Application: A.18-02-

Exhibit: SDGE-

Witness: Ted Reguly

DIRECT TESTIMONY OF

TED REGULY

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

FEBRUARY 28, 2018

TABLE OF CONTENTS

I. INTRODUCTION 1
A. Background and Summary of Order Sought from the Commission 1
B. Contents of this Application 4
II. OVERALL STORAGE PROCUREMENT AND INVESTMENT STRATEGY 5
A. SDG&E's Track Record of Delivering Energy Storage Solutions Is at the Forefront of the Industry 6
B. SDG&E's Forward Focus on Building Grid Resiliency 8
III. PROGRESS TOWARD SDG&E'S AB 2514 PROCUREMENT TARGET 9
IV. PROPOSED AB 2868 2018 PROGRAM AND INVESTMENTS OVERVIEW 11
A. AB 2868 Purpose and Goal 11
B. New Proposed Investments and Programs 12
1. Circuit-level energy storage microgrid projects 12
2. Service-level microgrids 16
3. Energy storage incentive for Expanded CARE pilot program 17
4. Framework for project evaluation and approval of future proposals 18
5. SDG&E's AB 2868 energy storage target 18
C. Priority to Public Sector and Low-Income Customers 19
D. Utility Investments and Programs Do Not Unreasonably Impair Non-Utility Enterprises to Market and Deploy Energy Storage Systems 20
E. Proposed Investments Under AB 2868 Will Utilize Organized Labor and Provide Workforce Training to Benefit Low-Income Communities 21
V. CONCLUSION 21
VI. STATEMENT OF QUALIFICATIONS 23

DIRECT TESTIMONY OF TED REGULY

I. INTRODUCTION

My direct testimony gives an overview of the subject application and describes San Diego Gas & Electric Company's ("SDG&E") overall strategy and policy for developing resources, investments and programs in energy storage pursuant to Assembly Bill ("AB") 2514 and AB 2868, and California Public Utilities Commission ("Commission") decisions implementing these statutory laws.

A. Background and Summary of Order Sought from the Commission

AB 2514 was designed to encourage the incorporation of energy storage into California's electricity grid.[1] In 2010 pursuant to AB 2514, the Commission established the Energy Storage Procurement Framework and Program to guide the energy storage procurement of California's load serving entities ("LSEs") under Commission jurisdiction.[2] Pursuant to the Energy Storage Decision, SDG&E filed energy storage applications in 2014 and 2016, with its proposals for energy storage procurement in each solicitation cycle.[3]

AB 2868 builds upon the growth of energy storage within California by accelerating widespread deployment of distributed energy storage resources. Specifically, AB 2868 requires the utilities to propose programs and investments up to 500 MW of distributed energy storage

---

[1] Stats 2010, ch. 469, *codified at* Cal. Pub. Util. Code ("P.U. Code") §§ 2835-2839. All statutory citations herein to "sections" are to the P.U. Code unless otherwise indicated.

[2] The Energy Storage Procurement Framework Program was established in Decision ("D.") 13-10-040, the "Energy Storage Decision," and adopted a total energy storage procurement target of 1,325 megawatts ("MW") for the investor-owned utilities("IOUs") across four biennial solicitations through 2020. SDG&E's share of this target is 165MW. Electric service providers ("ESPs") and community choice aggregators ("CCAs") were each directed to procure 1 percent of their annual peak load by 2020.

[3] Applications ("A.") 14-02-006 and A.16-03-003, respectively.

resources. In 2017 the Commission issued D.17-04-039 (the "Track 2 Decision"),[4] which leaves in place utility energy storage targets previously set pursuant to the Energy Storage Decision, and establishes a process to implement AB 2868.[5] The Track 2 Decision determined that starting in 2018, the existing process and schedule for approving the biennial utility procurement plans under the Energy Storage Procurement Framework and Program, should be utilized for AB 2868 investment and program applications.[6] Recognizing that AB 2868 includes an investment component, for the 2018 and 2020 solicitation cycles the utilities are required to file energy storage procurement and investment plans.[7] In accordance with this direction, SDG&E has incorporated its proposals for programs and investments for up to approximately 166 MW (its 1/3 share of the AB 2868 500 MW) of distributed energy storage systems into this 2018 Energy Storage Procurement and Investment Plan application.

SDG&E supports the goal of ensuring that all types of customers have access to distributed energy resources ("DERs"), and embraces the opportunity to develop distributed energy storage solutions consistent with AB 2868 that prioritize public sector and low-income customers, demonstrate ratepayer benefits, seek to minimize costs and maximize overall benefits, and reduce greenhouse gas ("GHG") emissions, while not unreasonably limiting or impairing the ability of nonutility enterprises to market and deploy energy storage systems.

This application and supporting testimony reports SDG&E's progress to date in meeting the requirements of the Energy Storage Decision; outlines SDG&E's 2018 procurement plan

---

4 *Decision on Track 2 Energy Storage Issues*, (May 8, 2017) ("Track 2 Decision").

5 Stats. 2016, ch.681, *codified at* P.U. Code §§ 2838.2 and 2838.3.

6 D.17-04-039 at 19-20.

7 *Id.* at 20.

solicitation cycle for energy storage resources; and proposes SDG&E's utility investment and program in furtherance of AB 2868. To that end, SDG&E asks the Commission to approve the following items in this 2018 Energy Storage Procurement and Investment Plan application:

1. SDG&E requests approval of its Energy Storage Investment and Program Framework in compliance with AB 2868 ("AB 2868 Framework"), described in my testimony[8] and that of Stephen T Johnston, which consists of:

    a. SDG&E ownership and investment in both circuit- and service-level microgrid energy storage projects within the distribution grid to provide multiple-use applications including microgrid islanding for selected critical public sector facilities;

    b. A project evaluation and weighting methodology based upon AB 2868 statutory criteria, which SDG&E used to select the seven circuit-level energy storage projects proposed herein, and proposes to use to select future circuit- and service-level AB 2868 energy storage investments;

    c. An advice letter process for Commission approval of future circuit- and service-level energy storage projects for the remaining AB 2868 capacity amounts not proposed in this application; and

    d. An SDG&E customer program aimed at accelerating the deployment of distributed energy storage systems behind-the-meter, to be owned by third parties, including customers.

2. Pursuant to the AB 2868 Framework proposed herein, SDG&E requests approval of the cost caps to construct the seven circuit-level energy storage projects totaling 100 MW that will provide distribution resiliency to critical public sector customers in the form of microgrids as described in the testimony of Steven Prsha.

3. A revenue requirement of $284.6 million resulting from the seven circuit-level energy storage projects as described in the testimony of Michael R. Woodruff and James G. Vanderhye Jr.

4. Pursuant to the AB 2868 Framework proposed herein, SDG&E requests funding approval for a $2 million Energy Storage Incentive for Expanded California Alternate Rates for Energy ("CARE") Pilot Program ("pilot program") that will

[8] References to "testimony" herein are to the prepared direct testimony served in support of this application.

offer incentives to Expanded CARE[9] facilities to deploy energy storage, as described in the testimony of Mayda Bandy.

5. A balancing account to record the authorized revenue requirement associated with the seven circuit-level energy storage projects, including energy storage units, operations and maintenance ("O&M"), capital related costs and revenues received from the operation of the resources in the wholesale energy market, with a provision for offsetting costs with any revenues from the storage projects' electricity sales into the wholesale energy market, as described in the testimony of Norma G. Jasso.

6. A balancing account to record the authorized revenue and incentive payments for the pilot program as described in the testimony of Norma G. Jasso.

7. Rate recovery via Distribution rates for the seven circuit-level energy storage projects, and rate recovery via the Electric Public Purpose Programs ("PPP") rates for the pilot program.

8. Because SDG&E plans to seek full capacity deliverability status for the seven circuit-level microgrid energy storage projects, SDG&E requests that to the extent these energy storage projects provide local capacity, that they qualify toward SDG&E's remaining Track 4 Local Capacity Requirement.

9. Approval of SDG&E's 2018 energy storage procurement methodology, including its AB 2514 procurement update, which identifies 6.09 MW of customer-sited remaining procurement to meet SDG&E's 2514 target. As SDG&E is already on track to meet its AB 2514 target, SDG&E is not proposing to conduct further procurement within its 2018 solicitation cycle toward its AB 2514 target.

B. Contents of this Application

This application includes a summary of the projects, programs, plans and investments for which approval is sought, and the information to satisfy the Commission's procedural and statutory requirements for applications under Articles 2 and 3 of the Commission's rules.

[9] California Alternative Rates for Energy ("CARE") helps-low income residential gas and electric customers afford their utility bills as outlined in P.U. Code § 739.1. P.U. Code § 739.1(h) added nonprofit facilities, where low-income ratepayers reside, to the CARE eligibility criteria (this modification for nonprofits is often referred to as "Expanded CARE," hence the pilot program's name). CARE provides a discount of 30-35% off a customer's total bill for low-income customers with annual household incomes no greater than 200% of the federal poverty guidelines (P.U. Code §739.1(c)(1)).

In addition, in support of this application, SDG&E has served concurrently the following prepared direct testimony (including my own):

- Overview and policy – Ted Reguly
- AB 2868 Framework – Stephen T Johnston
- AB 2514 solicitation process – Jennifer W. Summers
- AB 2514 procurement targets – Don Balfour
- Project costs – Steven Prsha
- Customer benefits – Evan M. Bierman
- Low-income customer program – Mayda Bandy
- Revenue requirement – Michael R. Woodruff and James G. Vanderhyde Jr.
- Regulatory accounts – Norma G. Jasso
- Cost recovery – Kellen C. Gill

II. OVERALL STORAGE PROCUREMENT AND INVESTMENT STRATEGY

SDG&E's 2018 Procurement and Investment Plan seeks to identify projects consistent with the following guiding principles established in AB 2514, including:

1. The optimization of the grid, including peak reduction, contribution to reliability needs, or deferment of transmission and distribution upgrade investments;
2. The integration of renewable energy, and
3. The reduction of GHG emissions to 80 percent below 1990 levels by 2050, per Governor Brown's Executive Order.[10]

[10] Executive Order B-30-15 (April 29, 2015) is available at: https://www.gov.ca.gov/news.php?id=18938

SDG&E's energy storage strategy aligns with Senate Bill ("SB") 350[11] to meet the state's clean energy and pollution reduction benefits. SDG&E's AB 2868 Framework considers opportunities to minimize costs and maximize ratepayer benefits, including reduction of GHG emissions, and toxic air contaminants.

A. SDG&E's Track Record of Delivering Energy Storage Solutions Is at the Forefront of the Industry

SDG&E's deployment of storage keeps it at the forefront in delivering results consistent with state and local clean energy and carbon emission goals. In May 2016, the Commission directed Southern California IOUs to accelerate energy storage to enhance regional energy reliability.[12] In response, SDG&E expedited ongoing negotiations and contracted with AES Energy Storage to build two projects for a total of 37.5 MW of lithium-ion battery energy storage.[13] In addition to the 30 MW facility built in Escondido, California, a smaller 7.5 MW installation was built in El Cajon. The Escondido and El Cajon projects demonstrate SDG&E's commitment to deliver clean energy to customers and to provide a more reliable power supply to the electric grid when it is most needed.

Reliability is at the core of SDG&E's mission, and SDG&E has recently and creatively deployed storage assets to this end. Borrego Springs is a small, isolated desert community

---

[11] SB 350, *codified at* P.U. Code § 400.

[12] Resolution ("Res.") E-4791 (May 26, 2016) instructs SDG&E and Southern California Edison Company to seek expedited energy storage projects to mitigate potential electric system reliability and other issues arising from partial shutdown of the Aliso Canyon natural gas storage facility. *See*, http://sdgenews.com/clean-innovative/sdge-unveils-world%E2%80%99s-largest-lithium-ion-battery-storage-facility.

[13] SDG&E Advice Letter ("AL") 2924-E (July 18, 2016) sought approval of 37.5 MW of energy storage resources to count toward local capacity and energy storage mandates (*approved*, Res. E-4798, August 18, 2016).

located in northeast San Diego County, fed only by a single radial sub-transmission line.[14] The Borrego Springs microgrid project uses advanced technologies to provide additional resiliency,[15] powering the entire community of Borrego Springs during planned grid maintenance and forced outages, thus avoiding major service interruptions to customers. The Borrego Springs microgrid deploys energy storage to serve multiple circuits which integrate third-party owned renewables at service-level voltages for specific customer sites. In addition to onsite generation and energy storage systems, SDG&E uses NRG Energy's nearby 26 MW Borrego Solar facility to supply electricity to all 2,800 customers in the area.[16] The microgrid is connected to the centralized energy grid but can disconnect from the larger grid and function independently during emergencies, which may include severe weather events across the service territory, supplying vital electricity to the local community through its onsite resources.

SDG&E is technology agnostic, as exemplified by our vanadium redox flow ("VRF") battery storage project. SDG&E piloted a 2 MW VRF battery storage project in March 2017, in coordination with Sumitomo Electric, which stemmed from a partnership between Japan's New Energy and Industrial Development Organization ("NEDO") and the California Governor's

---

[14] *See* https://building-microgrid.lbl.gov/borrego-springs

[15] Department of Homeland Security, National Infrastructure Advisory Council, *Final Report and Recommendations* (October 19, 2010) at 5 ("In its simplest form, infrastructure resilience is the ability to reduce the magnitude and/or duration of disruptive events"). Available at: https://www.dhs.gov/sites/default/files/publications/niac-framework-establishing-resilience-goals-final-report-10-19-10-508.pdf. Applying the concept to the utility grid, 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 outages." 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.

[16] *See* https://www.sdge.com/newsroom/press-releases/2015-06-01/microgrid-powers-borrego-springs-avoid-major-outage

Office of Business and Economic Development ("GO-Biz").[17] During the four-year demonstration project, SDG&E is researching how flow battery technology can economically enhance the delivery of reliable energy to customers, integrate growing amounts of renewable energy and increase the electrical system's flexibility in the way the company manages the power grid. The pilot showcases that SDG&E is committed to understanding how various energy storage technologies can help increase the reliable delivery of clean energy to our customers and support state and local carbon emission reduction goals.

B. SDG&E's Forward Focus on Building Grid Resiliency

At SDG&E, we are focused on reducing GHG emissions, but also recognize that we need to build a resilient energy system in the face of climate change and extreme weather events. This past year, California experienced one of the worst wildfire seasons on record, extending state-wide and affecting communities across all three of the California utilities' service territories. Wildfire prevention is a key focus at SDG&E, but in cases of natural disasters, the use of energy storage paired with microgrid technologies can help improve our customers' access to critical public infrastructure. Delivering safe, reliable and clean energy is a core mission at SDG&E, and we believe coupling energy storage with microgrid technologies is the pathway to enable a more resilient and clean energy future.

Overall, SDG&E's continued investment and proven track record in energy storage demonstrates our commitment to accelerate the widespread adoption of energy storage in SDG&E's service territory. SDG&E's 2018 Energy Storage Procurement and Investment Plan is focused on providing resiliency for public safety given the heightened need for these types of

[17] *See* http://sdgenews.com/battery-storage-clean-innovative-reliable/sdge-spurs-energy-storage-innovation-flow-battery

resources in the face of the recent catastrophic wildfires. SDG&E is dedicated to stacking the benefits of energy storage for serving all customers, particularly the public sector and ensuring equitable investments are made to benefit low-income customers. SDG&E will be operating these energy storage resources in the California Independent System Operator ("CAISO") market to generate revenues, where the benefits will pass through directly to all SDG&E's customers. Coupled with providing resiliency benefits for public safety during emergencies, SDG&E is uniquely positioned to maximize benefits and minimize costs, including providing environmental benefits focused on GHG reduction, renewables integration and air quality improvement. At the same time, SDG&E's investment in new energy storage will help to propel these advancing technologies to the market to develop a more resilient grid.

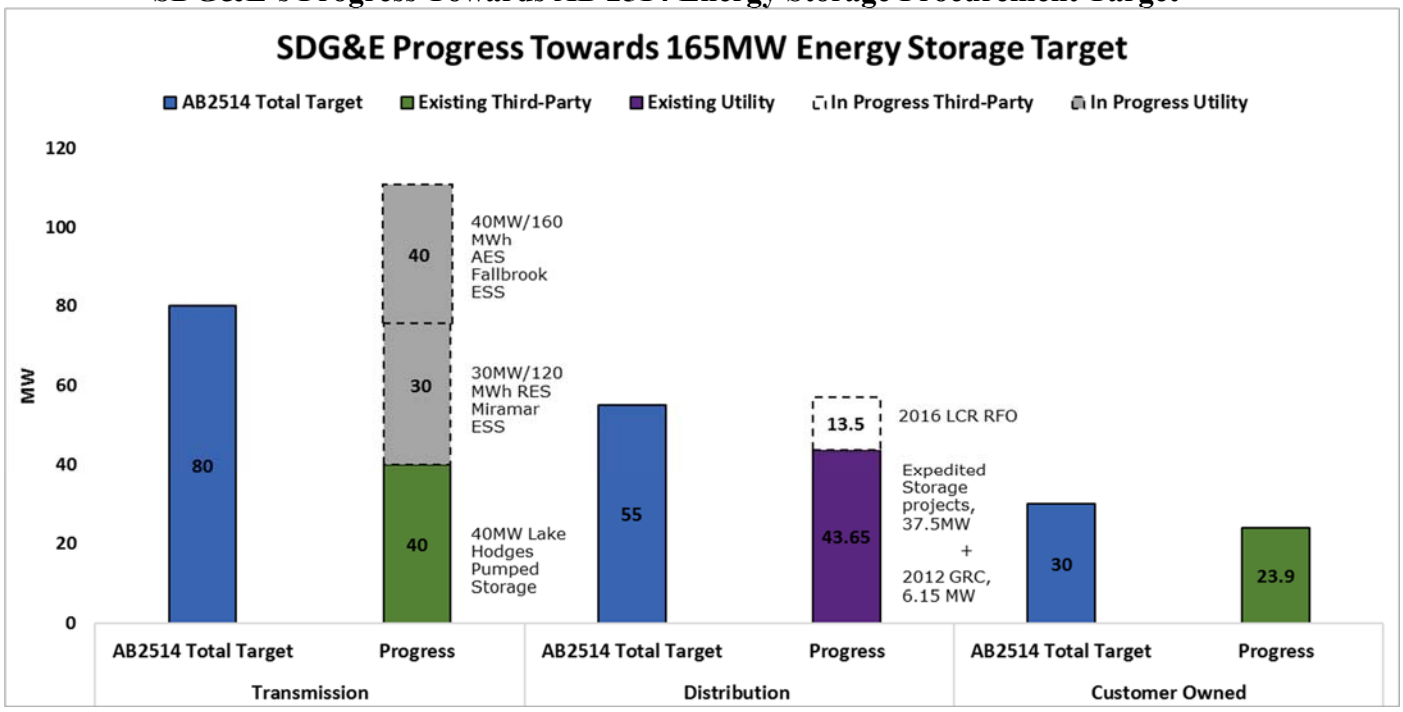
III. PROGRESS TOWARD SDG&E'S AB 2514 PROCUREMENT TARGET

As noted above, SDG&E's energy storage procurement target was created because of the Energy Storage Decision pursuant to AB 2514, and is separate and apart from SDG&E's Track 2 Decision, authorization created pursuant to AB 2868. Starting with SDG&E's 2018 energy storage solicitation cycle, SDG&E is required to combine its procurement plan for energy storage procurement within one application, the 2018 Energy Storage Procurement and Investment Plan.[18] Pursuant to SDG&E's requirement to provide a biennial solicitation cycle update in 2018, SDG&E is providing a brief narrative on SDG&E's progress in furtherance of its AB 2514 target of 165 MW, while also proposing an AB 2868 Framework, energy storage investments and a customer program in furtherance of AB 2868. SDG&E will have substantially met its AB 2514 target by 2020 based on: previously approved energy storage projects; projects procured since SDG&E's 2016 biennial solicitation update; and energy storage projects pending

[18] D.17-04-039 at 19-20.

approval in SDG&E's 2016 Track 4 Preferred Resources Local Capacity Requirements Request for Offers ("Preferred Resources LCR RFO") application. Don Balfour's testimony provides further details on SDG&E's energy storage procurement pursuant to AB 2514. As SDG&E is already on track to meet its AB 2514 target, SDG&E is not proposing to conduct further procurement within its 2018 solicitation cycle towards its AB 2514 target. Table TR-1 below outlines SDG&E's progress toward AB 2514, by domain: transmission, distribution and customer:[19]

Table TR – 1
SDG&E's Progress Towards AB 2514 Energy Storage Procurement Target[20]



[19] The domains are as defined in D.18-01-003 at 10 (Table 1).

[20] In accordance with D.13-10-040, SDG&E's storage projects will not exceed 50 percent of the cumulative procurement target across all three grid domains

IV. PROPOSED AB 2868 2018 PROGRAM AND INVESTMENTS OVERVIEW

A. AB 2868 Purpose and Goal

AB 2868 requires "the state's three largest electrical corporations to file applications for programs and investments to accelerate the widespread deployment of distributed energy storage systems," as defined.[21] In implementing AB 2868, the Commission, after consulting with the California Air Resources Board and the California Energy Commission ("CEC"), determined that these applications should be incorporated into the existing process and schedule for approving the biennial utility procurement plans.[22] In accordance with this direction, SDG&E has incorporated its proposals for programs and investments for up to approximately 166 MW of distributed energy storage systems into this 2018 energy storage procurement and investment plan.

Pursuant to AB 2868 and the Track 2 Decision, SDG&E's proposals aim to accelerate the widespread deployment of energy storage systems to achieve ratepayer benefits, reduce dependence on petroleum, meet air quality standards, and reduce emissions of GHG. Overall, SDG&E's proposals seek to minimize costs and maximize overall benefits. Increased demand for energy storage technologies will drive new business opportunities and create jobs. For energy storage projects that are either owned or controlled by SDG&E, we will seek to maximize value to ratepayers by providing multiple services.[23] The distributed energy storage programs and investments SDG&E is proposing prioritize public-sector and low-income customers as set forth in AB 2868.

---

[21] P.U. Code § 2838.2(b).

[22] D.17-04-039 at 19-20.

[23] *See* D.18-01-003 at 2.

B. New Proposed Investments and Programs

The following describes new investments or programs SDG&E intends to count towards SDG&E's share of the AB 2868 target - approximately 166 MW:

1. Circuit-level[24] energy storage microgrid projects

In this application, SDG&E proposes seven energy storage projects at the circuit-level that will provide distribution resiliency[25] to critical public sector customers in the form of microgrids. These seven energy storage projects total 100 MW and would count toward SDG&E's AB 2868 procurement target. SDG&E is entrusted with the duty to provide safe and reliable service to our customers, but the historical method by which that was achieved is changing. It is imperative for us to provide safe and reliable electricity by considering system resilience in addition to traditional reliability.

SDG&E has identified energy storage projects that not only meet the goals of AB 2868, but also provide distribution resiliency. SDG&E intends to deploy these projects in 2019 and 2020. The sites SDG&E selected for these projects allow future expansion to increase the energy storage system duration, thereby allowing these energy storage facilities to support critical public sector customer facilities for longer periods of time. SDG&E balanced the need to minimize customer costs and maximize customer benefits as outlined in AB 2868 in the sizing of its seven proposed energy storage facilities.

In addition to the seven projects proposed with this application, SDG&E plans to seek future energy storage project approvals as projects meeting the goals of the statute are identified, some of which may be filed as Tier 3 Advice Letters in the process proposed in Stephen T

[24] Circuit-level refers to assets on distribution circuits, and is used to distinguish service-level facilities, which are facilities on the customer services side of the distribution service transformer.

[25] D. 18-01-003at 10 (Table 1).

Johnston's testimony or included in our future 2020 Energy Storage Procurement and Investment Plan.

The microgrid for multiple critical public sector facilities can provide backup resiliency during grid disturbances, and may be used in energy markets when connected to the grid. Serving these multiple applications will maximize ratepayer benefits and minimize costs in accordance with AB 2868. The costs and resiliency benefits of the circuit-level microgrids with energy storage are described in the testimony of Steven Prsha and the benefits of the CAISO revenues generated by the energy storage resources are described in the testimony of Evan M. Bierman. 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.

The circuit-level microgrid projects utilizing energy storage will maximize ratepayer benefits through multiple-use applications by providing: distribution resiliency microgrid services; wholesale market services; and reduced use of diesel backup generators, thereby reducing dependence on petroleum. The projects will also enable greater renewable integration, and may reduce bulk system load shedding. Finally, microgrids may provide local control and smoothing of intermittent renewables, thus allowing higher overall renewable penetration within the electric grid.[26] SDG&E will use available land that is owned by SDG&E or where customers can offer suitable land where possible. All targeted sites are public sector customers. Locations in low-income communities are prioritized in the evaluation.

[26] Cal. Energy Comm'n, Energy Research and Development Division, *Final Project Report – Microgrid Assessment and Recommendation(s) to Guide Future Investments* (July 2015) at 7. Available at: http://www.energy.ca.gov/2015publications/CEC-500-2015-071/CEC-500-2015-071.pdf

a. Cost recovery and resource adequacy

As highlighted above, the seven proposed energy storage projects will be multi-use. Their primary purpose and function will be to provide distribution resiliency to critical public sector customers. The proposed energy storage projects will be located within existing utility-owned property, and will augment the existing 12 kV electric distribution system, allowing critical public sector customer distribution circuits to be able to operate independently, essentially creating self-contained electric distribution systems during outages (i.e., microgrids). The proposed energy storage projects will be located at, and connected to, existing SDG&E electric substations solely at the 12 kV electric distribution voltage. Due to their nature as critical load circuit support, these facilities may be controlled and operated as part of the electric distribution system during grid disturbances (such as a substation outage) to provide resiliency to the associated distribution circuit.

When a proposed energy storage project is not prioritized to provide distribution resiliency, the proposed project will be scheduled in the CAISO market and generate market revenues. SDG&E plans to seek Full Capacity Deliverability Status for these proposed energy storage projects, and to the extent qualified, serve as Resource Adequacy ("RA") resources contributing to SDG&E's remaining Track 4 Local Capacity Requirement as discussed in Jennifer W. Summers' testimony. SDG&E proposes that any RA capacity credits would be shared amongst the other LSEs in SDG&E's service territory as described in Evan Bierman's testimony.

Because the proposed energy storage projects are an augmentation to SDG&E's distribution system and their primary purpose and function is to provide distribution resiliency to distribution circuits, their costs should be recovered in Distribution rates, like other SDG&E distribution system assets. However, as discussed in Norma G. Jasso's testimony, SDG&E

proposes a new mechanism to capture the CAISO market revenues of the proposed projects when they are not prioritized to provide distribution resiliency, and to use those revenues to offset the costs of the proposed projects which will be borne by distribution customers. This mechanism allows the actual CAISO market revenues of the proposed energy storage projects to flow to the same set of customers paying for the distribution resiliency service.

b. **Importance of timely approval**

Three of the seven circuit-level projects are proposed to be constructed in the 2019 timeframe. The three circuit-level microgrid energy storage projects are located at SDG&E's Kearny Mesa, Melrose and Boulevard substations, and 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. Some of the critical public sector customers these projects support are as follows:

- Kearny Mesa circuit-level microgrid: supports multiple critical facilities that provide essential services to the San Diego region including an emergency operations center used for coordination during emergencies and natural disasters, local fire department and sheriff's department headquarters.
- Melrose circuit-level microgrid: supports a local fire station, sheriff's department, and local operations center providing evacuation relief during natural disasters and other emergencies.
- Boulevard circuit-level microgrid: located in a wildfire prone area, supports three local fire stations as well as local police that serve the surrounding community.

SDG&E is using utility-owned land and utilizing existing infrastructure, which allows construction in an expedited timeframe so that these energy storage microgrid projects can

provide distribution resiliency to these critical public sector facilities in 2019. Therefore, we are requesting that the Commission review these projects expeditiously and approve in a timely manner.

2. Service-level microgrids

SDG&E is not proposing or seeking funding for specific service-level energy storage microgrid projects in this 2018 Energy Storage Procurement and Investment Plan. Therefore, no specific project costs or benefits are proposed in this application. However, service-level energy storage microgrid projects are part of SDG&E's AB 2868 Framework as a future proposed use case to accelerate the widespread deployment of energy storage as outlined in AB 2868, and as described in the testimony of Stephen T Johnston. Service-level energy storage microgrid projects are intended for specific critical facilities or priority sites such as cool zones[27] or priority municipal buildings on the services side of the distribution service transformer.

The service-level projects will seek to maximize ratepayer benefits through multiple-use applications when possible by providing community resiliency through distribution back-up power, and may aggregate when possible to participate in wholesale energy markets when connected to the grid. Locations in low-income communities will be prioritized in the evaluation. The microgrids may reduce the use of diesel backup generators, reduce dependence on petroleum and enable greater renewable integration for the selected sites. SDG&E will seek to minimize overall costs by using SDG&E right of way or suitable land offered by customers. All targeted sites are public sector customers.

[27] Cool zones provide shelter for those without air-conditioning during severe heat waves.

3. Energy storage incentive for Expanded CARE pilot program

This application proposes an Energy Storage Incentive for Expanded CARE Pilot Program designed to provide incentives to Expanded CARE customers who purchase energy storage to permanently shift load during peak periods.[28] Expanded CARE facilities include transitional housing (drug rehabilitation, half-way house), 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. The pilot program is designed to complement and serve participants of the California Solar Initiative ("CSI") Multifamily Affordable Solar Housing ("MASH") Program,[29] and Solar on Multifamily Affordable Housing ("SOMAH") Program.[30]

Properly designed and dispatched energy storage systems will help SDG&E's customers manage energy costs, help reduce overall system peak energy demands, improve public health and assist in achieving GHG emissions goals. The pilot program is described in the testimony of Mayda Bandy. The regulatory accounting and cost recovery for the pilot program are described in the testimony of Noma G. Jasso and Kellen C. Gill, respectively. As this program is intended

---

[28] *See* Mayda Bandy's testimony.

[29] The MASH program is an incentive for solar distributed generation designed for qualifying affordable housing, as defined in P.U. Code § 2852. The MASH incentive was designed to cover a substantial amount of the costs of installing solar. D.08-10-036 and D.15-01-027 implemented the statutory program criteria and funding. The MASH program is now closed to new participants. D.17-12-005 established SOMAH as a successor program.

[30] The SOMAH program is a solar distributed generation project incentive for multi-family affordable housing sites designed to ensure benefits from solar generation especially bill credits are received by tenants. SOMAH was established by AB 693 and implemented by D.17-12-005. SOMAH is funded with GHG allowances from the IOUs. SOMAH is a successor program to MASH with different funding sources, rules and eligibility.

to provide benefits to Expanded CARE low-income customers, SDG&E proposes to recover costs for the proposed pilot program through the PPP rate component.[31]

4. Framework for project evaluation and approval of future proposals

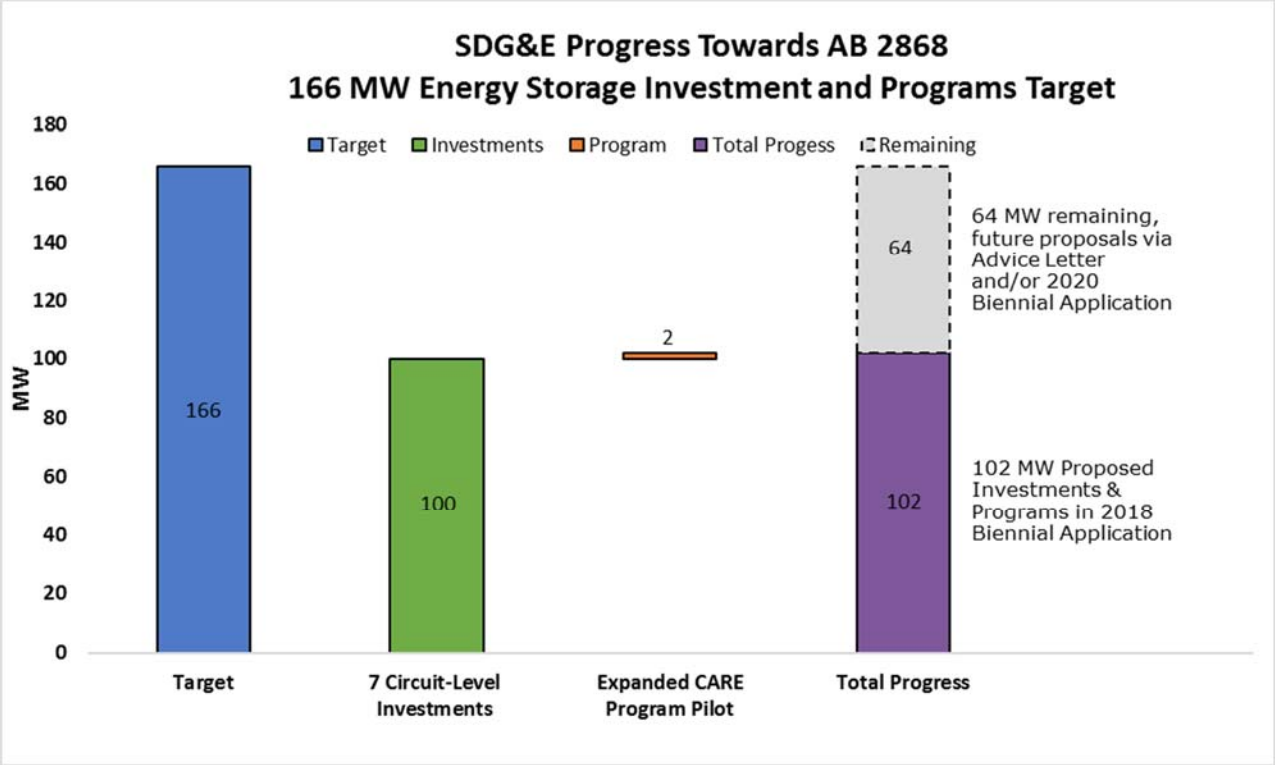
The testimony of Stephen T Johnston describes SDG&E's proposed AB 2868 Framework, which includes a methodology for evaluating circuit-level and service-level proposals in accordance with the AB 2868 statutory criteria. SDG&E plans to seek Commission approval of future energy storage projects as projects meeting the goals of the statute are identified. As proposed in Stephen T Johnston's testimony, SDG&E may request approval of future projects via Tier 3 Advice Letters or include future proposed projects in SDG&E's 2020 Energy Storage Procurement and Investment Plan.

5. SDG&E's AB 2868 energy storage target

Table TR-2 below outlines SDG&E's intended progress towards AB 2868, outlined by total investments and programs.

[31] *See* Kellen C. Gill's testimony.

Table TR – 2
SDG&E's AB 2868 Investments and Programs Energy Storage Target



C. Priority to Public Sector and Low-Income Customers

Prioritizing investments and programs for public sector and low-income customers broadens access to energy storage systems and ensures system and local resiliency[32] to critical facilities that serve the public. This not only supports public health in emergencies, but assists in achieving GHG emission reduction goals. SDG&E's proposed investments and pilot program prioritize low-income and disadvantaged communities. SDG&E's project evaluation methodology for its proposed investments identified and weighed whether a project would serve a public sector customer, as described in Stephen T Johnston's testimony. Using the definition of low-income established in AB 1550, SDG&E's project evaluation methodology also identified

[32] P.U. Code §454.52.

and weighed whether a facility served by the project was located in a low-income community.[33] SDG&E's proposed pilot program is designed to provide economic energy storage incentives to Expanded CARE facilities in SDG&E's service territory.

D. Utility Investments and Programs Do Not Unreasonably Impair Non-Utility Enterprises to Market and Deploy Energy Storage Systems

SDG&E's proposed investments for AB 2868 provide resiliency services to public sector customers and critical facilities. These investments will reduce dependency on petroleum and may reduce GHG emissions and help meet air quality standards. During the AB 2868 workshops required by the Track 2 Decision, stakeholders generally agreed that public sector critical infrastructure resiliency is important, and that resiliency services are suitable for utilities to offer. SDG&E's proposed energy storage investments are focused on critical facilities of public sector customers and designed to reduce the possibility risks of outages for public sector customers. Like other traditional distribution system upgrade investments, investments in these storage devices are not designed to and will not impede nonutility enterprises from also pursuing potential storage investments. SDG&E will use competitive solicitations to select the most cost-effective energy storage solutions that are intended to maximize ratepayer benefits and minimize overall costs in accordance with AB 2868. Such competitive solicitations will increase opportunities for nonutility enterprises to market and build energy storage systems, encourage competition across energy storage technology providers, and drive down the costs for SDG&E's customers.

SDG&E's pilot program proposal provides financial incentives to Expanded CARE facilities to deploy new energy storage systems. This program provides funding for customers to

[33] *See* Stephen T Johnston's testimony.

pay for storage systems and thereby directly supports the ability for nonutility enterprises in marketing and deploying energy storage systems. By providing additional financial incentives to customers, SDG&E's pilot program is expected to lower the economic barrier for eligible low-income customers to purchase energy storage and deploy it on the customer side of the meter for their own benefit. Such a program should increase the market opportunities for nonutility storage developers and technology providers.

E. Proposed Investments Under AB 2868 Will Utilize Organized Labor and Provide Workforce Training to Benefit Low-Income Communities

SDG&E will require that all construction, and installation of Energy Storage Investment and Programs (AB 2868) facilities that is not performed by employees of SDG&E, shall be performed by AFL/CIO unions, as defined in the current Amended Agreement between SDGE and IBEW 465 dated September 1, 2015. All electrical work will be performed by contractor's who hold a valid C-10 contractor's license. All specialized electric work on batteries and conversion systems will be performed by contractors and electricians who have Energy Storage and Microgrid Training and Certification (ESAMTAC). The union contractors will work with the local trade unions to utilize local labor when available and provide workforce training opportunities as much as possible.

V. CONCLUSION

SDG&E intends to meet its AB 2514 target of 165 MW of energy storage systems procured through solicitations by 2020, delivering to the grid by 2024. SDG&E is proposing programs and investments under AB 2868 to accelerate the widespread deployment of distributed energy storage systems.

SDG&E continues to work to achieve a successful energy storage strategy while maintaining and improving safety, resiliency, and efficiency of the electric delivery system.

SDG&E believes that the investments and programs submitted herein further the intent of AB 2868. Therefore, SDG&E respectfully requests that the Commission approve its 2018 Energy Storage Procurement and Investment Plan described in this application and supporting testimony. This concludes my prepared direct testimony.

VI. STATEMENT OF QUALIFICATIONS

My name is Ted Reguly and my business address is 8335 Century Park Ct., San Diego, CA 92123. I am currently the director of Growth and Technology Integration at SDG&E. My previous director positions were at Sempra Renewables Operations, SDG&E's Substation and Transmission Operations and Maintenance, Customer Programs, Smart Meter, and Customer Services Organizations. I am a registered California Mechanical Engineer and hold a Bachelor of Science degree in Mechanical Engineering from California State, Long Beach and a Masters in Business Administration with an emphasis in Finance from San Diego State University.

I have previously testified before the California Public Utilities Commission.