

Application: A.18-02-

Exhibit SDGE-

Witness: Steven Prsha

****PUBLIC REDACTED VERSION****

DIRECT TESTIMONY OF

STEVEN PRSHA

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY



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

FEBRUARY 28, 2018

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**DIRECT TESTIMONY OF
STEVEN PRSHA**

I. PURPOSE AND OVERVIEW

My direct testimony describes the seven utility-owned energy storage investments proposed by San Diego Gas & Electric Company (“SDG&E”) to accelerate the widespread deployment of distributed energy storage systems based on the goals and priorities directed by California Assembly Bill (“AB”) 2868.¹ My testimony² describes the specific project sites, how these investments align with the AB 2868 statutory criteria, the estimated project costs, and proposed cost cap for each project.

In total, SDG&E requests Commission approval for 100 megawatts (“MW”) in circuit-level energy storage investments, and an associated cost cap for each project based on estimated project costs. Seven projects are proposed, three of which have been identified as optimal sites to be deployed during the 2019 timeframe. All seven investments will focus on providing backup power capabilities by using microgrid design and technology to support public sector customers, such as municipal critical facilities or public-sector agencies in accordance with the framework described in Stephen T Johnston’s testimony. Additionally, these investments will be located on SDG&E-owned land adjacent to substations. Energy storage deployed through these investments will maximize ratepayer benefits by providing multiple services, as encouraged by the Commission’s multiple-use application policies.³

¹ Stats. 2016, ch.681, *codified at* Cal. Pub. Util. Code (“P.U. Code”) §§ 2838.2 and 2838.3. All statutory citations herein to “sections” are to the P.U. Code unless otherwise indicated.

² References to “testimony” herein are to the prepared direct testimony served in support of this application.

³ As most recently reflected in Decision (“D.”) 18-01-003.

1 SDG&E investments align with AB 2868 and meet California’s greenhouse gas (“GHG”)
2 goals, by deploying energy storage to provide resiliency service to critical public-sector
3 infrastructure and prioritizing low-income areas. In these ways, SDG&E will maximize
4 ratepayer benefits, prioritize public sector and low-income customers, and accelerate the
5 deployment of distributed energy storage systems.

6 **II. PROPOSED UTILITY-OWNED ENERGY STORAGE PROJECTS**

7 **A. Overview**

8 The proposed energy storage investments are circuit-level microgrid projects selected
9 using the evaluation process described in Stephen T Johnston’s testimony, which incorporate the
10 AB 2868 statutory criteria. In accordance with the Commission’s recent Decision on Multiple-
11 Use Application Issues,⁴ these projects are designed to provide “multiple benefits and services to
12 the electricity system.”⁵ The primary use case for these projects is to provide backup power and
13 enhance circuit resiliency⁶ to critical public-sector facilities and to prioritized locations in low-
14 income communities.

15 The circuit-level microgrid projects will be located on existing SDG&E substation
16 property and connected to the grid. However, during a substation outage or for other distribution
17 operation needs, these energy storage assets will be able to disconnect from the larger grid and
18 island a predetermined load. The energy storage resource will continue to power critical public

⁴ D.18-01-003.

⁵ *Id.* at 2.

⁶ The National Renewable Energy Laboratory (“NREL”) states: “For a power system to be resilient, it must be capable of islanding and operating independently from the grid during times of outages.” *See* NREL, *Valuing the Resilience Provided by Solar and Battery Energy Storage Systems* (January 2018) at 1. Available at: <https://www.nrel.gov/docs/fy18osti/70679.pdf>

See also D.16-12-036 at 78, Ordering Paragraph 2.

1 facilities and coincidental load located on the microgrid. An overview of the seven circuit-level
 2 proposed energy storage projects is provided below in Table SP-1, including the name, location,
 3 capacity, expected commercial on-line date, term and multiple customer sites served by each
 4 project.

5 **Table SP – 1**
 6 **Utility-Owned Energy Storage Projects**
 7

| Project Name | Location | Capacity | Expected COD | Customer Sites | Low-Income⁷ | DAC⁸ |
|---------------------|-------------------------------|-----------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------|
| Kearny | Kearny Mesa San Diego, CA | 30 MW / 40 MWh | 12/31/2019 | City of San Diego Metropolitan Operations Center, Polinsky Children’s Center, CA State Police and Border Division HQ, County Office of Emergency Services & Sheriff | No | Yes |
| Melrose | Vista, CA | 20 MW / 20 MWh | 12/31/2019 | Vista Library Cool Zone, Civic Center, Fire Station 6, Vista Courthouse, Vista Detention Facility, San Diego County Sheriff’s Department | Yes | Yes |
| Boulevard | Boulevard, CA | 10 MW / 10 MWh | 12/31/2019 | County Sheriff Dept., San Diego County Fire Station 47, Boulevard Border Patrol Station, Campo Reservation Fire Station, CAL Fire White Star | Yes | Yes |
| Clairemont | Clairemont Mesa San Diego, CA | 10 MW / 10 MWh | 12/31/2020 | Balboa Branch Library (Cool Zone), Fire Station 36 | No | No |

⁷ See testimony of Stephen T Johnston for a description of the low-income designation

⁸ For the purposes of this testimony, DACs are defined as sites in the top quartile of census tracts defined through the most updated version of California Environmental Protection Agency’s CalEnviroScreen, either on a state-wide or utility territory basis, whichever is broader. DACs must also meet the spirit of the definition, as described in D.16-12-065. Available at: <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>

| | | | | | | |
|----------|----------------------------|----------------|------------|-------------------------------------------------------------------------|-----|-----|
| Paradise | Skyline San Diego, CA | 10 MW / 10 MWh | 12/31/2020 | Fire Station 51, South East Division Police department, Fire Station 32 | Yes | Yes |
| Elliot | Tierrasanta, San Diego, CA | 10 MW / 10 MWh | 12/31/2020 | Fire Station 39, Tierrasanta Public Library | No | No |
| Santee | Santee, CA | 10 MW / 10 MWh | 12/31/2020 | Fire Station 4, Padre Dam Northcote Pump Station | No | Yes |

B. 2019 Projects

This section describes each of the circuit-level projects that are proposed in the 2019 timeframe, estimated project costs, and proposed cost cap. The following three circuit-level microgrid energy storage projects located at SDG&E’s Kearny, Melrose and Boulevard substations have been identified as optimal sites to be deployed in the 2019 timeframe due to the multiple benefits offered by each project as well as the ability to construct the projects in the expedited timeframe. This target can change based on the Commission approval date of the SDG&E AB 2868 program and other possible factors. By using utility-owned land and existing infrastructure, these sites were selected to maximize benefits and minimize costs. These circuit-level projects also serve multiple critical facilities. With the ability to construct them in an expedited timeframe, these projects will readily provide resiliency services to the community during emergencies and other unforeseen outages. Accordingly, these projects merit an expedited online date of 2019.

1. Kearny

a. Project overview

The Kearny circuit-level energy storage project is a 30 MW, 40 MWh energy storage project located on SDG&E’s Kearny Operations Center in San Diego, California. Kearny Mesa is a community in the eastern part of San Diego, California. The site will be constructed after a Request for Proposal (“RFP”) competitive solicitation process. The proposed on-line date is

1 December 31, 2019. The Kearny energy storage project will be constructed on existing SDG&E
2 land within the boundaries of an existing SDG&E Operations Center and adjacent to Kearny
3 substation. The energy storage systems will interconnect to Kearny substation on three separate
4 circuits, each of which serve the facilities/agencies noted in table SP-1 above. The project site
5 provides an ideal location for leveraging existing interconnection capacity to repower the site
6 with a modern grid-scale energy storage resource.

7 The Kearny facility will have the capability to island⁹ multiple critical public-sector
8 facilities including: the City of San Diego Metropolitan Operations Center, Polinsky Children’s
9 Center, The California State Police and Border Division headquarters, and the County Office of
10 Emergency Services & Sheriff, during a system disturbance, providing back-up power resiliency.

11 The Polinsky Children’s Center is a 24-hour facility for the temporary emergency shelter
12 of children who must be separated from their families for their own safety, or when parents
13 cannot provide care. Each month more than 300 children ages birth to 18 years old are admitted
14 to the Polinsky Children’s Center.¹⁰ The California State Police and Border Division
15 headquarters office is strategically located to provide the highest level of safety, service and
16 security from the devoted members of the California Highway Patrol. The Office of Emergency
17 Services (OES) coordinates the overall county response to disasters. The OES is responsible for
18 alerting and notifying appropriate agencies when disaster strikes; coordinating all agencies that
19 respond; ensuring resources are available and mobilized in times of disaster; developing plans
20 and procedures for response to and recovery from disasters; and developing and providing

⁹ “Island” refers to the ability to isolate a portion of the grid and to operate that portion independently from the rest of the grid.

¹⁰ See https://www.sandiegocounty.gov/hhsa/programs/cs/child_welfare_services/polinsky_childrens_center.html

1 preparedness materials for the public.¹¹ The Kearny circuit-level microgrids will allow the
2 critical facilities described above to remain operational during power outages. This increased
3 grid resilience benefits the community by ensuring the uninterrupted availability of essential
4 services.

5 **b. AB 2868 evaluation results**

6 In addition to supporting multiple critical facilities outlined above, the Kearny site will
7 provide 30 MW of energy storage to help integrate renewables and reduce GHG emissions.
8 There are 1300 kW of renewables already installed on the distribution circuits feeding into the
9 circuit-level microgrids with more proposed to be added in the future. The energy storage
10 system will be able to absorb and store excess solar generation and provide that energy back on
11 the grid when it is needed. The project will help reduce dependence on petroleum by limiting the
12 need for back-up diesel generation at these critical facilities. Currently, at least four of the
13 facilities have back-up generation (City of San Diego Metro Ops Center, County of Emergency
14 Services & Sheriff, and County Ops Center), the use of which would be offset by the integration
15 of energy storage systems. This site prioritizes the public sector by providing resiliency to the
16 multiple critical sites located on the distribution circuit. Lastly, this site will be able to
17 participate in the California Independent System Operator (“CAISO”) market¹² used to provide
18 local resource adequacy to the extent these resources qualify for resource adequacy.¹³

¹¹ See <https://www.sandiegocounty.gov/oes/>

¹² See Evan M. Bierman’s testimony.

¹³ See Jennifer W. Summers’s testimony.

c. Project costs

Table SP-2 below provides details around the total direct and indirect costs outlined in the capital cost cap, as well as the anticipated operations and maintenance (“O&M”) direct costs associated with the Kearny energy storage circuit-level microgrid project. All the values are shown on a nominal basis. Based on the estimated project costs, SDG&E requests Commission approval of approximately [REDACTED] for the Kearny project. This is a not-to-exceed cost cap. The regulatory accounting, revenue requirement and cost recovery of this AB 2868 investment are described in the testimony of Noma G. Jasso, Michael R. Woodruff/James G. Vanderhye Jr., and Kellen C. Gill, respectively.

**Table SP – 2
Kearny Mesa Estimated Project Costs**

| Capital Cost | Amount | Notes |
|------------------------------------------------|----------------------|----------------------------------------------------------|
| Total Direct Costs | [REDACTED] | Includes interconnection and CAISO network upgrade costs |
| Total Indirect Costs | [REDACTED] | |
| Contingency | [REDACTED] | |
| Total Project Costs | [REDACTED] | |
| <u>Operations and Maintenance Costs</u> | <u>Amount</u> | <u>Notes</u> |
| O&M Fixed Maintenance ¹⁴ | [REDACTED] | 5% of total Project Costs |
| O&M Variable Costs (per cycle) ¹⁵ | [REDACTED] | Variable costs for each MWh of discharged energy |

¹⁴ O&M estimations are included in the cost cap but are subject to change. These estimations contain two categories: fixed and variable. The fixed O&M has been estimated at 5% of the total project costs. The variable O&M is estimated at [REDACTED] per MWh of discharge from the unit. The cycling is estimated at 365 deep cycles per year for 10 years.

¹⁵ See fn. 14.

1 **2. Melrose**

2 **a. Project overview**

3 The Melrose circuit-level energy storage project is a 20 MW, 20 MWh energy storage
4 project located in Vista, California. Vista is a city in Southern California located in northwestern
5 San Diego County and is a designated low-income community.¹⁶ The proposed on-line date is
6 December 31, 2019. The Melrose energy storage project will be constructed on existing SDG&E
7 land, and will interconnect to Melrose substation. The Melrose facility will have the capability
8 to island critical public-sector facilities including the Civic Center, Fire Station 6, Vista
9 Courthouse, Vista Library Cool Zone, Vista Detention Facility and San Diego County Sheriff’s
10 Department during a system disturbance, thus providing back-up power resiliency.

11 Fire Station 6 serves Otay Mesa and its surrounding areas. Vista Library Cool Zone is a
12 designated, air-conditioned building that residents can go beat the heat in for free. The sites
13 provide refreshing relief for older adults and others, especially for seniors and disabled persons
14 with health problems that could be complicated by the effects of heat.¹⁷ The Vista Detention
15 Facility serves as the primary point of intake for arrestees in northern San Diego County. San
16 Diego County Sheriff’s Department in the City of Vista ensures the safety and security of those
17 living, working, and visiting the area and provide a full range of public safety services.

18 **b. AB 2868 evaluation results**

19 The Melrose site will provide 20 MW of energy storage on two separate circuits (10 MW
20 each) to help integrate renewables and reduce GHG emissions. The circuit-level microgrids will
21 support multiple critical facilities outlined above. There is 2250 kW of renewables already

¹⁶ See testimony of Stephen T Johnston for a description of the low-income designation.

¹⁷ See <http://www.ci.vista.ca.us/services/residential-services/cool-zones>

1 installed on the distribution circuits feeding into the circuit –level microgrids. The project will
2 help reduce dependence on petroleum by offsetting backup diesel generation at these critical
3 facilities. Currently, at least three of the facilities have back-up generation Civic Center, Fire
4 Station 6, and Vista Detention Facility, the use of which would be reduced by the integration of
5 energy storage. Lastly, this site will be able to participate in the CAISO market¹⁸ used to provide
6 local resource adequacy to the extent these resources qualify for resource adequacy.¹⁹

7 **c. Project costs**

8 The below table, Table SP-3 provides details around the total direct and indirect costs
9 outlined in the capital cost cap, as well as the anticipated O&M direct costs associated with the
10 Melrose energy storage circuit-level microgrid project. All the values are shown on a nominal
11 basis. Based on the estimated project costs, SDG&E requests Commission approval of
12 approximately [REDACTED] for the Melrose project. This is a not-to-exceed cost cap. The regulatory
13 accounting, revenue requirement and cost recovery of this AB 2868 investment are described in
14 the testimony of Noma G. Jasso, Michael R. Woodruff/James G. Vanderhye Jr., and Kellen C.
15 Gill, respectively.

¹⁸ See Evan M. Bierman’s testimony.

¹⁹ See Jennifer W. Summers’s testimony.

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**Table SP – 3
Melrose Estimated Project Costs**

| Capital Cost | Amount | Notes |
|------------------------------------------------|----------------------|----------------------------------------------------------|
| Total Direct Costs | ██████████ | Includes interconnection and CAISO network upgrade costs |
| Total Indirect Costs | ██████████ | |
| Contingency | ██████████ | |
| Total Project Costs | ██████████ | |
| <u>Operations and Maintenance Costs</u> | <u>Amount</u> | <u>Notes</u> |
| O&M Fixed Maintenance | ██████████ | 5% of total Project Costs |
| O&M Variable Costs (per cycle) | ██████████ | Variable costs for each MWh of discharged energy |

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3. Boulevard

c. Project overview

The 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 the eastern extent of San Diego County and is a designated low-income community.²⁰ The site will be constructed after a RFP competitive solicitation process. The proposed on-line date is December 31, 2019. The Boulevard energy storage project will be constructed on existing SDG&E land, and will interconnect at the Boulevard substation. The Boulevard facility will have the capability to island critical preselected load including the County Sheriff Dept, San Diego County Fire Station 47, Boulevard Border Patrol Station, Campo

²⁰ See testimony of Stephen T Johnston for a description of the low-income designation.

1 Reservation Fire Station, and CAL Fire White Star during a system disturbance thus providing
2 them back-up power resiliency.

3 The Boulevard County Sheriff office serves an area encompassing over 200 square miles
4 which includes the communities of Boulevard and Jacumba. The Boulevard community is
5 located in the rural high desert along the east San Diego/Mexico border. The community of
6 Jacumba is located in the Jacumba Mountains along the U.S./Mexico border.²¹ San Diego
7 County's Fire Station 47 serves Pacific Highlands Ranch and its surrounding areas. The
8 Boulevard Patrol Station is also responsible for two eastbound tactical checkpoints, which are an
9 integral part of the San Diego Sector's defense.²² The Campo Reservation Fire Station, located
10 on Campo Kumeyaay Nation Indian Reservation, provides protection from fire and other
11 emergencie to the surrounding communities. The CAL Fire White Star provides fire protection
12 and stewardship of the local wildlands. In addition, the facility provides varied emergency
13 services.

14 **d. AB 2868 evaluation results**

15 The Boulevard site will provide 10 MW of energy storage to help integrate renewables
16 and reduce GHG emissions. The circuit-level microgrid will support multiple critical facilities
17 outlined above. There is 600 kW of renewables already installed on the distribution circuit
18 feeding into the circuit-level microgrid. The energy storage system will be able to absorb and
19 store excess solar generation and provide that energy back on the grid when it is needed. The
20 project will help reduce dependence on petroleum by limiting the need for back-up diesel
21 generation at these critical facilities. Currently, at least one of the facilities has back-up

²¹ See <https://www.sdsheiff.net/patrolstations/boulevard.html>

²² The Boulevard Patrol Station is also responsible for two eastbound tactical checkpoints, which are an integral part of the San Diego Sector's defense.

1 generation, the use of which would be offset by the integration of an energy storage system.

2 This site prioritizes the public sector by providing resiliency to the multiple critical sites located
3 on the distribution circuit. This site will be able to participate in the CAISO market,²³ and will
4 be used to provide local resource adequacy to the extent these resources qualify for resource
5 adequacy.²⁴

6 **c. Project costs**

7 The below table, Table SP-4 provides details around the total direct and indirect costs
8 outlined in the capital cost cap, as well as the anticipated O&M direct costs associated with the
9 Boulevard energy storage circuit-level microgrid project. All the values are shown on a nominal
10 basis. Based on the estimated project costs, SDG&E requests Commission approval of
11 approximately [REDACTED] for the Boulevard project. This is a not-to-exceed cost cap. The
12 regulatory accounting, revenue requirement and cost recovery of this AB 2868 investment are
13 described in the testimony of Noma G. Jasso, Michael R. Woodruff/James G. Vanderhye Jr., and
14 Kellen C. Gill, respectively.

15 **Table SP – 4**
16 **Boulevard Estimated Project Costs**

| Capital Cost | Amount | Notes |
|----------------------------|---------------|----------------------------------------------------------|
| Total Direct Costs | [REDACTED] | Includes interconnection and CAISO network upgrade costs |
| Total Indirect Costs | [REDACTED] | |
| Contingency | [REDACTED] | |
| Total Project Costs | [REDACTED] | |

²³ See Evan M. Bierman’s testimony.

²⁴ See Jennifer W. Summers’ testimony.

| <u>Operations and Maintenance Costs</u> | <u>Amount</u> | <u>Notes</u> |
|-----------------------------------------|---------------|--------------------------------------------------|
| O&M Fixed Maintenance | ██████████ | 5% of total project costs |
| O&M Variable Costs (per cycle) | ██████████ | Variable costs for each MWh of discharged energy |

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2 **C. 2020 projects**

3 This section provides a description of each of the circuit-level projects that are proposed
4 in the 2020 timeframe as well as approximate project costs (not to exceed our estimated cost
5 cap). The following four circuit-level microgrid energy storage projects located at SDG&E’s
6 Paradise, Clairemont, Elliot, and Santee substations have been identified as optimal sites to be
7 deployed by the end of 2020. This target can change based on the Commission approval date of
8 the SDG&E AB 2868 program and other possible factors. These sites were ranked among the
9 highest to maximize benefits and minimize costs in accordance with the AB 2868 evaluation
10 matrix described in Stephen T Johnston’s testimony.

11 **1. Paradise**

12 **a. Project overview**

13 The Paradise circuit-level energy storage project is a 10 MW, 10 MWh energy storage
14 project located in Skyline San Diego, California. Skyline is a hilly neighborhood in Southeastern
15 San Diego and is a designated low-income community.²⁵ The site will be constructed after a
16 RFP competitive solicitation process. The proposed on-line date is December 31, 2020. The
17 Paradise energy storage project will be constructed on existing SDG&E land, and will
18 interconnect at the Paradise substation. The Paradise facility will have the capability to island

²⁵ The testimony of Stephen T Johnston and Mayda Bandy describes the identification of low-income communities.

1 critical pre-determined load Fire Station 51, South East Division Police department, and Fire
2 Station 32 during a system disturbance thus providing back-up power resiliency.

3 Fire Station 51 and Fire Station 32 serves Skyline Hills and Paradise Hills and their
4 surrounding areas respectively, be providing essential services such as fire, emergency medical
5 and emergency management services. This includes 9-1-1 services, fire inspections, permits and
6 community education. The South East Division Police department serves the the southeastern
7 neighborhoods of San Diego.

8 **b. AB 2868 evaluation results**

9 The Paradise site will provide 10 MW of energy storage to help integrate renewables and
10 reduce GHG emissions. The circuit-level microgrid will support several critical facilities
11 outlined above. There is 1,500 kW of renewables already installed on the distribution circuit
12 feeding into the circuit –level microgrid. The energy storage system will be able to absorb and
13 store excess solar generation and provide that energy back on the grid when it is needed. The
14 project will help reduce dependence on petroleum by limiting the need for back-up diesel
15 generation at these critical facilities. Currently, both facilities have back-up generation, the use
16 of which would be offset by the integration of energy storage systems. This site prioritizes the
17 public sector by providing resiliency to the multiple critical sites located on the distribution
18 circuit. This site will be able to participate in the CAISO market,²⁶ and will be used to provide
19 local resource adequacy to the extent these resources qualify for resource adequacy.²⁷

²⁶ See Evan M. Bierman’s testimony.

²⁷ See Jennifer W. Summers’ testimony.

1 **c. Project costs**

2 The below table, Table SP-5 provides details around the total direct and indirect costs
3 outlined in the capital cost cap, as well as the anticipated O&M direct costs associated with the
4 Paradise energy storage circuit-level microgrid project. All the values are shown on a nominal
5 basis. Based on the estimated project costs, SDG&E requests Commission approval of
6 approximately [REDACTED] for the Paradise project.

7 **Table SP – 5**
8 **Paradise Estimated Project Costs**

| Capital Cost | Amount | Notes |
|------------------------------------------------|----------------------|----------------------------------------------------------|
| Total Direct Costs | [REDACTED] | Includes interconnection and CAISO network upgrade costs |
| Total Indirect Costs | [REDACTED] | |
| Contingency | [REDACTED] | |
| Total Project Costs | [REDACTED] | |
| <u>Operations and Maintenance Costs</u> | <u>Amount</u> | <u>Notes</u> |
| O&M Fixed Maintenance | [REDACTED] | 5% of total project costs |
| O&M Variable Costs (per cycle) | [REDACTED] | Variable costs for each MWh of discharged energy |

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10 **2. Clairemont**

11 **a. Project overview**

12 The Clairemont circuit-level energy storage project is a 10 MW, 10 MWh energy storage
13 project located in Clairemont, San Diego, California. Clairemont is a community within the City
14 of San Diego. The site will be constructed after a RFP competitive solicitation process. The
15 proposed on-line date is December 31, 2020. The Clairemont energy storage project will be
16 constructed on existing SDG&E land adjacent to Clairemont substation, and will interconnect to

1 one circuit at the Clairemont substation. The Clairemont facility will have the capability to
2 island critical pre-determined load including Balboa Branch Library (Cool Zone) and Fire
3 Station 36 during a system disturbance thus providing back-up power grid resiliency.

4 Fire Station 36 serves East Clairemont and its surrounding areas. Fire Station 36 is
5 responsible for repairing and maintaining approximately 450 Self Contained Breathing
6 Apparatus (“SCBA”) and approximately 1,400 Air Cylinders used by City of San Diego and
7 Poway firefighters. SCBA’s are portable air units that supply breathable air to firefighters when
8 entering oxygen-deprived environments where the air supply is contaminated by smoke, toxic
9 gases or other hazardous materials.²⁸ The Balboa Branch Library is a designated cool zone.

10 **b. AB 2868 evaluation results**

11 The Clairemont site will provide 10 MW of energy storage to help integrate renewables
12 and reduce GHG emissions. The circuit-level microgrid will support multiple critical facilities
13 outlined above. There is 1,700 kW of renewables already installed on the distribution circuit
14 feeding into the circuit-level microgrid. The energy storage system will absorb and store excess
15 solar generation and provide that energy back on the grid when it is needed. The project will
16 help reduce dependence on petroleum by offsetting the use of backup diesel generation at both of
17 these critical facilities. This site prioritizes the public sector by providing resiliency to the
18 multiple critical sites located on the distribution circuit. This site will be able to participate in the
19 CAISO market, and will be used to provide local resource adequacy to the extent these resources
20 qualify for resource adequacy.²⁹

²⁸ See <https://www.sandiego.gov/fire/about/firestations/sta36>

²⁹ See Jennifer W. Summers’ testimony.

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c. Project costs

Table SP-6 below provides details around the total direct and indirect costs outlined in the capital cost cap, as well as the anticipated O&M direct costs associated with the Clairemont energy storage circuit-level microgrid project. All the values are shown on a nominal basis. Based on the estimated project costs, SDG&E requests Commission approval of approximately [REDACTED] for the Clairemont project. This is a not-to-exceed cost cap. The regulatory accounting, revenue requirement and cost recovery of this AB 2868 investment is described in the testimony of Noma G. Jasso, Michael R. Woodruff/James G. Vanderhye Jr., and Kellen C. Gill, respectively.

**Table SP – 6
Clairemont Estimated Project Costs**

| Capital Cost | Amount | Notes |
|------------------------------------------------|----------------------|----------------------------------------------------------|
| Total Direct Costs | [REDACTED] | Includes interconnection and CAISO network upgrade costs |
| Total Indirect Costs | [REDACTED] | |
| Contingency | [REDACTED] | |
| Total Project Costs | [REDACTED] | |
| <u>Operations and Maintenance Costs</u> | <u>Amount</u> | <u>Notes</u> |
| O&M Fixed Maintenance | [REDACTED] | 5% of total project costs |
| O&M Variable Costs (per cycle) | [REDACTED] | Variable costs for each MWh of discharged energy |

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1 **3. Elliot**

2 **a. Project overview**

3 The Elliot circuit-level energy storage project is a 10 MW, 10 MWh energy storage
4 system located in Tierrasanta, San Diego, California. Tierrasanta is a community in the
5 northeastern part of San Diego. The site will be constructed after a RFP competitive solicitation
6 process. The proposed on-line date is December 31, 2020. The Elliot energy storage project will
7 be constructed on existing SDG&E land and will interconnect to the Elliot substation. The Elliot
8 facility will have the capability to island critical predetermined load including Fire Station 39
9 and Tierrasanta Public Library during a system disturbance. Fire Station 39 serves Tierrasanta
10 and the surrounding areas. The Tierrasanta Public Library is a designated cool zone.

11 **b. AB 2868 evaluation results**

12 The Elliot site will provide 10 MW of energy storage to help integrate renewables and
13 reduce GHG emissions. The circuit-level microgrid will support multiple critical facilities
14 outlined above. There is 2650 kW of renewables already installed on the distribution circuit
15 feeding into the circuit-level microgrid. The energy storage system will absorb and store excess
16 solar generation and provide that energy back on the grid when it is needed. The project will
17 help reduce dependence on petroleum, by offsetting the use of backup diesel generation at one of
18 these critical facilities (Fire Station 39). This site prioritizes the public sector by providing
19 resiliency to the critical sites located on the distribution circuit. This site will be able to
20 participate in the CAISO market,³⁰ and will be used to provide local resource adequacy to the
21 extent these resources qualify for resource adequacy.³¹

³⁰ See Evan M. Bierman’s testimony.

³¹ See Jennifer W. Summers’ testimony.

c. Project costs

Table SP-7 below provides details around the total direct and indirect costs outlined in the capital cost cap, as well as the anticipated O&M direct costs associated with the Elliot energy storage circuit-level microgrid project. All the values are shown on a nominal basis. Based on the estimated project costs, SDG&E requests Commission approval of approximately [REDACTED] for the Elliot project. This is a not-to-exceed cost cap. The regulatory accounting, revenue requirement and cost recovery of this AB 2868 investment are described in the testimony of Noma G. Jasso, Michael R. Woodruff/James G. Vanderhye Jr., and Kellen C. Gill, respectively.

**Table SP – 7
Elliot Estimated Project Costs**

| Capital Cost | Amount | Notes |
|------------------------------------------------|----------------------|----------------------------------------------------------|
| Total Direct Costs | [REDACTED] | Includes interconnection and CAISO network upgrade costs |
| Total Indirect Costs | [REDACTED] | |
| Contingency | [REDACTED] | |
| Total Project Costs | [REDACTED] | |
| <u>Operations and Maintenance Costs</u> | <u>Amount</u> | <u>Notes</u> |
| O&M Fixed Maintenance | [REDACTED] | 5% of total project costs |
| O&M Variable Costs (per cycle) | [REDACTED] | Variable costs for each MWh of discharged energy |

4. Santee

a. Project overview

The 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 site will be constructed after a RFP competitive solicitation process. The proposed on-line date is

1 December 31, 2020. The Santee energy storage project will be constructed on existing SDG&E
2 land and will interconnect at the Santee substation. The Santee facility will have the capability
3 to island critical predetermined load including City of Santee Fire Station 4 and Padre Dam
4 Northcote pump station during a system disturbance thus providing back-up power resiliency.
5 The City of Santee Fire Station works to protect life and property in the community through fire
6 suppression, public education and emergency medical services.³²

7 **b. AB 2868 evaluation results**

8 The Santee site will provide 10 MW of energy storage to help integrate renewables and
9 reduce GHG emissions. The energy storage system will absorb and store excess solar generation
10 and provide that energy back on the grid when it is needed. There is 1,250 kW of renewables
11 already installed on the distribution circuit feeding into the circuit-level microgrid. The project
12 will help reduce dependence on petroleum by offsetting the use of backup diesel generation at
13 one of the critical facilities (City of Santee Fire Station 4). This site prioritizes the public sector
14 by providing resiliency to the multiple critical sites located on the distribution circuit. This site
15 will be able to participate in the CAISO market,³³ and will be used to provide local resource
16 adequacy to the extent these resources qualify for resource adequacy.³⁴

17 **c. Project costs**

18 Table SP-8 below provides details around the total direct and indirect costs outlined in
19 the capital cost cap, as well as the anticipated O&M direct costs associated with the Santee
20 energy storage circuit-level microgrid project. All the values are shown on a nominal basis.

³² See <https://www.santeefiredepartment.org/>

³³ See Evan M. Bierman's testimony.

³⁴ See Jennifer W. Summers' testimony.

1 Based on the estimated project costs, SDG&E requests Commission approval of approximately
 2 ██████ for the Santee project. This is a not-to-exceed cost cap. The regulatory accounting,
 3 revenue requirement and cost recovery of this AB 2868 investment are described in the
 4 testimony of Noma G. Jasso, Michael R. Woodruff/James G. Vanderhye Jr., and Kellen C. Gill,
 5 respectively.

6 **Table SP – 8**
 7 **Santee Estimated Project Costs**

| Capital Cost | Amount | Notes |
|------------------------------------------------|----------------------|----------------------------------------------------------|
| Total Direct Costs | ██████████ | Includes interconnection and CAISO network upgrade costs |
| Total Indirect Costs | ██████████ | |
| Contingency | ██████████ | |
| Total Project Costs | ██████████ | |
| <u>Operations and Maintenance Costs</u> | <u>Amount</u> | <u>Notes</u> |
| O&M Fixed Maintenance | ██████████ | 5% of total project costs |
| O&M Variable Costs (per cycle) | ██████████ | Variable costs for each MWh of discharged energy |

8
 9 **III. THE PROPOSED PROJECTS ALIGN WITH AB 2868 STATUTORY FACTORS**

10 **A. Proposed Projects Align with AB 2868 Statutory Factors by Minimizing**
 11 **Costs and Maximizing Benefits**

12 To minimize overall costs SDG&E will be using existing substation land for these
 13 projects and will be conducting a Request for Information (“RFI”) and RFP through Supply
 14 Management to ensure a prudent and competitive solicitation process. This solicitation process is
 15 described in greater detail by Stephen T Johnston. The substation sites will be built and designed
 16 in such a way to allow expansion, accommodating longer duration energy storage systems in the

1 future. After reviewing the bids of multiple vendors, SDG&E will select the most appropriate
2 vendor for the energy storage resources at the specific circuit-level sites.

3 SDG&E will leverage its existing project management organization (“PMO”) to manage
4 the implementation phase of the energy storage microgrid projects. This will include both the
5 administration of vendor contracts and construction oversight, as well as the performance of
6 SDG&E’s scope of work to integrate the energy storage systems into existing infrastructure,
7 software and controls. Building on its previous experience with deployment of both large and
8 small energy storage projects, SDG&E is well positioned to leverage its expertise and prior
9 lessons learned to deploy the microgrid projects using a programmatic and cost-effective
10 approach.

11 As part of the RFP evaluation, SDG&E will evaluate the long-term capability of energy
12 storage vendors to provide operations and maintenance service for the energy systems. SDG&E
13 plans to enter into service agreements with qualified vendors as a cost-effective means of
14 managing the long-term operations and maintenance of the energy storage systems. In
15 SDG&E’s experience, this model has worked well to minimize cost and maximize the
16 operational performance of the energy storage resources.

17 Pursuant to D.18-01-003, energy storage will provide multiple services in the distribution
18 domain. To increase the overall cost effectiveness of these projects for customers, SDG&E will
19 deploy the circuit-level energy storage resources to participate in the CAISO market when the
20 energy storage resources are not being used for grid resiliency purposes. The forecasted
21 revenues generated by providing ancillary, energy and capacity services to the grid are described
22 by the testimony of Evan M. Bierman. The energy resources will also be used to support local
23 capacity, to the extent that these resources qualify for resource adequacy.

1 Under the Track 4 Decision, SDG&E was authorized to procure a total of 500-800 MW
2 of capacity by the end of 2021 to meet this in-basin need.³⁵ The decision also required SDG&E
3 to procure at least 25 MW of capacity from energy storage resources and, consistent with the
4 Loading Order of the Energy Action Plan, to procure at least 175 MW of capacity from preferred
5 resources or energy storage.³⁶ SDG&E currently has 56 MW remaining under its fulfillment
6 obligation and intends to have the seven energy storage resources count towards its in-basin local
7 capacity requirement, as described in Jennifer W. Summer’s testimony.

8 **B. Distributed Energy Storage Management System**

9 SDG&E uses a Distributed Energy Resource Management System (“DERMS”) to
10 manage distributed energy resources under its operational control. DERMS can monitor and
11 control various sized energy storage systems and has been deployed at our Borrego Springs
12 Microgrid. DERMS creates user situational awareness by visualizing real-time battery points
13 such as state of charge and the current charge and discharge rates of the battery. It can also be
14 used to manage future battery dispatch. This DERMS management capability includes the
15 scheduling of energy storage devices to assist with daily or weekly activities such as peak
16 shaving. The system can also accommodate data from external sources such as circuit loading,
17 and substation loading to help support local distribution deficiencies. DERMS in conjunction
18 with distribution operations assistance is capable of sectionalizing load to provide electricity to
19 critical facilities as part of a pre-defined microgrid. Without DERMS control of these assets and
20 overall management of the microgrid, these customers would be without power during certain
21 outage conditions.

³⁵ D.14-03-004 at 143, ordering paragraph 2.

³⁶ See Jennifer W. Summers’ testimony.

1 **C. Environmental Benefits**

2 Energy storage deployed on the circuit-level microgrid will be able to integrate
3 renewables and provide environmental benefits in a number of ways. Firstly, energy storage
4 paired on the distribution circuit will be able to assist in smoothing short-term variability caused
5 by rapid fluctuations of intermittent wind and solar energy resources. This smoothing of short
6 duration variability will support the grid as well as allow for a higher penetration of renewables
7 on the distribution circuits. Energy storage can be used to address both short-duration and long-
8 duration variability. This capability, paired with the proper inverter, can enable concurrent
9 operations to take place, such as smoothing and market participation.

10 To address long-duration variability, energy storage will help integrate renewables during
11 times when the sun is not shining and when the wind is not blowing. The energy storage
12 system will absorb and store excess solar generation during times when solar and wind
13 production is high and provide that energy back on the grid when it is needed. Furthermore,
14 when energy is at its greatest demand during the evening ramp, the energy storage resources will
15 be used to help shave peak demand. The stored energy can also be discharged to dispel energy
16 sourced from less efficient natural gas peaker plants, which will help to decrease emissions of
17 climate-changing greenhouse gases and other pollutants. In times during the day when
18 renewables are most abundant and subsequent energy prices fall, and even sometimes go
19 negative, the energy storage resources will be able to charge and harness renewable energy.
20 Separately, by providing ancillary services, the energy storage resources will help foster a higher
21 penetration of renewables by smoothing the intermittency of renewable resources on to the
22 electric grid.

23 Properly designed and dispatched energy storage systems will help customers manage
24 energy costs, help reduce overall system peak energy demand, improve public health, and assist

1 in achieving greenhouse gas emission goals.³⁷ Many emergency service locations, such as those
2 described in the project descriptions above, use petroleum-based generation as a backup. Energy
3 storage providing microgrid resiliency for those emergency service locations will mitigate the
4 need for onsite backup power and therefore help reduce the GHG and carbon footprint of those
5 sites. Energy storage will also be able to utilize any connected and available renewables during
6 times of islanding.

7 **D. Prioritizes Public Sector and Low-Income Customers**

8 In accordance with D.17-04-039, the circuit-level microgrid distributed energy systems
9 achieve ratepayer benefits, maximize overall benefits and minimize overall costs. As detailed in
10 the testimony of Stephen T Johnston, the selection process for the seven sites focus on providing
11 maximum benefits to customers and the local communities served near the connected
12 substations. Circuits that included public sector facilities such as fire stations, police stations,
13 and cool zones were selected to keep people safe and provide a place to go when the lights go
14 out. Low-income areas were also prioritized to provide the neighboring community with access
15 to localized backup power. Facilities and circuit loads with local distributed renewables were
16 also prioritized during the evaluation process to better integrate renewables on the utility's side
17 of the meter.

18 **IV. DISTRIBUTION ENERGY STORAGE MICROGRID PROJECTS**

19 As indicated previously, the proposed facilities are augmenting the existing 12kV electric
20 distribution system, allowing critical customer load distribution circuits to be able to operate
21 independently during outages, essentially creating self-contained electric distribution systems
22 during outages. These distribution assets will be located at, and connected to, existing SDG&E

³⁷ See AB 2868, P.U. Code §§ 2838.2(b).

1 electric distribution substations solely at 12kV electric distribution voltage. Due to their nature
2 as critical load circuit support, the facilities will be controlled and operated as part of the electric
3 distribution system, to provide distribution system resiliency as integral parts of the electric
4 distribution substation and associated circuits. As with all of our electric distribution activities,
5 SDG&E will be conferring with local agencies to ensure that these facilities are integrated into
6 the existing utility properties to the greatest extent feasible, focusing on any outstanding land use
7 matters if and as needed.

8 **V. SAFETY AND ENVIRONMENTAL**

9 SDG&E performs environmental review on all of its O&M and capital projects,
10 employing a detailed set of criteria for determining whether a more robust environmental review
11 is needed based on project location and scope relative to sensitive environmental resources. We
12 do this independently of any specific permit oversight from the Commission or other state
13 agencies. Our environmental review focuses on avoiding and minimizing any impacts to
14 biological resources through review and compliance with our existing endangered species
15 permits as well as cultural resource review, paleontological resources, water quality, air quality
16 and hazardous materials/substances reviews. This internal environmental review ensures
17 compliance with existing laws, regulations and SDG&E standards and policies.

18 SDG&E will construct the energy storage sites in compliance with County, State and
19 Federal guidelines. Proper environmental studies and necessary infrastructure and/or mitigations
20 will be in place to prevent or contain spills and audible levels from encroaching into the
21 surrounding environment. All the projects listed above will be constructed on previously
22 disturbed sites that are owned by SDG&E.

23 SDG&E works to ensure its energy storage procurements yield energy storage systems
24 that are designed, constructed and operated safely, regardless of use case or ownership structure.

1 For utility-owned energy storage systems such as these, SDG&E undertakes a comprehensive
2 evaluation of all components of each project, including assessment of the contractor's prior
3 experience in safely constructing and operating energy storage systems, the technical merit of the
4 proposed system, and the projects safety components. In accordance with best practices in
5 safety, SDG&E has preliminarily evaluated sites based on the Commission's Safety and
6 Enforcement Division's Safety Inspection Items for Energy Storage Checklist and other energy
7 storage safety documentation in the industry.

8 **VI. CONCLUSION**

9 SDG&E's distributed energy resource projects described in my testimony will provide
10 microgrid resiliency to critical public infrastructure by providing back-up power capability
11 during outages. My testimony provides details surrounding the proposed capital cost cap of each
12 circuit-level microgrid energy storage resource for which we are seeking approval, as well as the
13 anticipated O&M direct costs associated with the energy storage circuit-level microgrid projects.

14 This concludes my prepared direct testimony.
15

1 **VII. STATEMENT OF QUALIFICATIONS**

2 My name is Steven Prsha and my business address is 8335 Century Park Ct., San Diego,
3 California 92123. I currently work under the Growth and Technology Integration division as an
4 engineer in the distributed energy resources group of SDG&E. I hold a Bachelor's of Science
5 Degree in Electrical Engineering from San Diego State University. I have been employed by
6 SDG&E since 2013. I am a licensed Professional Engineer in the State of California and have
7 over three years of experience with integrating, installing and operating numerous utility scale
8 multi-Megawatt energy storage systems of various technologies (flow, lead acid, Li-ion, etc.) in
9 SDG&E's territory. Prior to working in the distributed energy resources division, I held
10 positions in resource planning, generation and system protection.

11 I have not previously testified before the California Public Utilities Commission.

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

**DECLARATION OF TED REGULY REGARDING CONFIDENTIALITY OF
CERTAIN DATA/DOCUMENTS PURSUANT TO D.17-09-023**

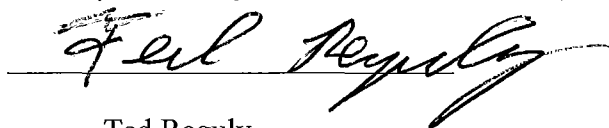
I, Ted Reguly, do declare as follows:

1. I am the Director of the Growth & Technology Integration Department for San Diego Gas & Electric Company (“SDG&E”). I have been delegated authority to sign this declaration by Caroline Winn, SDG&E’s Chief Operating Officer. I have reviewed the confidential information included within the Direct Testimony of Stephen Prsha and the Direct Testimony of Michael R. Woodruff and James G. Vanderhye Jr., submitted concurrently herewith (the “Direct Testimony”). I am personally familiar with the facts in this Declaration and, if called upon to testify, I could and would testify to the following based upon my personal knowledge and/or information and belief.

2. I hereby provide this Declaration in accordance with Decision (“D.”) 17-09-023 and General Order (“GO”) 66-D to demonstrate that the confidential information (“Protected Information”) provided in the Direct Testimony is within the scope of data protected as confidential under applicable law.

3. In accordance with the narrative justification described in Attachment A, the Protected Information should be protected from public disclosure.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct to the best of my knowledge. Executed this 28th day of February, 2018, at San Diego



Ted Reguly

ATTACHMENT A

SDG&E Request for Confidentiality on the following information in its Direct Testimony

| Location of Protected Information | Legal Citations | Narrative Justification |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Highlighted data within documents:</p> <p>Direct Testimony of Steven Prsha, SP-7 to SP-10, SP-12 to SP-13, SP-15, SP-17 to SP-19, SP-21.</p> <p>Direct Testimony of Michael R. Woodruff and James G. Vanderhye Jr., MW-1 to MW-2.</p> | <p>CPR A Exemption, Gov't Code § 6254.7(d)</p> <p>CPR A Exemption, Gov't Code § 6254(k)</p> <ul style="list-style-type: none"> • Cal. Evid. Code § 1060 • Cal. Civil Code §§ 3426 <i>et seq.</i> | <p>The Protected Information is entitled to confidential treatment under applicable law, including, but not limited to, the legal authority cited herein. The identified confidential information are project cost estimates which third-party vendors will bid upon based upon an RFI/RFP process. Public disclosure would pose potential negative impacts and/or competitive harm by setting a cost target for third parties. Cost estimates should not be made visible to the public, other vendors, contractors, or any others outside SDG&E, as public disclosure would impact competitive pricing, and the ability to secure optimal terms with third parties.</p> |