportunities for non-utility enterprises to supply and install energy storage systems at SCE's substations. Thus, component manufacturers and project developers will have the opportunity to design, build, and then transfer energy storage systems to SCE. Moreover, SCE is proposing to utilize distribution substation land that is owned and/or controlled by SCE. SCE indicated it would not agree to allow third party owned projects to be located in these spaces. Thus, SCE's proposal, in its words, provides an opportunity for manufacturers and sellers that would not otherwise exist

SCE points to its previous energy storage activity to indicate that it has sufficiently supported third party projects. SCE indicates that in this circumstance it is not hampering competition by only allowing utility owned projects to occupy the space at its substations for its proposed energy storage projects. SCE's Direct Testimony indicates that SCE has supported the development of a third-party market by procuring or contracting for approximately 570 MW of energy storage systems.[73] Less than 60 MW of the 570MW, *i.e.*, less than 11%, is utility-owned. As indicated in D.18-10-036, SCE has over procured 264.22 MW of customer domain/owned energy storage for its 2018 cumulative AB 2514 target.

TURN indicates that the proposed utility ownership structure is not necessary to accomplish the predominate goals of the projects, nor is it necessarily in the ratepayer interest.[74] As TURN witness Borden explains:

> The IOUs' reliance on utility-owned assets presents risks to ratepayers that can be mitigated with a mix of ownership structures. For instance, costs are less certain under a utility

[73] Exhibit SCE-01B at 23, Table III-10. The 570 MW figures is total, and does not consider the ceiling on customer procurement contained in D.16-01-032.

[74] Exhibit TURN-01 at 4.

> ownership model than under third-party contracts, and asset performance risk is borne by ratepayers when assets are utility owned. If unexpected failures in battery storage occurs or degradation of the battery in future years is greater than believed today (a significant risk for lithium-ion batteries), utility ownership necessitates that ratepayers bear this risk (though this may be mitigated by regulation), whereas under a third-party contract, the risk may be borne primarily by the third-party developer. Lastly, the utility generally has a financial incentive to maximize the costs of utility owned storage to increase rate base and shareholder earnings. Requiring that AB 2868 programs and investments be spread equally across third party owned storage assets and utility owned storage will create a check on the potential upward bias on the costs of utility-owned storage assets.

TURN recommends that the Commission limit direct utility ownership of storage assets to a maximum of 50% as measured by capacity of the storage assets added pursuant to AB 2868. TURN asserts that this recommendation incorporates the relative benefits of both utility ownership and third-party contracting. Further, TURN argues that this structure helps ensure programs do "not unreasonably limit or impair the ability of nonutility enterprises to market and deploy energy storage systems," as instructed by AB 2868.[75]

TURN recommends that the Commission use the discretion afforded it by AB 2868 to determine how best to effectuate the statutory purpose of maximizing ratepayer (and other) benefits, while minimizing costs.[76] TURN notes that as AB 2868 indicates, the Commission "may approve, or modify and approve, programs and investments of an electrical corporation … if they are consistent

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[75] Pub. Util. Code Section 2838.2(c)(1).

[76] Pub. Util. Code Section 2838.2(b).

with" AB 2868 and "do not unreasonably limit or impair the ability of nonutility enterprises to market and deploy energy storage systems." TURN's position is that requiring a mix of utility-owned and third party-owned AB 2868 storage assets will benefit ratepayers, and thus should be embraced by the Commission in its implementation of AB 2868 as a matter of policy.

TURN's position is that requiring a mix of utility-owned and third party-owned AB 2868 storage assets will benefit ratepayers, and thus should be embraced by the Commission in its implementation of AB 2868 as a matter of policy. In D.18-05-040, which addressed SDG&E's Application for Approval of its SB 350 Transportation Electrification Proposals (in addition to PG&E's and SCE's similar applications), the Commission concluded that SDG&E should not be permitted to own the charging infrastructure on the customer side of the meter "to ensure the goals of SB 350 are achieved without placing a burden on ratepayers."[77]

SBUA supports third party ownership of a significant portion of the procurement authorized from AB 2868.[78]

In D.13-10-040, the Commission determined that for energy storage procurement resulting from AB 2514, that the utility ownership of storage projects should not exceed 50 percent of all storage across all three grid domains at this time. The Commission determined that utilities may own no more than half of all of the storage projects they propose to count toward the MW target, regardless of whether it is interconnected at the transmission or distribution level, or on the customer side of the meter. The Commission found that setting this limit will ensure that any viable market options are not preempted.

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[77] D.18-05-040 at 51.

[78] Exhibit SBUA-02 at 17-21.

AB 2868 requires that the investments and programs resulting from this authorizing statute support ratepayer benefit and do not unreasonably limit or impair the ability of non-utility enterprises to market and deploy energy storage systems.

There is not sufficient evidence to support extending a limitation on the amount of utility owned procurement the investor owned utilities may conduct pursuant to AB 2868. However, there is sufficient record to support ensuring that the investor owned utilities did not consider third party owned projects and utility owned projects without bias towards either ownership model. There is also sufficient record to support not allowing the investor owned utilities to solely conduct RFOs for projects on utility owned property, thus limiting the bids to utility owned projects only.

If the IOUs are proposing to site the utility owned energy storage projects on utility owned land that is not being engaged for any other purpose, the ownership of the land likely fails the used and useful test and the IOU should have already considered selling the property at market value. Additionally, because the IOUs now would be using this utility owned property for energy storage projects, it is possible that there is a higher and better use for the property that they are ignoring. This means the IOU would potentially have to go to market for additional property for a higher priority use.

For this reason, when considering the bids of third party projects with concurrently with utility owned projects on utility owned land, the cost effectiveness metric must take into account the market value of the utility owned land that will be use to site the energy storage project. Any comparison of utility owned projects costs to third party owned costs must take into account all costs involved, including the market value of utility owned land. The Commission

supports the procurement of the most cost effective energy storage regardless of the ownership model.

3.4.2. Do the plans prioritize programs and investments of distributed energy storage systems to public sector and low-income customers?

Pub. Util. Code Section 2838.2(d)(2) states: "The Commission shall prioritize those programs and investments that provide distributed energy storage systems to public sector and low-income customers."

SDG&E, PG&E, and SCE all independently assert that their proposed investments and programs that prioritize the provision of distributed energy storage systems to public sector and low-income customers.

SDG&E proposes to develop front of the meter projects that are capable of islanding the entire circuit for which some of the customers are considered public sector and low-income. Additionally, SDG&E's SGIP like program proposes to provide incentives for the purchase of energy storage systems targeted at expanded CARE facilities.

PG&E proposes front of the meter projects with different objectives, some of which are targeted at providing resiliency for public-sector customers. Additionally PG&E proposes a behind the meter program to provide incentives for heat pump water heaters, replacing existing propane-based and electric resistance water heaters. PG&E notes that its behind the meter proposal will coordinate closely with the team administering the San Joaquin Valley pilot and scaled programs, as proposed in R.15-03-010.

> The administrators of this behind the meter thermal storage program will work closely with those administering the San Joaquin Valley pilots and scaled programs to ensure customers who are fuel-switching will also have the opportunity to enroll in this thermal storage program. This is particularly important, because the customers participating in

> the San Joaquin Valley program will have an appropriately upgraded panel, circuitry and wiring to accommodate a heat pump water heater.[79]

PG&E has sufficiently demonstrated that its behind the meter thermal storage program is prioritizing public sector and low-income customers.

SCE proposed front of the meter procurement that targets substations with high penetrations of intermittent renewables that also have high levels of customers on the CARE rate plan. For its front of the meter proposal, SCE indicates that the installed energy storage resources will solely participate in the energy markets and provide capacity, although SCE indicates that the resources may provide some heightened resiliency benefit in the future. Additionally, similar to SDG&E, SCE proposes a SGIP like incentive for low-income customers, specifically those participating in the SOMAH and MASH programs.

SDG&E's proposal for front of the meter projects does indeed target public sector and low-income customers, although the record does not substantiate exactly how much of the procurement will benefit those public sector or low-income participants. For instance, numerous parties critiqued SDG&E's proposal as sizing the storage to the entirety of the circuit to provide islanding capabilities for a couple of public sector entities.

Additionally, SDG&E's SGIP like proposal does indeed target low-income customers, but it does it in a way that lacks creativity. The actual benefit of the program is called into question because the program so closely mirrors existing programs already directed by the Commission. The same critique of SDG&E's behind the meter proposal applies to the proposal of SCE.

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[79] Exhibit PGE-03 at 7-8.

PG&E does indicate in its proposal that it is targeting community resiliency in low-income areas as one of the potential procurement directions it proposes for front of the meter procurement. Additionally, PG&E is directly collaborating its hot water heat pump proposal with the San Joaquin Valley pilot and scaled programs. We particularly appreciate this collaboration.

TURN commented on the lack of a connection from SCE's proposal to locate front of the meter energy storage systems in areas with high participation of low-income rate programs and the benefits that will actually accrue to those customers. TURN notes that SCE's vague claim that the storage may provide "backup power" is unsubstantiated and is unlikely to be significant, though a circuit-level analysis would be required to determine the number of minutes the storage asset could provide any kind of backup power, which SCE has not provided. TURN makes a compelling case that SCE's proposal does not effectuate the provision of energy storage systems to public sector or low-income customers.

Particularly for future behind the meter programs proposed by the IOUs pursuant to AB2868, the IOUs must demonstrate how the programs will provide unique value to public sector or low-income participants. Simply mirroring existing programs with minor variations, especially those already considered and rejected by the Commission, does not adhere to the spirit of providing additional benefit to public sector and low-income participants.

3.4.3. Do the plans reduce dependence on petroleum, meet air quality standards, and reduce greenhouse gas emissions?

At this time, there is not enough information to make a clear determination whether the proposals reduce dependence on petroleum, meet air quality standards and reduce greenhouse gas emissions, the exception being the behind the meter thermal storage proposal of PG&E.

In all of the proposals, the IOUs claim that the installed facilities will all reduce dependence on petroleum and reduce greenhouse gasses. However, the record is lacking information on the controls that the IOUs will put on the energy storage systems to ensure that they are not being dispatched in a way that actually increases dependence on petroleum or greenhouse gas emissions.

TURN recommends that the Commission require the utilities to collect performance data on projects approved pursuant to AB 2868, "including but not limited to benefits achieved by the projects such as reliability, petroleum reduction, and GHG benefits."

Cal Advocates notes that SCE relied, in part, on the 2016 SGIP Report to assert that its energy storage systems designed to support renewable integration efforts would likely result in improvements in local air quality and overall GHG benefit.[80] Cal Advocates asserts that reliance on the 2016 SGIP Report is not definitive because the report explicitly states that energy storage increased emissions depending on the system's operating characteristics.

SCE states that Cal Advocates mischaracterizes SCE's data request response and elaborates that SCE intends to bid [its Local Energy Storage and Management Systems contracts] into the CAISO market. As such, SCE notes it assumes an oversupply of electricity during the daytime/low GHG hours and discharge during evening/high GHG.

Cal Advocates responds that SCE does not explain how the specific siting of Local Energy Storage and Management Systems projects will improve the air quality of the locales they are situated in. Cal Advocates believes SCE's

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[80] Exhibit ORA-02 at 3-5; SCE Response to the Public Advocates Office's Data Request, numbered ORA-SCE DR3, Response 1(a) and 1(b).

prioritization of reliability issues will alter how it operates the energy storage systems contrary to how the market would otherwise dictate. Because SCE states that it will operate the resources to "provide a distribution service in conjunction with market participation, or solely rely on these systems as distribution asset if the need arises."[81]

When SDG&E, PG&E, or SCE return to the Commission with proposed contracts or projects for front of the meter resources pursuant to AB 2868, they must make a clear demonstration how the contracts or programs establishes controls that ensure that the projects will reduce dependence on petroleum, meet air quality standards, and reduce greenhouse gas emissions. Additionally, when proposing behind the meter programs, SDG&E, PG&E, and SCE must clearly demonstrate how they are deploying battery energy management systems, or another mechanism, that provides controls that ensure that the projects will reduce dependence on petroleum, meet air quality standards, and reduce greenhouse gas emissions.

3.4.4. Do the plans effectively incorporate the appropriate use of energy storage management systems?

SDG&E indicated it would use a Distributed Energy Resource Management System (DERMS) for a software control platform to operate its fleet of energy storage and microgrid assets remotely. SDG&E intends to use the DERMS platform for the circuit-level energy storage and microgrids deployed for AB 2868, in addition to dispatch controls required to participate in wholesale energy markets operated by the California Independent System Operator (CAISO).[82] SDG&E did

[81] Exhibit SCE-01B at 36.

[82] Exhibit SDGE-02 at SJ-1.

not indicate how it was incorporating the use of energy storage management systems in its behind the meter proposals.

SCE indicated it will install, in each front of the meter project, an Energy Storage Management System (ESMS) that will allow the CAISO and SCE's operators to manage the charging and discharging of each selected Distributed Energy Resource (DER). The ESMS will allow the selected DERs to respond to CAISO's economic signals. In order to maximize ratepayer benefit by monetizing its ability to provide system benefits.[83]

In this circumstance, SDG&E and SCE effectively explained its appropriate energy storage management systems for the proposed resources.

For PG&E's behind the meter thermal storage program, PG&E is proposing two options:

- Option 1: Monetary pay-for-performance incentive to replace aging electric resistance or propane water heaters with smart heat pump water heaters and provide thermal storage, limiting water heating to off-peak hours, reducing or eliminating water heating during peak hours.
- Option 2: Monetary pay-for-performance incentive to add control and communication equipment to existing electric water heaters to provide thermal storage, limiting water heating to off-peak hours, reducing or eliminating water heating during peak hours.[84]

PG&E is proposing both time of use rates and controls as different ways of managing the storage systems. These mechanisms are appropriate.

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[83] Exhibit SCE-01B at 37.

[84] Exhibit PGE-03 at 7-7.

We find that PG&E's implementation of energy storage management systems in its behind the meter thermal storage program, as proposed, is appropriate.

In any future Application for contract or program approval, the applicant shall include information indicating what appropriate energy storage management system it proposes to be deployed for that contract or program.

Additionally, any program resulting from AB 2868 that requires participating customers to be on mandatory time of use rates must include in its implementation plan a clear explanation on what customer outreach the utility will conduct to ensure their customers understand how their rates will change and what the bill impact would have been based on historical usage. When PG&E files a Tier 3 Advice Letter to implement the behind the meter thermal storage program, it must include such a communication plan during the implementation of the program.

3.5. What is the appropriate procedural mechanism (Application or Tier 3 advice letter) for approval of investments that result from AB 2868 procurement?

All three IOUs seek Commission authorization to file Advice Letters for project specific approval of contracts resulting from the three respective investment and program plans. SDG&E[85] and PG&E[86] requesting a Tier 3 Advice Letter process. SCE requests a Tier 2 advice letter process.[87] CUE suggests that a Tier 3 Advice Letter is the appropriate process for the Commission to approve projects.

CESA supports more streamlined contract approval processes, but states that given the many qualitative factors involved in the assessment and the issues around assessing the competitiveness of utility-owned versus third-party-owned

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[85] Exhibit SDGE-02 at SJ-27.

[86] Exhibit PGE-03 at 2-5.

[87] Exhibit SCE-01B at 26.

projects, CESA believes a more extensive Commission and stakeholder review process may be necessary.

CESA notes that SDG&E cites Pub. Util. Code Section 2838.2(b) as justification for "accelerating" the approval process,[88] but Section 2838.2(d)(1) only stipulates that the application must be resolved within 12 months of the date of filing (*i.e.,* February 28, 2018 for SDG&E), which CESA interprets as involving either approval, rejection, or directives to modify the application. CESA finds sufficient statutory basis to consider having the IOUs modify their applications in accordance with our recommendations. Cal Advocates and TURN both assert that the Commission should make any future approvals through an Application process rather than an advice letter process. Cal Advocates states "The deficiencies identified in parties' comments and the lack of a cohesive understanding of the requirements of AB 2868, support
[Cal Advocates's] recommendations and necessitate a detailed review of the IOUs' procurement decisions."[89]

We agree with TURN and Cal Advocates that the Applications thus far are not complete enough to justify future approval through an Advice Letter process. The IOUs shall submit future requests for project approval through a Commission Application process.

The implementation of PG&E's proposed behind the meter hot water heat pump program may occur through a Tier 3 Advice Letter because it contains sufficient details regarding structure and implementation.

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[88] Exhibit SDGE-14 at 6.

[89] Exhibit ORA-03 at 2.

The IOUs shall coordinate with each other to provide a consistent submissions, including the display and provision of information and Application submission timing to ensure the Commission can most effectively evaluate future proposals in a coherent fashion.

3.6. Is safety properly addressed in the utilities' plans for investments and programs? Will the utilities' proposed plans ensure safe and reliable delivery of energy to customers?

3.6.1. SDG&E

SDG&E indicated it works to ensure its energy storage procurements yield energy storage systems that are designed, constructed and operated safely, regardless of use case or ownership structure.[90] For utility-owned energy storage systems, SDG&E additionally indicated it undertakes a comprehensive evaluation of all components of each project, including assessment of the contractor's prior experience in safely constructing and operating energy storage systems, the technical merit of the proposed system, and the projects safety components. In accordance with best practices in safety, SDG&E indicates it has preliminarily evaluated sites based on the Commission's Safety and Enforcement Division's Safety Inspection Items for Energy Storage Checklist and other energy storage safety documentation in the industry.

3.6.2. PG&E

PG&E provided information regarding how it approaches safety in the context of energy storage,[91] indicating sellers will be required to meet certain safety standards and may be required to submit to PG&E a site safety plan with respect to the seller's project. A seller's obligations, with respect to safety, may vary based on

[90] Exhibit SDGE-05A at 59-60.

[91] Exhibit PGE-01 at 3-7.

the particular contract structure and product type, as well as the commercial relationship of the entities involved in the energy storage transaction. Each of the agreements will contain specific requirements intended to ensure that the seller and the entities that construct, operate, or maintain the project, as applicable, do so in a safe, reliable and efficient manner that protects the public health and safety of California residents, business, employees, and the community.

In the event a Seller is required to provide PG&E with a site safety plan, PG&E indicated such plan must reference the applicable safety-related codes and standards in the seller's safety programs and policies. PG&E requires a summary of the project design and description of key safety related systems. The seller must also describe in a site safety plan potential hazards and include mitigations and safeguards, such as operating procedures, incident response and recovery plans, and personal protective equipment and procedures. If a seller is required to provide PG&E with a site safety plan, the seller will be required to update it periodically during the term of the contract.

3.6.3. SCE

With respect to utility procurement of energy storage resources, SCE places the responsibility of safe operations falls on the owner/operator of the facility. SCE indicates it includes provisions in its contracts to require third-party sellers to engage in safe practices and comply with all applicable laws, permit requirements and applicable California utility industry standards. The safety of energy storage systems is addressed at the point of interconnection to SCE's distribution grid. Whether third-party or utility-owned, energy storage systems must adhere to Rule 21 or the Wholesale Distribution Access Tariff (WDAT) in order to interconnect. The majority of safety standards and certifications have been incorporated into both tariffs.

Both the WDAT and Rule 21 allow SCE the ability to review energy storage equipment prior to installation, during pre-and post-commercial operation testing. As part of this commercial testing, SCE requires third-party inspection reports, commissioning test plans and checklists, as well as commissioning reports. SCE engineers provide technical review of the commissioning testing. Furthermore, as part of the interconnection tariff process, an Electrical Inspection Release from the appropriate local authority having jurisdiction is required to verify that the work on the customer's side of the meter meets requirements of the National Electric Code and all applicable local codes and ordinances.

Pursuant to D.16-01-032, SCE collaborated with other energy storage safety working group members and developed a Commission energy storage safety inspection protocol for Safety and Enforcement Division inspectors to use based on expertise from the utilities, codes and standards development organizations, energy storage developers, and other interested parties. SCE indicated it will continue to participate in the energy storage safety working group to refine the energy storage safety protocol as technology develops and matures as needed.

3.6.4. Determination

The Commission is committed to ensuring the safe deployment and interconnection of energy storage resources. Accordingly, the utilities are reminded of their critical role in ensuring the safe connection, operation, and maintenance of energy storage resources, as they carry the "ultimate responsibility for safety of resources connected to (their) facilities, regardless of whether those resources are utility owned or owned by entities under contract to the utilities."[92]

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[92] D.16-01-032 at 54.

We find that SDG&E, PG&E, and SCE have addressed potential safety concerns in a proactive and responsible manner and that there are no obvious safety concerns that remain to be addressed.

3.7. Should the utilities' proposed cost recovery methodologies be adopted?

SDG&E proposes to recover the costs of implementing the utility-owned energy storage microgrid projects through Distribution rates and the behind-the-meter program through Public Purpose Program (PPP) rates.[93]

PG&E outlines a complex proposal for cost recovery for the projects it has proposed in this Application.

> "PG&E's cost recovery and ratemaking proposal includes a request to establish a new Distributed Energy Storage Investments Balancing Account (DESIBA), to record actual revenue requirements for utility-owned distribution-connected investments that provide reliability services and local capacity in four separate subaccounts. When the investments that provide reliability become operational, on an annual basis, the Utility will transfer the actual capital revenue requirement to the Distribution Revenue Adjustment Mechanism (DRAM) for recovery in distribution rates. For investments that provide local capacity, PG&E is requesting that these be deemed eligible for the Cost Allocation Mechanism (CAM) and be recorded to the New System Generation Balancing Account (NSGBA) for recovery through the New System Generation Charge (NSGC). PG&E's proposal also requests the establishment of a Public Policy Balancing Account (PPBA) to record actual costs and revenues for the customer-connected behind the meter thermal storage program with recovery through the Public Purpose Program (PPP) rate."[94]

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[94] Exhibit PGE-03 at 9-1.

SCE proposes to recover the costs of the Local Energy Storage and Management Systems projects from all customers and share the benefits of these projects with all customers, through the Cost Allocation Mechanism (CAM).[95] SCE proposes to recover the costs of the incentive payments to customers on SCE's MASH or SOMAH programs through the Public Purpose Programs Rate Component.[96]

The DACC/AReM and the CCA Parties (Joint Parties) summarize the cost recovery proposals of the three investor owned utilities. "PG&E and SDG&E each further proposed to recover the costs associated with their multi-use storage solely through distribution rates. SCE also proposed to procure multi-use storage pursuant to AB 2868, but requested cost recovery through the Cost Allocation Mechanism (CAM)."[97]

The Joint Parties provide six specific critiques of the cost recovery proposals of the three investor owned utilities.

1) A uniform cost allocation policy for multi-use storage is needed and the Commission should adopt the usage-based policy proposed by the Joint Parties to be applicable to all three IOUs and designed to recover an appropriate share of the project costs though both the generation and the non-generation rate components in compliance with D.14-10-045.
2) The Commission should reject, as unsupported by the statute, SCE's argument that AB 2868 requires CAM treatment.

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[95] Exhibit SCE-01 at 42.

[96] Exhibit SCE-01 at 55.

[97] Joint Parties Opening Brief on AB 2868 Issues at 3.

3) The Commission should revise the net capacity cost calculation for energy storage procured through CAM adopted in D.15-11-041 as proposed by the Joint Parties to include ancillary services and other revenues obtained through the wholesale markets operated by the California Independent System Operator (CAISO) as well as revenues associated with any other incentive mechanisms.
4) The Commission should require that the RA value of the energy storage procured through the non bypassable charges (NBC) of transmission rates, distribution rates, and the Public Purpose Program (PPP) charges be allocated proportionally to CCAs and ESPs, as is done today for CAM and demand response procurement.
5) The Commission should establish the policy that CCAs and ESPs are to be assigned credits or provided other recognition in their Integrated Resource Plans (IRPs) for energy storage procured by the IOUs through NBCs, which (a) provide greenhouse gas emissions reduction and renewable integration benefits; and involve installations targeted to Disadvantaged Communities (DACs).
6) The capacity values of any storage projects procured and paid for through CAM and other NBCs should be applied to the automatic limiter consistent with D.17-04-039 and Resolution E-4892.[98]

At this time, the Commission is not approving cost recovery for contracts that are not yet in consideration. At the time that the utilities propose the approval of contracts or projects pursuant to AB 2868, the utilities shall propose specific cost recovery mechanisms for each contract or project, consistent with the benefits received.

[98] Joint Parties Opening Brief on AB 2868 Issues at 3.

The Commission agrees with the Joint Parties that AB 2868 did not require CAM treatment for any resource approved pursuant that statute. Pub. Util. Code section 2838.8 reads as follows:

"It is the intent of the Legislature that the commission, in authorizing an electrical corporation to recover the costs of approved energy storage programs and investments from all customers pursuant to Section 2838.2, shall ensure that the costs for the programs and investments are recovered in proportion to the benefits received, consistent with Section 451." The plain language of this statue does not support that the Commission must grant CAM treatment.

At this time the Commission does not determine that CAM is the appropriate ratemaking treatment.

With PG&E's approved behind the meter thermal storage program, it proposed the establishment of a Public Policy Balancing Account (PPBA) to record actual costs and revenues for the customer-connected behind the meter thermal storage program with recovery through the Public Purpose Program (PPP) rate. The Commission agrees this is prudent, as customers will be able to take advantage of this program, regardless of whether the customer takes commodity service as a bundled customer of PG&E or from a CCA or ESP. PG&E's proposed rate recovery for its behind the meter thermal storage program is approved.

Cost recovery for specific investments and programs will be addressed in the Applications requesting Commission approval of the specific investments and programs. All requests for cost recovery, with the exception of PG&E's proposed and approved behind the meter thermal storage program, are denied.

4. Exhibit Identification, Confidential Treatment, and Outstanding Procedural Matters

This proceeding included the following exhibits:

AReM-01: Alliance for Retail Energy Markets, Direct Access Customer Coalition, California Choice Energy Authority, Marin Clean Energy, Peninsula Clean Energy, Silicon Valley Clean Energy, and Sonoma Clean Power's Testimony of Sue Mara.

LS-01: LS Power Development, LLC's Direct Testimony of Cody Hill in SDG&E's Application for Approval of its 2018 Energy Storage Procurement and Investment Plan Application 18-02-016.

NRDC-01: Natural Resources Defense Council's Opening Testimony of Pierre Delforge on Application of PG&E for Approval of 2018 Energy Storage Procurement and Investment Plan (including Attachments A, B, and C).

ORA-02: ORA's Prepared Testimony of Meghan O'Brien, Kaj Peterson, and Sonja Ziajaon on PG&E, SDG&E, and SCE's Application for Approval of Their 2018 Energy Storage Procurement and Investment Plans.

ORA-03: ORA's Rebuttal Testimony on PG&E, SDG&E, and SCE's Application for Approval of Their 2018 Energy Storage Procurement and Investment Plans.

PGE-04: PG&E's 2018 Energy Storage Procurement and Investment Plan, 2018 Assembly Bill 2868 Energy Storage Investments and Programs, Rebuttal Testimony.

PGE-05: Attachment A, Revised, to Chapter 2 of Volume 1 of PG&E's Prepared Testimony.

SBUA-01: Small Business Utility Advocates' Direct Testimony of Paul Chernick.

SBUA-02: Small Business Utility Advocates' Rebuttal Testimony of Paul Chernick.

SBUA-03: Direct Testimony of Paul Chernick Concerning Energy Storage Diversity Technology on behalf of Small Business Utility Advocates.

SCE-03: SCE's Rebuttal Testimony in Support of Its 2018 Energy Storage Procurement and Investment Plan - AB 2868 Track.

SDGE-11: SDG&E's Rebuttal Testimony of George Katsufrakis.

SDGE-12: SDG&E's Rebuttal Testimony of Kellen Gill.

SDGE-13: SDG&E's Rebuttal Testimony of Steven Prsha.

SDGE-14: SDG&E's Rebuttal Testimony of Ted Reguly.

SDGE-15: SDG&E's Rebuttal Testimony of Stephen Johnston.

SDGE-16: SDG&E's Rebuttal Testimony of Evan Bierman .

TURN-01: TURN's Prepared Testimony of Eric Borden Addressing Issues. Pertaining to AB 2868:

All marked exhibits (AReM-01, LS-01, NRDC-01, ORA-02, ORA-03, PGE-04, PGE-05, SBUA-01, SBUA-02, SBUA-03, SCE-03, SDGE-11, SDGE-12, SDGE-13, SDGE-14, SDGE-15, SDGE-16, and TURN-01) are received into evidence as of the date of this decision.

Because SDG&E's testimony includes confidential materials and therefore public (SDGE-05A, SDGE-08A, SDGE-16, ORA-02, ORA-03, and TURN-01) and confidential (SDGE-05AC, SDGE-08AC, SDGE-16C, ORA-02C, ORA-03C, and TURN-01C) versions of several exhibits were submitted. Consistent with the requirements of D.06-06-066,
D.17-09-023, and General Order (GO) 66-D, SDG&E filed and served a motion that included a declaration setting forth which data is proposed for confidential treatment and why.

The parties have proposed that the following exhibits be admitted under seal because they contain market-sensitive data: Exhibits SDGE-05AC, SDGE-08AC,

SDGE-16C, ORA-02C, ORA-03C, and TURN-01C. Good cause being shown, these exhibits are admitted under seal for the duration of three years.

On October 5, 2018, San Diego Gas & Electric Company (SDG&E) moved under Rule 11.4 to file its opening brief in this proceeding under seal. The motion is based on Commission Rules 11.4 and 13.8(c), Decision (D.) 17-09-023, and Commission GO 66-D.

Consistent with D.17-09-023 and GO 66-D, and as supported by declarations provided by SDG&E, the confidential versions of SDG&E's prepared testimony contain cost information related to scoring and evaluating bids in competitive solicitations that is entitled to confidential treatment.

SDG&E's motion states that SDG&E's found it necessary to display some confidential material in the opening brief. Specifically, the brief contains confidential material from exhibits: SDGE-05-AC, and SDGE-08-AC.

SDG&E's motion for leave to file portions of its opening brief under seal is granted. The confidential information in the brief shall be kept confidential for a duration of three years and shall not be made accessible or disclosed to persons other than the Commission and its staff except on further Commission order or Administrative Law Judge ruling. If San Diego Gas & Electric Company believes that it is necessary for this information to remain under seal for longer than the time periods specified in this ruling, it may file a motion showing good cause for extending this order by no later than 30 days before the expiration of this order.

The Commission affirms all rulings made by the assigned Commissioner and assigned ALJ. All motions not previously ruled on are denied as moot.

5. Comments on Proposed Decision

The proposed decision of the ALJ in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were

allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on March 18, 2019 by SDG&E, PG&E, SCE, CUE, the Joint Parties, Cal Advocates, SBUA, Green Power Institute, TURN, CESA, California Housing Partnership Corporation, and LS Power. Reply comments were filed on March 25, 2019 by SDG&E, PG&E, SCE, CUE, the Joint Parties, Cal Advocates, SBUA, Green Power Institute, TURN, CESA, and LS Power. Minor edits have been made throughout the Decision to clarify the intent of the Proposed Decision, including allowing SDG&E to consider the results if its initial AB 2868 RFP if it holds a supplemental RFP that conforms to the direction of this decision.

In its initial comments on the proposed decision, SDG&E included a motion requesting that the Commission set aside submission and take additional evidence. The appended evidence included an Independent Evaluator (IE) report that tracked and reported on SDG&E's RFP. The Commission's Docket Office rejected the motion because the motion was included in comments on the PD rather than being filed as a separate document. The Commission's Docket Office provided explicit direction to SDG&E to refile the motion, and SDG&E refiled the motion on April 05, 2019.

In our cursory review, the IE report contained numerous errors and omissions that made it difficult to impossible to interpret and determine the accuracy of the procurement cost information. Examples of these deficiencies include:

- Several Tables in the report do not label or define the unit value being displayed in multiple columns making it impossible for the reader to interpret the data. See Tables 3, 4 and 5.

- The unit value for Net Present Value (NPV) is not defined making it impossible to determine if NPV is a positive or negative number from a rate payer standpoint.
- NPV in this IE report appears to be used in a way not customary for other Commission procurement valuations. In this IE report it appears to be a value relative to the cost of other bids but does not tell the Commission if the projects represent a good value to the ratepayer.
- SDG&E has expressed that contract costs are below its proposed cost cap. Total costs only give the costs of the projects themselves. To understand whether the projects provide benefits to rate payers the Commission would need to know the expected revenues compared to costs to determine if the batteries represent a positive or negative value to the ratepayers. SDG&E has not provided information that can inform the Commission on that important decision. This deficiency would be addressed if cost effectiveness information is provided consistent with the guidance in Appendix A.

6. Assignment of Proceeding

Michael Picker is the assigned Commissioner and Brian Stevens is the assigned Administrative Law Judge in this proceeding.

Findings of Fact

1. The cost cap for SDG&E's proposed utility owned microgrid projects is $284.6 million.
2. The total cost for SDG&E's proposed behind the meter program is $2,000,000.
3. The total cost for PG&E's proposed behind the meter thermal storage program is $6,316,996.
4. The total cost for SCE's proposed behind the meter program is $10,000,00.

5. One methodology to determine which projects most meet the guidelines of AB 2868 would be to use a statutory weighting methodology, like the one proposed by SDG&E.

6. SDG&E did not propose specific contracts for approval by the Commission for front of the meter energy storage resources.

7. It is reasonable to allow SDG&E to consider the results of its initial request for proposals that it held on April 6, 2018 in conjunction with a future request for proposals that adheres to the guidance put forth in this decision.

8. Expanded CARE facilities include transitional housing (drug rehabilitation, half-way houses), short or long-term care facilities (hospice, nursing homes, children's and seniors' homes), group homes for physically or mentally disabled persons, or other nonprofit group living facilities.

9. Projects that adhere to a framework like PG&E proposed for investments in different categories may qualify for approval pursuant to AB 2868; PG&E's proposed categories are comprised of (1) deploying energy storage in the North Bay to improve fire resilience, (2) supporting local capacity requirements, (3) supporting reliability for customers in low-income and disadvantaged communities, and (4) supporting transportation electrification.

10. PG&E did not propose specific site locations, technologies, nor cost estimates for any front of the meter investments pursuant to AB 2868.

11. Heat pump hot water heating thermal storage is a viable behind the meter option for energy storage.

12. The administrators of PG&E's behind the meter thermal storage program are able to work closely with those administering PG&E's San Joaquin Valley pilots and scaled programs to ensure customers who are fuel-switching will also have the opportunity to enroll in this thermal storage program

13. SCE, like PG&E, serves customers in the San Joaquin Valley who are eligible for behind-the-meter thermal storage pilot programs under R.15-03-010.

14. SCE did not propose a cost for its requested authorization for the procurement of 40 MW of front of the meter energy storage investments.

15. SDG&E and SCE's proposed behind the meter storage incentive programs are similar to the current utility administered SGIP, and there is significant overlap between the proposals and SGIP.

16. SDG&E's, PG&E's, and SCE's Applications all comply with D.17-04-039.

17. The requirement to minimize overall costs and maximize overall benefit does not preclude the requirement for the procurement resulting from investments or programs, proposed specifically pursuant to AB 2868, to adhere to a cost effectiveness requirement.

18. Nothing in AB 2868 reveals a Legislative intent to excuse AB 2868 projects from the requirements and provisions of existing statutes on energy storage.

19. The terms "investment" and "procurement" are used interchangeably between Pub. Util. Code Section 2838.2 to Section 2836 (*i.e.* procurement mandated under AB 2868 and 2514, respectively).

20. The Commission required that if the IOUs conducted requests for offers pursuant to AB 2514 for utility owned energy storage projects, the IOUs must also, without bias towards ownership model, consider third party owned energy storage projects.

21. There is no statutory requirement for the investments resulting from AB 2868 to only include utility owned projects.

22. AB 2868 requires the commission to ensure that the proposals of SDG&E, PG&E, and SCE do not unreasonably limit or impair the ability of non-utility enterprises to market and deploy energy storage systems.

23. Similar to the Commission's policy in the implementation AB 2514, there is not sufficient evidence to support placing a limitation on the amount of utility owned procurement the investor owned utilities may conduct pursuant to AB 2868.

24. Requiring SDG&E, PG&E, and SCE to consider third party owned projects and utility owned projects without bias towards either ownership model during request for offers and in the selection methodology for AB 2868 investments meets the requirement to not unreasonably limit or impair the ability of non-utility enterprises to market and deploy energy storage systems.

25. It is not apparent from this record that proximity to a front of the meter energy storage resource provides direct benefits specifically to nearby communities.

26. SGIP provides energy storage incentives to low-income participants through the SGIP Equity Budget.

27. With the exception of PG&E's proposed behind the meter thermal storage program, the Applications of SDG&E, PG&E, and SCE are not complete enough to justify preapproval through an Advice Letter process.

28. SDG&E, PG&E, and SCE all addressed safety in their Applications.

29. AB 2868 does not require that the Commission approve CAM treatment for the procurement resulting from AB 2868.

30. An effective methodology for PG&E to recover the costs of its behind the meter thermal storage program is through the establishment of a Public Policy Balancing Account to record actual costs and revenues for the customer-connected behind the meter Thermal Storage Program with recovery through the Public Purpose Program rate.

31. It is appropriate at the time of contract or program approval for the Commission to determine the reasonable rate recovery and rate treatment methodologies.

Conclusions of Law

1. The Applications of SDG&E, PG&E, and SCE should not be adopted except as modified by this decision.

2. The Commission may place a condition on contract or program approval, pursuant to AB 2868, that ensures third party energy storage facilities can compete fairly against utility owned facilities.

3. No programs, revenue requirements, or ratemaking treatments should be pre-approved for SDG&E and SCE.

4. SDG&E should be authorized to utilize its statutory weighting methodology described in Application 18-02-016 to justify the reasonableness of future proposed projects pursuant to Assembly Bill 2868 as long as its reasonableness showing indicates the proposed projects also comply with this decision, including Appendix A, and all other statutory requirements of AB 2868.

5. PG&E should be authorized to move forward with its proposed Assembly Bill 2868 behind the meter thermal storage program by spending up to $6.4 million during the period from 2019 to 2025, subject to filing a subsequent Tier 3 Advice Letter for final approval of PG&E's program, and subject to a program cap of 5 MW by September 30, 2019. All other investments proposed by PG&E should not be authorized.

6. PG&E should be authorized to recover the costs of its proposed behind the meter thermal storage program during the period from 2019 to 2025 through the establishment of a Public Policy Balancing Account to record actual costs and

revenues for the customer-connected behind the meter Thermal Storage Program with recovery through the Public Purpose Program rate.

7. When PG&E submits its Tier 3 Advice Letter to implement its the behind the meter thermal storage program, it should be required to inform the Commission of the specific actions it will take to prioritize public sector and low-income customers, and it should include an outreach plan to ensure that customers understand how their rates will change and what the bill impact would have been based on historical usage.

8. For the purpose of projects proposed pursuant to Pub. Util. Code Section 2836, Heat Pump Water Heater technology should be considered a type of thermal energy storage pursuant to Pub. Util. Code Section 2835.

9. SDG&E, PG&E, and SCE should be able to hold requests for offers that comply with this decision, including Appendix A, for front of the meter energy storage projects pursuant to Assembly Bill 2868.

10. SDG&E should be able to consider the results of its initial request for proposals that it held on April 6, 2018 in conjunction with a future request for proposals that adheres to the guidance put forth in this decision. The results of these combined request for proposals should not deemed reasonable by this decision, however, SDG&E should be able to use these combined results in a future Application it may submit to the Commission seeking approval of specific projects.

11. SCE should be encouraged to include, in a future Application, considerations of how its proposed projects will allow for support of the heat pump water heater component of their San Joaquin Valley pilot projects as defined in Decision 18-12-015.

12. If SDG&E, PG&E, and SCE, pursuant to Assembly Bill 2868, propose utility owned resources on utility owned property, the cost effectiveness calculation

should take into consideration a reasonable market value of the utility owned property that is proposed to be occupied for the energy storage facility.

13. SDG&E, PG&E, and SCE should make a showing for future proposed programs pursuant to AB 2868 that the proposals are significantly unique from other behind the meter programs, including SGIP.

14. Any program or investment proposed by SDG&E, PG&E, and SCE pursuant to Assembly Bill 2868 that requires the participating customers to be on mandatory time of use rates should include in its implementation plan a clear explanation on what customer outreach the utility will conduct to ensure their customers understand how their rates will change and what the bill impact would have been based on historical usage.

15. When future proposals for investments or programs pursuant to Assembly Bill 2868 come before the Commission, the Applicants should propose a reasonable mechanism for rate recovery with the final determination made by the Commission at the time of contract approval.

16. Exhibits AReM-01, LS-01, NRDC-01, ORA-02, ORA-03, PGE-04, PGE-05, SBUA-01, SBUA-02, SBUA-03, SCE-03, SDGE-11, SDGE-12, SDGE-13, SDGE-14, SDGE-15, SDGE-16, and TURN-01 should be identified and received into evidence as of the date of this decision.

17. Exhibits SDGE-05AC, SDGE-08AC, SDGE-16C, ORA-02C, ORA-03C, and TURN-01C should be admitted under seal for the duration of three years. During this time frame, the specified information should not be publicly disclosed except on further Commission order or Administrative Law Judge ruling. If SDG&E, Cal Advocates, or TURN believes that it is necessary for this information to remain under seal for longer than three years, the party should file a motion showing good

cause for extending this order by no later than 30 days before the expiration of this order.

18. SDG&E's motion for leave to file portions of its opening brief under seal should be granted for a duration of three years. During this time frame, the specified information should not be publicly disclosed except on further Commission order or Administrative Law Judge ruling. If SDG&E believes that it is necessary for this information to remain under seal for longer than three years, the utility should file a motion showing good cause for extending this order by no later than 30 days before the expiration of this order.

19. A.18-02-016, A.18-03-001, and A.18-03-002 should be closed.

O R D E R

IT IS ORDERED that:

1. The Applications of San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company are not adopted except as modified by this decision.

2. No programs, revenue requirements, or ratemaking treatments are pre-approved for San Diego Gas & Electric Company and Southern California Edison Company.

3. San Diego Gas & Electric Company may utilize its statutory weighting methodology described in Application 18-02-016 to justify the reasonableness of future proposed projects pursuant to Assembly Bill 2868 as long as its reasonableness showing indicates the proposed projects also comply with this decision, including Appendix A, and all other statutory requirements of AB 2868.

4. Pacific Gas and Electric Company is authorized to move forward with its proposed Assembly Bill 2868 behind the meter thermal storage program by spending up to $6.4 million during the period from 2019 to 2025, subject to filing a

subsequent Tier 3 Advice Letter for final approval of Pacific Gas and Electric Company 's program, and subject to a program cap of 5 megawatts by September 30, 2019. All other investments proposed by Pacific Gas and Electric Company are not authorized.

5. Pacific Gas and Electric Company is authorized to recover the costs of its proposed behind the meter thermal storage program during the period from 2019 to 2025 through the establishment of a Public Policy Balancing Account to record actual costs and revenues for the customer-connected behind the meter Thermal Storage Program with recovery through the Public Purpose Program rate.

6. When Pacific Gas and Electric Company submits its Tier 3 Advice Letter to implement its the behind the meter thermal storage program, it must inform the Commission of the specific actions it will take to prioritize public sector and low-income customers, and it must include an outreach plan to ensure that customers understand how their rates will change and what the bill impact would have been based on historical usage.

7. San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company may hold requests for offers that comply with this decision, including Appendix A, for front of the meter energy storage projects pursuant to Assembly Bill 2868.

8. San Diego Gas & Electric Company may consider the results of its initial request for proposals that it held on April 6, 2018 in conjunction with a future request for proposals that adheres to the guidance put forth in this decision. The results of these combined request for proposals are not deemed reasonable by this decision, however, San Diego Gas & Electric Company may use these combined results in a future Application it may submit to the Commission seeking approval of specific projects.

9. Southern California Edison is encouraged to include, in a future Application, considerations of how its proposed projects will allow for support of the heat pump water heater component of their San Joaquin Valley pilot projects as defined in D.18-12-015.

10. If San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company, pursuant to Assembly Bill 2868, propose utility owned resources on utility owned property, the cost effectiveness calculation shall take into consideration a reasonable market value of the utility owned property that is proposed to be occupied for the energy storage facility.

11. San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company shall make a showing for future proposed programs pursuant to AB 2868 that the proposals are significantly unique from other behind the meter programs, including the Self-Generation Incentive Program.

12. Any program or investment proposed by San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company pursuant to Assembly Bill 2868 that requires the participating customers to be on mandatory time of use rates must include in its implementation plan a clear explanation of what customer outreach the utility will conduct to ensure their customers understand how their rates will change and what the bill impact would have been based on historical usage.

13. When future proposals for investments or programs pursuant to Assembly Bill 2868 come before the Commission, the Applicants shall propose a reasonable mechanism for rate recovery with the final determination made by the Commission at the time of contract approval.

14. Exhibits AReM-01, LS-01, NRDC-01, ORA-02, ORA-03, PGE-04, PGE-05,

SBUA-01, SBUA-02, SBUA-03, SCE-03, SDGE-11, SDGE-12, SDGE-13, SDGE-14, SDGE-15, SDGE-16, and TURN-01 are identified and received into evidence as of the date of this decision.

15. Exhibits SDGE-05AC, SDGE-08AC, SDGE-16C, ORA-02C, ORA-03C, and TURN-01C are admitted under seal for the duration of three years. During this time frame, the specified information may not be publicly disclosed except on further Commission order or Administrative Law Judge ruling. If San Diego Gas & Electric Company, the Public Advocates Office, or The Utility Reform Network believes that it is necessary for this information to remain under seal for longer than three years, the party may file a motion showing good cause for extending this order by no later than 30 days before the expiration of this order.

16. San Diego Gas & Electric Company's motion for leave to file portions of its opening brief under seal is granted for a duration of three years. During this time frame, the specified information may not be publicly disclosed except on further Commission order or Administrative Law Judge ruling. If San Diego Gas & Electric Company believes that it is necessary for this information to remain under seal for longer than three years, the utility may file a motion showing good cause for extending this order by no later than 30 days before the expiration of this order.

17. Application (A.) 18-02-016, A.18-03-001, and A.18-03-002 are closed.

This order is effective today.

Dated _____, at Oxnard, California.

APPENDIX A

1) Energy Storage Procurement Targets

a) Procurement Targets for the Utilities

Southern California Edison Company, Pacific Gas and Electric Company, and San Diego Gas & Electric Company may each procure (i.e., pending contract, under contract, or installed) 166.66 megawatts (MW) of energy storage, where MW represents the peak power capacity of the storage resource in terms of the maximum discharge rate. No more than 25 percent of the capacity of distributed energy storage systems approved for programs and investments pursuant to this section may be provided by behind the meter systems.

2) Energy Storage Procurement Program Design

a) Procurement Guidelines

The investor owned utilities (IOU) shall procure energy storage through competitive solicitations involving requests for offers (RFO).

If an IOU believes that more than one competitive solicitation is needed to meet its procurement target, it should note its plan for future solicitations in its Application requesting authorization for contract approval. The IOUs shall make every effort to cluster the contract approval requests into single Applications for multiple projects rather than submitting multiple applications for individual projects.

b) Cost Effectiveness

The IOUs shall only procure energy storage resources that are cost effective and meet a least-cost, best-fit criteria. The IOUs shall identify expected revenue collected from energy storage resources participating in the California Independent System Operator (CAISO) market when calculating the cost

effectiveness of energy storage resources. For any project that is proposed to provide multiple uses, the IOUs must adhere to the Commission's policy for multiple use application procurement, including Decision (D.) 18-01-003, when participating in the CAISO market.

c) Project Ownership & Market Concentration Limits

When procuring energy storage systems through competitive RFOs, the utilities shall consider all forms of resource ownership (utility-owned, third-party owned, customer-owned, joint ownership). The RFO allow bid participation and be evaluated without any bias towards any ownership model.

An IOU proposing utility-owned storage shall pursue a competitive process consistent or comparable to the process described in D.07-12-052. IOUs should hold a competitive RFO for turnkey project development of the resource under a Purchase and Sale Agreement (PSA). If a competitive solicitation for a PSA contract to build the utility-owned project is not appropriate, the IOU should explain in its application why this is the case and propose with an Engineering, Procurement, and Construction (EPC), straight utility build project approach, or other approach, depending on the circumstances.

Where an energy storage system has been funded in part by a local, state, or federal public program, only the expenditures not publicly funded may be proposed for rate recovery by the IOUs. However, the project will be bid in and be evaluated based upon its full cost after any public funding, but rate recovery shall be authorized only for the portion of the cost that is not publicly funded.

If an IOU asserts that particular value streams are only obtainable by procuring or investing in assets that are utility owned, it must make a sufficient

and reasonable showing in the Application requesting contract approval why this is the case.

d) Procurement Review Group

Each IOU shall be required to present the design of each solicitation plan and the results of each solicitation to its Procurement Review Group, including the evaluation methodology applied to the bids received in response to the RFO.

e) Multiple Use Application

For any project that is proposed to provide multiple uses, the IOUs must adhere to the Commission's policy for multiple use application procurement, including D.18-01-003. Each IOU must include information in its Application regarding how the proposal adheres to the Commission's rules for multiple use application procurement.

f) Independent Evaluator

Each IOU shall employ an independent evaluator (IE) to assess the competitiveness and integrity of its solicitation and to prepare a post-solicitation report.

The IE report shall include, at a minimum, an evaluation of the fairness of the IOUs solicitation and bid selection process, an assessment of project-specific negotiations, an analysis of the RFO bids, bid evaluation process (including valuation tools), an analysis of the overall market, and whether the contracts merit Commission approval. The report shall also include project characteristics such as technology, location, project size, online date and project viability. The report shall be served to the service list of the energy storage proceeding active at the time. Energy Division may provide additional direction on the reports as needed.

The IOU shall submit the IE's report as part of its Application requesting approval of contracts resulting from the solicitation.

g) Treatment of Solicitation and Contract Data

All data related to all bids in each solicitation shall be handled in a manner consistent with D.06-06-066 or any subsequent applicable Commission decision on the confidentiality of procurement data. However, all information that is afforded confidential treatment shall become public three years after the date the contract is approved by the Commission, unless an earlier date is specified in the IOU Matrix.

h) Commission Approval of Procurement Contracts

Following each solicitation, the IOUs shall negotiate signed contracts within one year of the solicitation, contingent on Commission approval.

The Application requesting Commission approval of the contracts shall be **submitted** no later one year from the date of the solicitation, unless the Applicant makes a reasonable showing, as determined by the Commission, that an alternative schedule is necessary.

i) Procurement Application

When seeking approval of the contracts executed pursuant to AB 2868, the IOUs must include the following information in each Application.

- The contracts that the IOUs propose for the Commission to approve, including contracts that provide for third party ownership or utility ownership;
- The IE's report;
- A chart that provides information including total cost, technology, cost effectiveness, capacity and energy volume, counterparty, and online date.
- A list of all applicable rules and statutes impacting the procurement;

- For multiple use application projects, information indicating how the proposed contracts meet the Commission's multiple use application requirements, with the burden on the Applicant to prove that the proposed contracts meets the Commissions multiple use application rules;
- An explanation of how the procurement meets the mandates of AB 2868, including
    - prioritization those programs and investments that provide distributed energy storage systems to public sector and low-income customers;
    - utilization an appropriate energy storage management systems;
    - reduction of dependence on petroleum;
    - meeting air quality standards; and
    - reduction of emissions of greenhouse gases.
- Cost effectiveness analysis for all bids considered in the RFOs, including
    - Consideration of the full range of benefits and costs identified in the use case framework developed and the EPRI and DNV KEMA reports submitted in this proceeding;[99]
    - A net present value, net market value, and least cost best fit analysis; and
    - An optional utility-specific proprietary evaluation protocol.
- An explanation of why the selected bids were short listed and executed, including information on how the

[99] The EPRI and DNV KEMA energy storage cost effectiveness reports are available here: http://www.cpuc.ca.gov/PUC/energy/electric/storage.htm.

projects are considered cost effective and meet the lest-cost, best-fit criteria.

- An explanation of how proposed energy storage projects could support utility public safety power shut down protocols and how the location of proposed projects intersect with the CPUC Fire-Threat Map and could provide additional resiliency value to the electric distribution system.
- An explanation of whether the proposed energy storage project was included (or will be included, if so when) in the IOUs wildfire mitigation plan filed pursuant to Pub. Util. Code Section 8386(c), including whether the proposed energy storage was approved with reference to the supporting decision.
- An explanation of whether the costs of the proposed energy storage project will be charged in whole or in part to the Wildfire Mitigation Plan related memorandum accounts established by Pub. Util. Code Section 8386, and why or why not.
- A copy of the relevant sections of the IOU's WMP that references or discusses the proposed energy storage project or similar technology.
- A report on all storage resources procured to date in all Commission proceedings. In the report, the IOUs are directed to identify the type of storage technology, the capacity of the projects (in MW & MWh), the location of the project (city and zip code level if public), the proceeding in which it is procured, and the procurement mechanism (e.g., RFO, RAM, SGIP, etc.), applicable storage grid domain, status of the project (CPUC approval, construction stage), estimated online date, expected operational life, primary and secondary applications of the project, technology manufacturer and project owner & operator. Energy Division may provide additional direction on changes in the required content and format of the reports as needed; and

- Request for cost-recovery authorization as appropriate.

(END OF APPENDIX A)