PREPARED DIRECT TESTIMONY OF
RANDY SCHIMKA
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

CHAPTER 1

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

JULY 30, 2018
# TABLE OF CONTENTS

I. OVERVIEW AND PURPOSE .................................................................................................................. 1

II. SCHOOL PILOT ................................................................................................................................... 4
   A. Description and Features .................................................................................................................. 4
      1. Pilot Summary .............................................................................................................................. 4
      2. Portfolio Fit ................................................................................................................................... 5
      3. Stakeholder Coordination ........................................................................................................... 8
      4. Pilot Description ............................................................................................................................ 10
      5. Pilot Objectives, Market Segment, and Sites Targeted ................................................................. 10
      6. Pilot Architecture ........................................................................................................................... 13
      7. Implementation Timeframe ........................................................................................................... 15
      8. Leveraged Funding ......................................................................................................................... 15
      9. Stranded Asset Mitigation ............................................................................................................. 15
   B. Pilot Benefits .................................................................................................................................... 16
      1. Grid Impacts ................................................................................................................................. 16
      2. Ratepayer Interest ......................................................................................................................... 17
      3. Emissions Benefits and Accounting Methodology ........................................................................ 18
   C. Regulation Supported by Pilot ........................................................................................................ 18
      1. California Agency Regulation Supported by Pilot ........................................................................ 18
      2. CPUC Regulation Supported by Pilot .......................................................................................... 19
      3. Monitoring and Evaluation Plan ................................................................................................... 20
      4. Future Opportunity / Scalability ................................................................................................... 20
      5. Education and Outreach ............................................................................................................... 20
      6. Estimated Pilot Costs .................................................................................................................... 21
      7. Conclusion .................................................................................................................................... 21

III. PARKS PILOT .................................................................................................................................... 21
A. Description and Features ................................................................. 21
   1. Pilot Summary ........................................................................... 21
   2. Portfolio Fit .............................................................................. 23
   3. Stakeholder Coordination .......................................................... 24
   4. Pilot Description ....................................................................... 26
   5. Pilot Objectives, Market Segment, and Sites Targeted .................. 26
   6. Pilot Architecture ....................................................................... 29
   7. Implementation Timeframe ....................................................... 31
   8. Leveraged Funding ..................................................................... 31
   9. Stranded Asset Mitigation .......................................................... 31

B. Pilot Benefits ................................................................................ 32
   1. Grid Impacts ............................................................................. 32
   2. Ratepayer Interest ..................................................................... 33
   3. Emissions Benefits and Accounting Methodology ....................... 34

C. Regulation Supported by Pilot ...................................................... 34
   1. California Agency Regulation Supported by Pilot ......................... 34
   2. CPUC Regulation Supported by Pilot ........................................ 35
   3. Monitoring and Evaluation Plan ............................................... 36
   4. Future Opportunity/Scalability ................................................. 36
   5. Education and Outreach .......................................................... 36
   6. Estimated Pilot Costs .............................................................. 37
   7. Conclusion .................................................................................. 38

IV. STATEMENT OF QUALIFICATIONS ............................................. 38

APPENDIX A – COSTS AND SITE SCENARIOS
CHAPTER 1

I. OVERVIEW AND PURPOSE

San Diego Gas and Electric Company (“SDG&E”) proposes two transportation electrification (“TE”) pilots, consistent with the “Assigned Commissioner’s Ruling Providing Guidance to Utilities Electing to Submit Applications Pursuant to Assembly Bills 1082 and 1083” dated January 24, 2018, in Rulemaking 13-11-007 (“ACR”). Within the following Assembly Bill (“AB”) 1082 and 1083 pilot proposals SDG&E requests the following:

- AB 1082: Install, own, operate and maintain electric vehicle (“EV”) charging stations and electrical infrastructure utilizing time-variant rates at 30 school facilities and educational institutions¹ — a total of 184 Level 2 (“L2”) charging stations and 12 DC Fast-Chargers (“DCFC”) units for a total direct cost of $9.9M (the “School Pilot”).

- AB 1083: Install, own, operate and maintain public EV charging stations and electrical infrastructure utilizing time-variant rates at 12 State parks and beach locations with a total of 64 L2 charging stations and 10 DCFC stations for a total direct cost of $5.1M (the “Parks Pilot”).

In addition, consistent with Senate Bill (“SB”) 350,² and the goals of AB 1083, SDG&E is requesting funding, as part of its Parks Pilot, to install additional EV charging stations and electrical infrastructure utilizing time-variant rates (56 L2 charging stations and 10 DCFC

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¹ Pursuant to AB 1082, “Educational institution” has the same meaning as defined in Section 22129 of the California Education Code, and includes any accredited public or private institution whose primary purpose is to provide classroom teaching and includes a high school, trade or vocational school or college, community college, or other college or university. Citing California Public Utilities Code (“P.U.C.”) § 740.13(a)(2).

stations) at city and county parks within SDG&E’s service territory. Because there is only one
state park in SDG&E’s territory that is within a disadvantaged community site ("DAC")\(^3\), these
additional city and county park locations will allow SDG&E to prioritize DACs as part of its
Parks Pilot, for an additional total direct cost of $3.8M. The total Parks Pilot cost – for both state
parks and beach sites and city and county park sites — is $8.9M.

AB 1082 and 1083 require that the CPUC issue a decision on the pilot applications by
December 31, 2018, in an expedited five-month review process.\(^4\) As shown in more detail
below, the proposed pilots meet the following requirements for expedited review,\(^5\) as defined by
the ACR:\(^6\)

- Have a mechanism that allows for cost recovery up to a California Public
  Utilities Commission ("CPUC")-defined limit;
- Minimize costs and maximize benefits;
- Do not unfairly compete with nonutility enterprises;
- Include performance accountability measures;
- Are in the interest of ratepayers;
- Use workers paid the prevailing wage or employed by the utility to install
  charging stations;
- Require the site hosts to participate in a time-variant electric rate for the
  charging stations; and
- Prioritize sites located in DACs.

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\(^3\) The term “DAC” is defined consistent with Decision ("D.") D.16-01-045 and SDG&E Advice Letter
(“AL”) 2876-E, approved April 28, 2016 and effective March 31, 2016.

\(^4\) ACR at 1.

\(^5\) The bills require the utilities to submit any applications by July 30, 2018 and for the CPUC to decide
on the applications by December 31, 2018, in an expedited five-month review process. Id.

\(^6\) Id. at 2.
Upon approval from the CPUC, SDG&E will implement the pilots in a variety of private and public venues, including school facilities, educational institutions, parks, and beaches, consistent with AB 1082 and 1083. This will, in turn, provide greenhouse gas (“GHG”) emission reduction benefits, provide sales growth for EV manufacturers and electric vehicle service providers (“EVSPs”), provide local skilled labor employment for installation and maintenance of charging equipment, continue to transition EV drivers to time-variant rates, and positively impact DACs with the installation and operation of local charging equipment.

Prepared direct testimony chapters are organized as follows:

- Chapter 1: (Randy Schimka) provides an overview of SDG&E’s vision and costs regarding transportation electrification and policy support for its School and Parks Pilots;
- Chapter 2: (Kellen C. Gill) describes the proposed rate recovery for the transportation electrification pilot proposals that are the subject of this application;
- Chapter 3: (Amanda D. White) identifies the costs associated with the pilot proposals; describes the methodology used by SDG&E in determining the revenue requirements for the proposals; and identifies the resulting annual revenue requirements for the Pilots;
- Chapter 4: (Norma G. Jasso) describes the balancing accounts requested for recovering the costs related to SDG&E’s School and Parks Pilots; and
- Chapter 5: (Tony Rafati) describes the air quality impacts for SDG&E’s School and Parks Pilots.

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7 See the Prepared Direct Testimony of Tony Rafati (Chapter 5) for further details.
# II. SCHOOL PILOT

## A. Description and Features

### 1. Pilot Summary

<table>
<thead>
<tr>
<th>Pilot Components</th>
<th>SDG&amp;E’s AB 1082 Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commission Review Mechanism</td>
<td>Expedited Review.</td>
</tr>
<tr>
<td>Objectives</td>
<td>Provide EV charging infrastructure at 30 school facilities and other educational institutions.</td>
</tr>
<tr>
<td>Market Segment and Vehicles Targeted</td>
<td>People movement; Level 2 (“L2”) and DC Fast Charger (“DCFC”) electric vehicle supply equipment (“EVSE”) for light-duty passenger vehicles.</td>
</tr>
<tr>
<td>Vehicle Goals</td>
<td>Install charging stations and infrastructure with time-variant rates at 30 school facilities and educational institution locations – a total of 184 L2 charging stations and 12 DCFC units. The number of stations at each location will depend on the size of the venue and the number of current and expected EV drivers.</td>
</tr>
<tr>
<td>Implementation Timeframe</td>
<td>Installation will commence after CPUC approval of the implementation advice letter, and charging data will be collected and analyzed for the two-year Pilot duration.</td>
</tr>
<tr>
<td>Project Partners</td>
<td>California Department of Education. Local school districts and educational facilities.</td>
</tr>
<tr>
<td>Leveraged Funding</td>
<td>Site hosts/locations to sign agreements to allow the installation of the charging equipment and infrastructure, provide parking spaces for charging, and expertise to help streamline the design, installation and permitting efforts.</td>
</tr>
<tr>
<td>Stranded Asset Mitigation</td>
<td>SDG&amp;E ownership and maintenance will assure reliable and available charging equipment. Level 2 EVSE will conform to SAE J1772 standards(^8) and the DC Fast Charge units will have charging cables that can connect to either a CHaDeMo-equipped(^9) or SAE Combined Charging System (CCS)-equipped(^10) vehicle.</td>
</tr>
</tbody>
</table>

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2. Portfolio Fit

The ACR requires SDG&E to describe how these Pilots aligns with its broader TE plans and portfolios, and how these proposed Pilots compare to its other ongoing and proposed transportation electrification projects. The California legislature and the Commission regard the acceleration of widespread TE as a vital tool in achieving environmental policy goals.

According to the California Air Resources Board (“CARB”), the transportation sector now

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11 See Prepared Direct Testimony of Tony Rafati (Chapter 5) for further details.
12 ACR at 5.
13 See P.U.C. §§ 740.12(a)(2); 740.12; 701.1(a)(1).
accounts for 41% of all GHG emissions in California.\(^\text{14}\) Although CARB found that California has met its 2020 GHG reduction target four years early, CARB concluded that emissions from the transportation sector continue to rise, increasing by two percent in 2016; from 39% to 41%.\(^\text{15}\)

SDG&E’s School Pilot helps SDG&E expand EV charging infrastructure in schools and educational institutions, therefore advancing the State’s TE goals.

As part of its broader transportation electrification efforts, SDG&E is currently implementing both its Power Your Drive (“PYD”)\(^\text{16}\) program for workplaces and multi-unit dwellings (“MUDs”), and its six SB 350 Priority Review Projects (“PRP”).\(^\text{17}\) As part of its PRP portfolio of offerings, SDG&E seeks to provide charging infrastructure for shuttles, airport ground support equipment, the Port of San Diego, and fleet delivery services. Additionally, SDG&E is working to increase EV sales by engaging automobile dealerships. Further, SDG&E is engaging with CalTrans to build public EV charging infrastructure at four Park-and-Ride locations in its service territory, under its Electrify Local Highways PRP.

As part of PYD, SDG&E aims to install at least 3,000 EV charging stations and infrastructure at 300 apartments, condominiums and places of work. As of July 20, 2018, the PYD pilot has installed and energized 825 charging stations at 76 locations. In addition, 134 sites encompassing 1,596 nozzles are in the design phase, with 10 sites with 162 nozzles under


\(^{16}\) SDG&E’s Vehicle-Grid Integration Pilot Program, later rebranded as “Power Your Drive,” was approved in D.16-01-045.

\(^{17}\) *See* D.18-01-024.
construction. PYD continues to be popular in SDG&E’s service territory, as PYD is almost fully subscribed, with 1,122 sites on PYD’s interest list as of late July 2018.

Power Your Drive has demonstrated that installing new charging stations does induce employees or residents to purchase EVs to utilize newly installed charging equipment. SDG&E has also learned numerous lessons from PYD that can be used to improve future programs such as the School and Parks Pilots, including:

- Insights into the EV charging technology that is available in the marketplace;
- Streamlining the request for proposal (“RFP”) and the EVSP qualification process;
- Implementing a more streamlined agreement strategy;
- Minimizing the distance for trenching to help control costs;
- Improving metering testing;
- Increasing site hosts interests by showing existing sites with installed SDG&E charging infrastructure; and
- Making site designs more flexible to encourage higher participation.

Of interest here, PYD currently has 10 schools and two educational administration facilities that are participating as “workplaces.” These schools average 10 charging stations per site.

SDG&E’s School Pilot builds off the company’s experiences with schools in PYD to increase school participation. PYD only allows staff at schools and educational institutions to have access to Level 2 EV charging. Under the School Pilot, schools will also have the option to provide charging infrastructure for a larger group of students, parents and other visitors. The School Pilot also expands the charging options available to schools and educational institutions. While the average installation requirement for PYD participation is 10 Level 2 stations, the
School Pilot will allow for a smaller number of charging stations for schools and educational institutions that have fewer drivers and/or less space for charging EVs.\(^{18}\)

Additionally, the School Pilot’s financing structure would increase the number and types of schools that can participate. PYD requires a participation payment. School participation in PYD has solely consisted of public schools in DACs, where the participation payment is waived, or private schools with funding for the PYD participation payments. As discussed below, the School Pilot seeks to remedy this potential impediment through a utility ownership model that has no participation fee. Therefore, the School Pilot offering complements SDG&E’s ongoing portfolio of charging investments.

SDG&E also has a pending application before the CPUC to provide charging infrastructure to support medium-duty and heavy-duty (“MD/HD”) EVs.\(^{19}\) If approved, the program will support a range of EVs, including electric school buses. The vehicles in the MD/HD program will maintain their normal operating schedule and charge overnight and midday, when renewables are plentiful. SDG&E believes the MD/HD vehicle-to-grid-pilot complements the School Pilot, as the MD/HD focuses on school buses, while the School Pilot addresses passenger vehicles.

3. **Stakeholder Coordination**

The ACR requires SDG&E to consult with the California Department of Education prior to submitting its AB 1082 application to understand the potential charging needs at facilities under the Department’s authority. The ACR further instructs that utilities should consult with

\(^{18}\) See Appendix A for a list of available School Pilot site scenarios and costs.

\(^{19}\) See Application (“A.”) 18-01-012, Application of San Diego Gas & Electric Company (U 902-E) for Approval of Senate Bill 350 Transportation Electrification Proposals Regarding Medium and Heavy-Duty Electric Vehicles and a Vehicle-to-Grid Pilot.
other school and educational organizations, as necessary. SDG&E met with the following statewide and local organizations to garner feedback and input on the School Pilot.

List of Statewide Consultative Meetings

- California Air Resources Board
- California Community College Chancellor’s Office
- California Department of Education
- California Energy Commission
- California Public Utilities Commission
- California School Energy Coalition
- California State University Chancellor’s Office
- University of California Transportation Office

List of Local Consultative Meetings and Letters of Support

- American Lung Association
- California State University – San Marcos
- Carlsbad Unified School District
- City of Encinitas – Mayor Catherine S. Blakespear
- City of San Diego – Councilmember David Alvarez
- City of San Diego – Councilmember Chris Cate
- City of San Diego – Councilmember Christopher Ward
- Cleantech San Diego’s K-12 Schools Sustainability Strategy Coalition
- Chula Vista School District
- Encinitas School District
- Escondido School District
- Poway School District
- San Diego State University

20 ACR at 3.
21 See Letters of Support attached to Application as Appendix A.
San Diego Unified School District
• SDG&E Program Advisory Council
• University of California San Diego
• University of San Diego

External stakeholders support SDG&E’s School Pilot to support transportation electrification for schools and educational institutions, evidenced by the letters of support.

4. **Pilot Description**

As part of the School Pilot, SDG&E proposes to provide a total of 196 light duty public EV chargers and infrastructure at school facilities and other educational institutions that will be installed over a total of 30 sites in various configurations.

After speaking with several interested parties, it became clear that a one-size fits all approach would not be appropriate for this Pilot. There are different sized venues, with different sized parking lots, and different numbers of EV drivers. SDG&E has designed a versatile pilot, budgeting for 30 sites with 184 L2 and 12 DCFC charging stations in various configurations.

SDG&E will work with site hosts to determine the best fit for their needs from the pool of sites and the charging station options available within the School Pilot. Table A-4 in Appendix A, below, outlines examples of potential charging station sites and costs proposed for this Pilot.

5. **Pilot Objectives, Market Segment, and Sites Targeted**

Schools and educational institutions are locations where drivers, including staff and students, leave their cars in designated parking lots for long durations. Currently, there are limited charging opportunities for EV drivers at schools in SDG&E’s territory. SDG&E intends to reach out to local schools and educational institutions to publicize the program and offer charging infrastructure and charging stations to 30 qualified and interested schools and educational institutions. Site hosts will self-nominate to participate in the program. A qualified
location would be willing to provide the space for the charging stations and equipment, and have existing and future EV drivers to use the equipment. In addition, once a school or educational facility host customer expresses an “indication of interest” for the School Pilot, SDG&E will evaluate and prioritize the interested site(s) for installation by using the following criteria, including, but not limited to:

- Date of indicated interest (first-in-line priority);
- Disadvantaged Community status;
- Current and expected volume of EV drivers;
- Number of installations desired;
- Type of installation (DCFC, L2);
- Distance between transformer and new electric service point;
- Estimated cost for infrastructure and EV charging station installation; and
- Existing/available Americans with Disabilities Act (“ADA”) accessible parking.

SDG&E proposes to install, own, operate, and maintain the charging stations. This is the same ownership model in SDG&E’s Electrify Local Highways PRP, recently approved by the Commission in D.18-01-024. SDG&E proposes this ownership model to facilitate public school participation. Like the Electrify Local Highways PRP, many schools are public facilities. Public schools would require funding to purchase and maintain the equipment. Yet many schools state that they lack the funding and personnel to own, operate, and maintain the equipment, and see the ownership of charging infrastructure as outside their mission. So, as stated by the San Diego Unified School District and the University of San Diego in their letters supporting the School Pilot, many school districts and educational institutions would prefer a turn-key ownership, operation, and maintenance solution.

See Appendix A of the Application.
Power Your Drive further underscores how SDG&E ownership can expand school participation. Power Your Drive requires a participation payment. SDG&E has not targeted PYD at public schools that would be responsible for the participation payment. Of the 12 school facilities participating in PYD, 10 are public school and administration buildings in DACs, where the participation payment is waived. The other two are private schools that made the required payment.

Because utility ownership provides EV charging infrastructure for capital constrained schools and educational facilities that would need public funding to acquire charging stations and infrastructure, the School Pilot’s ownership plan can help overcome this barrier to TE expansion at public schools. As the owner of the charging equipment, SDG&E will provide the same standard of service that it does to all other assets installed in its territory to ensure that the charging stations are safe, reliable, and available for drivers to use. Existing EV drivers value having reliable and available charging stations. The PlugShare website\(^{23}\) highlights comments from drivers about public charging stations that are having ongoing availability / workability issues in the San Diego region. SDG&E-owned charging stations would mitigate the reliability concerns of customers, as SDG&E continues to be one of the most reliable energy companies in the United States. In November 2017, SDG&E was recognized for delivering industry-leading reliability to customers for the past 12 years.\(^{24}\) And SDG&E has strong knowledge and experience with EV charging infrastructure, by installing and managing over 250 workplace charging sites at 20 different SDG&E locations, along with the PYD locations.

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\(^{23}\) See [www.plugshare.com](http://www.plugshare.com).

SDG&E is proposing to use the EV Time-of-Use (“TOU”) rate for this Pilot. It will study charging patterns and share the usage data with the CPUC and the PAC. The EV-TOU rate has three time-of-use periods per day. It offers drivers a predictable per-kWh price without demand charges that match the current TOU pricing experience at their home.

Upon approval of this pilot, SDG&E will work with EVSPs via a RFP process to purchase the EVSE and associated network services, and use International Brotherhood of Electric Workers (“IBEW”)-affiliated contractors and skilled electricians for the installation and maintenance of the charging equipment.  

6.  **Pilot Architecture**

SDG&E will examine the need to install new distribution transformers at the sites. Each location will likely not have enough electrical infrastructure capacity to serve the proposed number of charging stations, and will need a new transformer. New electric service will be installed at each site that is separately metered.

AB 1082 provides schools the ability to determine who may use the charging stations. Per AB 1082, authorized EV drivers can choose either an L2 or DCFC charger. The charging stations will accommodate two different types of drivers: (1) those that leave their cars for a longer period of time (more appropriate for an L2); and (2) those who wish to quickly charge

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25 All work that is not performed by SDG&E employees shall be performed by contractor’s signatory to the IBEW who hold a valid C-10 contractor’s license, as defined in the governing labor agreement between SDG&E and the IBEW. In addition, electricians performing the EVSE installations will have Electric Vehicle Infrastructure Training Program (“EVITP”) certification.

26 See P.U.C. § 740.13(c) (“a school district, county office of education, private school, or other educational institution choosing to participate in the program shall have the authority to establish guidelines for use of the charging stations installed pursuant to the approved program, which may include use by faculty, students, and parents, before, during, and after school hours at those times that the school facilities or other educational institutions are operated for purposes of providing education or school-related activities, including, but not limited to, parent-teacher conferences, clubs, theater, and athletic events, and by any other persons present for those activities and events.”)
their vehicles (more appropriate for a DCFC). Charging scenarios will be dependent on specific site design, as some sites may not have both types of charging stations. The site design will be determined based on-site needs.

The customer experience at these charging stations will be a key focus. Payment can be made at the charging station, so users don’t have to be SDG&E customers or have an SDG&E account. Each charger will allow EV drivers a variety of payment options, including credit/debit card, fob, and mobile device. Depending on school authorization, this will allow the stations to be available to school and educational institution visitors, as well as those who regularly use the charging stations. The prices will be displayed on or near the EVSE, or on the vendor-supplied phone app.

![Diagram of EV Charging Station Architecture at School or Educational Institution Sites](image)

**Figure 1-1: EV Charging Station Architecture at School or Educational Institution Sites**

Figure 1-1 above depicts the EV charging station architecture at each school or educational institution site. A new separately metered electric service will be installed to feed the charging stations. SDG&E envisions that the EVSP will be the customer of record for this new service. The EVSP will bill drivers for their charging session energy on the EV-TOU rate.
7. Implementation Timeframe

SDG&E anticipates breaking ground on the Pilot within 12 months from the time it receives the Commission approved implementation advice letter. The 12-month period will be used to issue and process the RFPs, test and procure equipment, sign up site hosts and prepare for installation. Data collection will continue for two years from the time the charging stations are installed and operational.

8. Leveraged Funding

SDG&E will work with each school and educational institution to develop a collaborative installation and operational plan that minimizes costs. SDG&E has included all currently known construction costs in the Pilot budget and envisions that each school and educational institution will agree to provide land, sign an agreement, and provide assistance to help streamline the design, installation, and permitting efforts needed to build a successful and cost-effective site. SDG&E will continue to seek out appropriate non-utility sources of funding to alleviate some ratepayer funds, if funding sources become available prior to implementation. For example, SDG&E will continue to collaborate and work diligently with its Pilot partners in an effort to secure and utilize additional federal, state and private funding.

9. Stranded Asset Mitigation

As with all of SDG&E’s TE programs, SDG&E proactively mitigates stranded asset risk through program design. SDG&E will ensure that the charging facilities are reliably operated and maintained, minimizing the risk that charging infrastructure will be out of service for
extended periods. SDG&E’s proposed ownership structure ensures that facilities will be reliable and available to drivers, mitigating the risk of insufficient maintenance, supplier bankruptcy, insufficient funding, or local market contraction. Finally, SDG&E’s interaction with the PAC and the Commission has, and will continue to, provide data on electric transportation adoption and charging infrastructure utilization.

B. Pilot Benefits

1. Grid Impacts

Per the ACR, and pursuant to P.U.C. § 740.13(g) and P.U.C. § 740.14, SDG&E is required to state which time-variant electric rate should apply to the pilot sites. SDG&E plans to use the EV-TOU rate to incentivize drivers to charge at times of the day when the grid is least impacted. The proposed EV-TOU rate in this Pilot will help support Governor Brown’s ZEV Action Plan by providing drivers an incentive to charge during off-peak hours — ensuring that the grid can support the influx of new load from EVs, and mitigating the need for new generation or transmission and distribution (“T&D”) assets.

27 Reputation and branding can be significant in changing the public perception of EVs. The local utilities have the reputation to deliver safe and reliable service. Recent failures to advance the TE market illustrate that a different approach is needed. Car2Go, a fleet of clean EV cars in San Diego, failed in just five years, claiming setbacks in electric charger stations as one of the reasons. See The San Diego Union-Tribune, Car2go’s San Diego Departure a Climate Change Setback (November 18, 2016), available at http://www.sandiegouniontribune.com/news/politics/sd-me-car2go-leaves-20161118-story.html. ECOtality, the original operator of the Blink charging network, went bankrupt and the Blink network was taken over by Car Charging Group. The Blink residential and public chargers were initially provided as part of a Department of Energy (“DOE”) EV grant. ECOtality’s public financial reports have revealed its inability to build a business beyond the DOE funded chargers, which led to DOE freezing further grant payments. One survey conducted by Recargo indicated that only 48 percent considered the Blink brand “reliable” and only 18 percent felt “loyal” to the brand. See Green Tech Media, ECOtality Bankruptcy: Blink EV Charging Network Changes Hands but Can’t Shake Its Bad Reputation (October 11, 2013), available at https://www.greentechmedia.com/articles/read/ECOtality-Bankruptcy-Blink-EV-Charging-Network-Changes-Hands-But-Not-Bad-R.

2. Ratepayer Interest

With a variety of EVs now available on the market, the decreasing costs of EVs, the increasing battery capacity, and the increasing number of EVs entering the market as drivers return vehicles from leases, electric transportation choices are growing. With these increased EV choices, the infrastructure to support such EVs must also be built to accommodate all types of users. This Pilot will provide new charging infrastructure in, or adjacent to, DAC areas that will be available to staff, students, residents, and visitors alike and help extend their electric miles traveled. SDG&E ratepayers will benefit through cleaner air, reduced GHG emissions, and increased grid optimization. The American Lung Association estimates that in 2015, the harmful impacts caused by passenger vehicles in the 10 ZEV States\(^\text{29}\) totaled billions of dollars in health and climate costs combined. In addition, according to the American Lung Association, San Diego County has received a grade of “F” in ozone air quality in the organization’s last two annual “State of the Air” reports.\(^\text{30}\) Studies continue to link air pollution to adverse effects to humans, including cancer and respiratory damage.\(^\text{31}\) Electric vehicles are a powerful tool to combat these issues because they have zero tailpipe emissions. Therefore, while there continues to be a cost to deploy charging infrastructure, there is also a cost if stakeholders do not act in the short and long-term interest of ratepayers.

\(^{29}\) A report by the American Lung Association refers to the following states as the “10 ZEV States” - California, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island and Vermont. The American Lung Association focused on the 10 U.S. states that have adopted a ZEV sales program. See American Lung Association in California, Clean Air Future, Health and Climate Benefits of Zero Emission Vehicles (October 2016), available at http://www.lung.org/local-content/california/documents/2016zeroemissions.pdf.


SDG&E will focus on deploying infrastructure to support EVs in disadvantaged communities, setting a DAC deployment goal of 25% of installations within the School Pilot. DACs often face disproportionate exposure to the health and economic impacts of air pollution and climate change, making increased access to electricity as a transportation fuel in DACs a policy priority. The Pilot will provide both environmental and economic benefits in DACs, including creating high-quality jobs.

3. Emissions Benefits and Accounting Methodology

GHG reductions from the School Pilot will provide air quality benefits for all ratepayers. First year reductions of 554 MT of CO₂ are estimated, resulting in lifetime net CO₂ reductions of 5,864 MT for the vehicles included in the School Pilot.

C. Regulation Supported by Pilot

1. California Agency Regulation Supported by Pilot

The School Pilot will support a variety of California regulation in addition to SB 350, such as:

- AB 1082: Support the installation of EV charging stations at school facilities and other educational institutions;
- AB 32: Reduction of GHG emissions to approximately 15% below emissions expected under a “business as usual” scenario;


33 P.U.C. §§ 740.12(a)(1)(E); 740.12(a)(1)(c).

34 P.U.C. § 740.8(b)(5).

35 See the Prepared Direct Testimony of Tony Rafati (Chapter 5) for further details.


37 California Air Resources Board, Assembly Bill 32 Overview, available at https://www.arb.ca.gov/cc/ab32/ab32.htm.
• 2016 ZEV Action Plan: 1.5 million ZEVs in California by 2025;\textsuperscript{38}
• Executive Order B-30-15: Decrease GHG emissions to 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050;\textsuperscript{39} and
• Executive Order B-48-18: Put at least 5 million zero-emission vehicles on California roads by 2030, by increasing the supply of ZEVs and charging and refueling stations in California.\textsuperscript{40}

2. CPUC Regulation Supported by Pilot

The School Pilot also supports the following CPUC Regulation:

• Public Utilities Code §740.3(a) and (c): SDG&E, as an electrical corporation, will evaluate and implement policies to promote the development of equipment and infrastructure needed to facilitate the use of electric power. This project is in the ratepayers’ interest and will not unfairly compete with nonutility enterprises.
• Public Utilities Code §740.8: the Pilot will increase the use of alternative fuels, reduce the health and environmental impacts from air pollution, and create high quality job and other economic benefits, including in DACs.
• Public Utilities Code §740.12: the Pilot stimulates innovation and competition by EV manufacturers, attracting more private capital


investments in TE, and increasing access to electricity as a transportation
fuel in DACs.

3. Monitoring and Evaluation Plan

SDG&E will study and learn whether the proposed EV charging infrastructure at school
and educational institutions will increase the amount of EVs in those neighborhoods and station
usage in general. The Pilot will use time-variant charging to manage the load, while cars are
parked for long periods, as well as for faster DCFC charging sessions. SDG&E will monitor
usage and charging data to share with the Commission and PAC within the two-year Pilot
duration to study charging patterns at the school and educational institution locations.

4. Future Opportunity / Scalability

Installing EV charging stations at schools and educational institutions have strong
scalability opportunities. While there are more than 1,000 schools and educational institutions
within SDG&E’s territory, due to its size, this pilot will only target a small number of them. If
this pilot is successful, it can be expanded to additional schools and educational institutions in
San Diego and throughout California.

5. Education and Outreach

SDG&E has strong knowledge and experience in EV charging. SDG&E has installed
and managed over 250 EVSEs at over 20 different SDG&E locations for its employees within its
territory. Additionally, SDG&E has gained EV charging knowledge and experience through the
implementation process of PYD, which will continue to inform future education and outreach
efforts associated with SDG&E’s AB 1082 pilot. As an example of this, SDG&E recognized
that obtaining agreements with site hosts for EVSE placement were difficult to obtain and
contributed to a longer site-host approval time. Therefore, SDG&E revised its agreement
strategy, to make it easier to implement and easier for site host approval.
A strong customer communication plan, in partnership with the schools and educational institutions, will be developed to inform the region about the availability and accessibility of the charging stations. In coordination with each respective school and educational institution, the plan could include a social media campaign, a direct e-mail campaign targeted to SDG&E customers near each location, and a direct e-mail campaign by each school and educational institution to current staff, students and potential users. SDG&E will work with each school and educational institution to coordinate a grand opening for the charging stations, in an effort to generate awareness through earned media.

6. **Estimated Pilot Costs**

The estimated cost of SDG&E’s School Pilot is $9.9M. See Appendix A, Table A-1, below, for a cost estimate summary.

7. **Conclusion**

The School Pilot should be designated for expedited review because it is non-controversial. It is a short-term pilot and will not oversaturate the market. And it is within the budget parameters as outlined in the ACR to qualify for expedited review.

III. **PARKS PILOT**

A. **Description and Features**

1. **Pilot Summary**

<table>
<thead>
<tr>
<th>Pilot Components</th>
<th>SDG&amp;E’s AB 1083 Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commission Review Mechanism</td>
<td>Expedited Review.</td>
</tr>
<tr>
<td>Objectives</td>
<td>Provide EV charging infrastructure at 12 state parks and beach sites, and optionally, up to 10 city and county park sites.</td>
</tr>
<tr>
<td>Market Segment and Vehicles Targeted</td>
<td>People movement; L2 and DCFC EVSE; light-duty passenger vehicles.</td>
</tr>
<tr>
<td>Vehicle Goals</td>
<td>Install time-variant public charging stations and infrastructure at 12 state parks and beach locations, and up to 10 city and county park sites, with a total of 64 L2 charging stations and 10 DCFC stations at the state sites, and 56 L2 charging stations and 10 DCFC stations at the city and county sites.</td>
</tr>
<tr>
<td>Implementation Timeframe</td>
<td>Installation will commence after CPUC approval of the implementation advice letter, and charging data will be collected and analyzed for the two-year Pilot duration.</td>
</tr>
</tbody>
</table>
| Pilot Partners | California Department of Parks and Recreation (“Parks”). Potential California state parks and beach sites include:  
- Anza-Borrego State Park  
- Carlsbad / Tamarack State Beach  
- Cardiff by the Sea / Sea Side/ South Cardiff State Beach  
- Cuyamaca Ranch State Park  
- Doheny State Beach  
- Old Town San Diego State Park  
- San Clemente State Beach  
- San Elijo State Beach  
- San Onofre State Beach  
- Silver Strand State Beach  
- South Carlsbad / Ponto State Beach  
- Torrey Pines, North & South Beach State Beach City and County Parks  
- 100% of city and county park sites will be in DACs.  
- Sites have yet to be determined. |
| Leveraged Funding | Site hosts/locations to sign SDG&E license agreements, provide parking spaces, and expertise to help streamline the design, installation and permitting efforts. |
| Stranded Asset Mitigation | SDG&E ownership and maintenance assures reliable charging equipment and both L2 EVSE will be J1772 standardized and the DCFC units will have both Chademo and SAE CCS connectors. |
| Grid Impacts | EV-TOU rates to incentivize drivers to charge at times of the day when the grid is impacted the least. |
| Emissions Benefits & Accounting Methodology | GHG Emission Reductions: 377 MTCO$_2$/first year\(^{41}\) for the state sites and 353 MTCO$_2$/first year\(^{42}\) for the city and county sites. |
| CA Regulation Supported by Pilot | AB 1083  
SB 32  
SB 350  
2016 ZEV Action Plan  
Climate Change Scoping Plan  
California Transportation Plan 2040  
Executive Order B-16-2012  
Executive Order B-18-12  
Executive Order B-30-15  
Executive Order B-48-18 |
| CPUC Regulation Supported by Pilot | §740.3(a), (c)  
§740.8  
§740.12  
§ 740.14 |
| Monitoring and Evaluation Plan | As described in section III 3.C.  
Data will be shared with CPUC and other stakeholders. |
| Supplier Diversity | Diverse Business Enterprise goal: 40% |
| Disadvantaged Community Participation | DAC Goal: 50% of the state sites and the city and county sites combined, including the one qualifying state site and 10 city and county sites. |
| Cost | Estimated Direct Costs: $5.1M at the state sites, and optionally, $3.8M at the city and county sites. Total estimated cost is $8.9M. |

2. Portfolio Fit

The ACR requires SDG&E to describe how this Pilot aligns with its broader TE plans and portfolios, and how the proposed Pilot compares to its other ongoing and proposed transportation electrification projects.\(^{43}\) Similar to the School Pilot, SDG&E’s proposed Parks Pilot complements the ongoing efforts by SDG&E and helps achieve the State’s TE goals.

\(^{41}\) See Prepared Direct Testimony of Tony Rafati (Chapter 5) for further details.

\(^{42}\) See Prepared Direct Testimony of Tony Rafati (Chapter 5) for further details.

\(^{43}\) ACR at 5.
As part of its broader transportation electrification efforts, SDG&E is currently in the implementation phase of its six SB 350 PRPs. Those PRPs includes the Electrify Local Highways PRP, which provides a mix of L2 and DCFC public charging infrastructure at four CalTrans Park-and-Ride locations in SDG&E’s service territory.

The Parks Pilot proposal complements the Electrify Local Highways RPR. Like the Electrify Local Highways PRP, the Parks Pilot will provide an additional mix of much needed L2 and DCFC charging infrastructure at public locations within SDG&E’s service territory. In addition, the Parks Pilot will provide much needed design flexibility, allowing for the smaller installations of charging stations for parks and beaches that are space-constrained. The Parks Pilot addresses an investment gap in an important sector of SDG&E’s service territory – tourism.

The tourism industry continues to be a uniquely weighted market segment within SDG&E’s service territory; therefore, the Parks Pilot specifically serves a need for this market. Additionally, the Parks Pilot will advance SDG&E’s goal to enable TE and reduce barriers to adopting EVs.

3. **Stakeholder Coordination**

AB 1083 requires utilities to consult with Parks, CPUC, California Energy Commission (“CEC”), and California Air Resources Board (“ARB”) before filing an application. Since Parks manages the state parks and beaches that are the subject of this bill, the ACR instructs that any pilot should help Parks meet its goals for fleet and employee charging, pursuant to Executive Order B-16-2012, and Parks’ fleet acquisition plan. It is therefore particularly important to

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45 ACR at 2.

46 Id. at 3-4.
develop a pilot in coordination with this Department. SDG&E met with the following statewide and local organizations to garner feedback and input on the AB 1083 pilot, as well as secure letters of support.

**List of Statewide Consultative Meetings**

- California Air Resources Board
- California Energy Commission
- California Public Utilities Commission
- California State Parks Foundation
- Parks

**List of Local Consultative Meetings and Letters of Support**

- American Lung Association
- Anza-Borrego State Park
- Carlsbad / Tamarack State Beach
- Cardiff by the Sea / Sea Side/ South Cardiff State Beach
- City of Encinitas – Mayor Catherine S. Blakespear
- City of San Diego – Councilmember David Alvarez
- City of San Diego – Councilmember Christopher Ward
- Cleantech San Diego
- County of San Diego – Supervisor Ron Roberts
- Cuyamaca Ranch State Park
- Doheny State Beach
- Old Town San Diego State Park
- Orange County Board of Supervisors – Supervisor Lisa A. Bartlett
- San Clemente State Beach
- San Elijo State Beach
- San Elijo Lagoon Conservancy
- San Onofre State Beach

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47 See Letters of Support attached to the Application as Appendix A.
External stakeholders support SDG&E’s Parks Pilot to facilitate transportation electrification for state parks and beaches and city and county parks.

4. Pilot Description

SDG&E proposes to provide 74 light duty public EV chargers and infrastructure at 12 state parks and beaches, and, 66 light duty public EV chargers at 10 city and county park sites.

After speaking with interested parties, it became clear that a one-size fits all approach would not be appropriate for this Pilot. There are different sized venues, with different sized parking lots, and different numbers of EV drivers. SDG&E designed a versatile pilot and budgeted an overall number of sites and Level 2/DC Fast charge stations. The company will work with site hosts to determine their needs from the selection of site designs available. Tables A-5 and A-6 in Appendix A below outlines example charging site scenarios and costs proposed for this project.

5. Pilot Objectives, Market Segment, and Sites Targeted

SDG&E will partner with Parks to implement the Parks Pilot at local state parks and beaches, by providing EV charging infrastructure to 12 state parks and beach locations. SDG&E would install, own, maintain, and operate the charging stations. State parks and beaches would provide the parking spaces, sign licensing agreements, and provide expertise to streamline the design, permitting and installation efforts – thus helping to reduce the overall Pilot cost.
SDG&E will study charging patterns and share the usage data for modeling charging infrastructure at the locations. SDG&E will also test the proposed EV-TOU rate at public charging sites, and see how driver behavioral charging patterns vary at the parks and beach sites.

State parks and beaches are locations where drivers, including visitors and staff, leave their cars in designated parking lots for long durations. There is limited access for charging opportunity for EV drivers at the 15 state parks and beaches within SDG&E’s service territory. Upon approval of this Pilot, SDG&E will work with EVSPs via an RFP process to purchase the charging infrastructure and associated network services, and then use IBEW-affiliated contractors and skilled electricians for the installation and maintenance of the charging equipment.48

As stated previously, SDG&E proposes to install, own, operate and maintain the charging stations in the Parks Pilot, similar to the Electrify Your Highways PRP. Like public highways, state parks and beaches are public property that would require public funding to purchase the charging equipment. Parks has indicated in its letter of support that utility ownership, operation and maintenance is the preferred structure for an AB 1083 Pilot.49 Moreover, as AB 1083 states, “the Department of Parks and Recreation shall not be required to incur any costs or liability related to the installation, use, or maintenance of the charging stations for the pilot program’s duration.”50 SDG&E’s proposed ownership is consistent with AB 1083’s guidance, provides EV

48 All work that is not performed by SDG&E employees shall be performed by contractor’s signatory to the IBEW who hold a valid C-10 contractor’s license, as defined in the governing labor agreement between SDG&E and the IBEW. In addition, electricians performing the EVSE installations will have EVITP certification.

49 See Appendix A to the Application.

infrastructure for capital constrained public parks and beaches, and offers the public turn-key operation and maintenance services for the charging equipment at each park and beach site.

As the owner, SDG&E will provide the same standard of service that it does to all other assets installed in its territory, ensuring that the charging stations are safe, reliable and available for drivers. As noted with the School Pilot, SDG&E has long been recognized for its reliability and has extensive experience with operating and maintaining EV infrastructure.

As part of its Parks Pilot, SDG&E is also proposing to provide charging infrastructures to 10 city and county park sites. City and county parks within SDG&E’s service territory offer more opportunity to meet the needs of DACs, compared to state parks and beaches. Only one state park within SDG&E’s service territory in a DAC. So including city and county parks in the Parks Pilot enables SDG&E to prioritize DAC sites. SDG&E is committed to installing 100 percent of the charging stations in city and county parks within DACs. SDG&E believes that its supplemental city and county parks pilot is authorized by SB 350. It will increase access to electricity as a transportation fuel to help meet California’s goals, particularly in DACs. It is also consistent with the goals of AB 1083 and the ACR guidance. The latter specifies that the SB 350 proceeding remains open to consider additional utility proposals that would support widespread transportation electrification. The ACR further states that each respective AB 1083 pilot proposal should be:

• In the interest of ratepayers; and

• Prioritize sites located in disadvantaged communities.

Enabling SDG&E to provide public EV charging at city and county parks provides the ratepayers the benefit of better air quality in DACs. Air pollution impacts all ratepayers. Yet low-income communities, such as DACs, suffer disproportionally from the consequences of
Evidence shows that people who have low incomes may face higher risk of health impacts from air pollution. The Parks Pilot — particularly the city and county parks proposal — will provide environmental and economic benefits, including GHG emission reduction and local skilled labor employment. The city and county parks proposal is supported by multiple groups, as evidenced in the letters of support included in Appendix A of the Application. With California’s emphasis on improving DACs, SDG&E believes the addition and prioritization of city and county parks in DACs is appropriate.

Including The total estimated cost for both the state parks and beaches and city and county parks pilots is $8.9M — below the ACR’s budget guidance.

6. Pilot Architecture

SDG&E will examine the need to install new distribution transformers at the chosen sites. Each location will likely not have enough electrical infrastructure capacity to serve the proposed number of charging stations and will need a new transformer. A new electric service will be installed at each site, as needed, that is separately metered. It will feed the installed charging stations.

EV drivers will be able to pull into the state parks and beach parking lots and choose a charging station. Those stations will accommodate two different types of drivers: (1) those that leave their cars for a longer period of time to charge; and (2) those that wish to quickly charge their vehicles. Charging scenarios will be dependent on specific site design, as some sites may


53 See P.U.C §740.
not have both L2 and DCFC chargers. The site design will be based on the location and the needs of the site.

In an effort to minimize negative grid impacts, the charging stations will use a EV TOU rate, incentivizing drivers to charge when the price of electricity is lower and when grid supply is unconstrained. The EV-TOU rate has three time-of-use periods per day. It offers drivers a predictable per-kWh price without demand charges, mirroring the current TOU residential rate.

The customer experience at these charging stations will be a key focus. Payment will be made at the charging station, so users needn’t be an SDG&E customer or have an SDG&E account. Each charger will have full public access, allowing EV drivers a variety of payment options, including credit/debit card, fob, and mobile device. By providing customers the option to pay by credit card, it ensures that stations are available to infrequent visitors, along with more regular users. The prices will be displayed on or near the EVSE, or on the vendor-supplied phone app.

Figure 1-2: EV Charging Station Architecture at Parks and Beaches Sites

Figure 1-2 above depicts the EV charging station architecture at each park or beach site. A new separately metered electric service will be installed to feed the charging stations. SDG&E
envisions that the EVSP will be the customer of record for this new service, and will bill drivers for their charging session energy on the EV-TOU rate.

7. Implementation Timeframe

SDG&E plans to break ground on the pilot within 12-months from the time it receives Commission approval of the implementation advice letter. The 12-month period will be used to issue the RFPs, test and procure equipment, sign up site hosts, and prepare for installation. Data collection will continue for two years from the time the charging stations are installed and operational.

8. Leveraged Funding

SDG&E will work with Parks and individual parks and beaches to develop a collaborative installation and operational plan that minimizes costs. SDG&E has included all the construction costs in the Pilot budget. It envisions that each park and beach will agree to provide land, sign an agreement, and assist in streamlining the design, installation, and permitting efforts needed to build a successful and cost-effective site. SDG&E will seek out appropriate non-utility sources of funding to alleviate some ratepayer funds if funding sources become available prior to implementation. SDG&E will continue to collaborate and work diligently with its pilot partners in an effort to secure and utilize additional federal, state, and private funding as available.

9. Stranded Asset Mitigation

SDG&E proactively mitigates stranded asset risk through program design. SDG&E will ensure that the charging facilities are reliably operated and maintained, minimizing the risk that charging infrastructure will be out of service for extended periods. SDG&E’s proposed

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54 Reputation and branding can be significant in changing the public perception of EVs. The local utilities have the reputation to deliver safe and reliable service. Recent failures to advance the TE
ownership structure ensures that facilities will be reliable and available to drivers, mitigating the risk of insufficient maintenance, supplier bankruptcy, local market contraction, or insufficient funding. In addition, SDG&E’s long history of owning, operating, and maintaining infrastructure in weather challenged areas, such as public coastal parks and beaches, provides enhanced assurance of asset performance. Charging station usage and energy consumption data will be collected and reported to the PAC and the Commission.

B. Pilot Benefits

1. Grid Impacts

SDG&E plans to use the EV-TOU rate to incentivize drivers to charge at times with the least grid impacts. The proposed EV-TOU rate in this Pilot will support Governor Brown’s ZEV Action Plan, providing drivers an incentive to charge during off-peak hours — ensuring that the grid can support the influx of new load from EVs and mitigate the need for new generation or transmission and distribution (T&D) assets.55

market illustrate that a different approach is needed. Car2Go, a fleet of clean EV cars in San Diego, failed in just five years, claiming setbacks in electric charger stations as one of the reasons. See The San Diego Union-Tribune, Car2go’s San Diego Departure a Climate Change Setback (November 18, 2016), available at http://www.sandiegouniontribune.com/news/politics/sd-me-car2go-leaves-20161118-story.html. ECotality, the original operator of the Blink charging network, went bankrupt and the Blink network was taken over by Car Charging Group. The Blink residential and public chargers were initially provided as part of a DOE EV grant. ECotality’s public financial reports have revealed its inability to build a business beyond the DOE funded chargers which led to DOE freezing further grant payments. One survey conducted by Recargo indicated that only 48 percent considered the Blink brand “reliable” and only 18 percent felt “loyal” to the brand. See Green Tech Media, ECotality Bankruptcy: Blink EV Charging Network Changes Hands but Can’t Shake Its Bad Reputation (October 11, 2013), available at https://www.greentechmedia.com/articles/read/ECotality-Bankruptcy-Blink-EV-Charging-Network-Changes-Hands-But-Not-Bad-R.

2. Ratepayer Interest

With a variety of EVs now available, the decreasing costs of EVs, the increasing battery capacity, and more available used EVs as drivers return leased vehicles, electric transportation choices are growing. This pilot will provide new charging infrastructure in or adjacent to DAC areas that will be available to public, visitors, and employees to help extend their electric miles traveled. SDG&E ratepayers will benefit through cleaner air, reduced GHG emissions, and increased grid optimization. As noted in AB 1082 testimony, the American Lung Association estimates that in 2015, the harmful impacts caused by passenger vehicles in the 10 ZEV States totaled billions of dollars in health and climate costs combined.

In addition, according to the American Lung Association, San Diego County has received a grade of “F” in ozone air quality in the organization’s last two annual “State of the Air” reports. Studies continue to link air pollution to adverse effects to humans, including cancer and respiratory damage. Because they have zero tailpipe emissions, electric vehicles are a powerful tool to combat these issues. Therefore, while there continues to be a cost to deploy charging infrastructure, there is also a cost if stakeholders do not act in the interest of ratepayers. SDG&E will focus on deploying infrastructure to support EVs in disadvantaged communities, by setting a combined DAC deployment goal of 50% of installations within the Parks Pilot between


state parks and beaches and city and county parks. Because, as noted, only one state park in SDG&E’s territory is in a DAC, the city and county parks proposal is critical to meeting this DAC installation goal.

3. **Emissions Benefits and Accounting Methodology**

GHG reductions from the Parks Pilot provide air quality benefits for all ratepayers. First year reductions of 377 MT of CO₂ are estimated for the state park and beach sites, resulting in lifetime net CO₂ reductions of 3,990 MT for state parks and beaches. The optional city and county park sites are estimated to provide 352 MT of CO₂ in the first year, resulting in lifetime net CO₂ reductions of 3,734 MT.⁵⁹

C. **Regulation Supported by Pilot**

1. **California Agency Regulation Supported by Pilot**

SDG&E’s Parks Pilot will support a variety of California regulation in addition to SB 350, such as:

- AB 1083: Authorizes the installation of EV charging stations at state parks and beaches.⁶⁰
- AB 32: Reduction of GHG emissions to approximately 15% below emissions expected under a “business as usual” scenario.⁶¹
- 2016 ZEV Action Plan: 1.5 million ZEVs in California by 2025;⁶²
- Executive Order B-16-2012: State entities support and facilitate the rapid

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⁵⁹ See the Prepared Direct Testimony of Tony Rafati (Chapter 5) for further details.


commercialization of zero-emission vehicles;\textsuperscript{63}

- Executive Order B-18-12: State agencies identify and pursue opportunities to provide electric vehicle charging stations, and accommodate future charging infrastructure demand, at employee parking facilities in new and existing buildings;\textsuperscript{64}

- Executive Order B-30-15: Decrease GHG emissions to 40\% below 1990 levels by 2030, and 80\% below 1990 levels by 2050;\textsuperscript{65} and

- Executive Order B-48-18: Increase supply of ZEVs and charging and refueling stations in California.\textsuperscript{66}

2. CPUC Regulation Supported by Pilot

The Parks Pilot also supports the following CPUC Regulation:

- Public Utilities Code §740.3(a) and (c): SDG&E, as an electrical corporation, will evaluate and implement policies to promote the development of equipment and infrastructure needed to facilitate the use of electric power. This project is in the ratepayers’ interest and will not unfairly compete with nonutility enterprises.

- Public Utilities Code §740.8: the project will increase the use of alternative fuels and reduce the health and environmental impacts from air


pollution, and create high quality job and other economic benefits, including in DACs.

- Public Utilities Code §740.12: the project stimulates innovation and competition by EV manufacturers, attracting more private capital investments in TE, increasing access to electricity as a transportation fuel in DACs, and creating high quality jobs for Californians.

3. Monitoring and Evaluation Plan

SDG&E intends to study whether the proposed EV charging infrastructure at state parks and beaches will increase the amount of EVs in the region and usage of the stations in general. The pilot will use time-variant charging to manage the load when cars are parked for long periods, as well as for the faster DCFC charging sessions. SDG&E will monitor usage data to share within the two years to study charging patterns at the state parks and beaches locations, as well as city and county park locations.

4. Future Opportunity/Scalability

Installing EV charging stations at state parks and beaches have strong scalability opportunities — including city and county parks. If this Pilot is successful, it can be expanded to additional parks and beaches in San Diego and throughout California. The Parks Pilot will assist state, city, and county parks and beaches in implementing their effort to install EV charging stations at locations, as ordered by Executive Order B-18-12. Success will be demonstrated through data collection of charger usage and drivers’ time of day charging habits.

5. Education and Outreach

SDG&E has strong knowledge and experience in EV charging. SDG&E has installed and managed over two hundred and fifty (250) EVSE at over twenty (20) different SDG&E facility locations for its employees within its territory. Additionally, SDG&E has gained EV
charging knowledge and experience through the implementation process of PYD. As noted above, as of July 20, 2018, the PYD pilot has installed and energized 825 charging stations at 76 locations. In addition, 134 sites encompassing 1,596 nozzles are in the design phase, with 10 sites with 162 nozzles under construction.

A strong customer communication plan, in partnership with Parks and the local parks, will be developed to inform the region about the availability and accessibility of the charging stations. In coordination with each respective state park and beach, the plan could include a social media campaign, a direct e-mail campaign targeted to SDG&E customers near each location, and a direct e-mail campaign by each state park and beach to current staff, park and beach members and potential users. SDG&E will work with Parks and individual parks to coordinate a grand opening for the charging stations in an effort to generate awareness through non-paid media.

SDG&E will work with Parks and individual parks to determine the: (1) current and expected volume of EV drivers; (2) number of installations desired; (3) nearby transformer available capacity; (4) distance between transformer and new service point; (5) site conditions related to construction feasibility; (6) charging station mounting surface, condition of facility; and (7) existing or available ADA accessible parking.

6. Estimated Pilot Costs

The estimated cost of SDG&E’s Parks Pilot is $5.1M at the state sites, and, $3.8M at the city and county sites for a total direct cost of $8.9M. See Appendix A, Tables A-2 and A-3 below for summary cost estimate information.

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67 Approved in D.16-01-045.
7. **Conclusion**

The Parks Pilot should be designated for expedited review because it is non-controversial. The Pilot is a short-term pilot and will not oversaturate the market. And it is within the budget parameters as outlined in the ACR to qualify for expedited review.

This concludes my prepared direct testimony.

IV. **STATEMENT OF QUALIFICATIONS**

My name is Randall L. Schimka. My business address is 8306 Century Park Court, San Diego, California 92123. I am employed by SDG&E as a Project Manager in Clean Transportation.

I have over 30 years of energy industry experience. My current duties involve project management to support SDG&E’s electric transportation efforts, including electric vehicle charging in residential, workplace, and public locations. I act as a utility liaison or interface with electric vehicle service providers wanting to install charging equipment in our service territory. I also contribute to our Clean Transportation education and outreach efforts for electric vehicle customers, talking with customers and making presentation about transportation electrification. I am the proud owner of two battery electric vehicles, and have taken several all-electric long-distance road trips over the past several years.

My prior duties at SDG&E focused on transmission grid control systems, transmission system cyber security, NERC and CIP reliability standards, distribution system reliability, substation engineering, and project management.

My education is in the general area of electrical engineering and business. I graduated from San Diego State University in 1985 (BS Electrical Engineering), 1990 (MS Electrical Engineering), and 1992 (Executive MBA). I am a registered Electrical Engineer in the State of California.
I have previously testified before the California Public Utilities Commission.
APPENDIX A

COSTS AND SITE SCENARIOS
Costs are primarily for charging equipment and installation, electrical infrastructure for charging stations, customer support, and staff necessary for IT, project management and equipment maintenance functions.

Table A-1
AB1082 Schools Charging Infrastructure Program
After Sales Tax, Unloaded, Unescalated, Direct Cost Estimate

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**Program Total (Capital and O&M)** $9,892,175
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<td></td>
</tr>
<tr>
<td>Trench, Conduit, Wire &amp; Installation</td>
<td>$1,119,282</td>
<td></td>
</tr>
<tr>
<td>Switchgear / Meters</td>
<td>$230,670</td>
<td></td>
</tr>
<tr>
<td>Program and Project Management</td>
<td>$550,000</td>
<td></td>
</tr>
<tr>
<td>Chargers / EVSE</td>
<td>$628,000</td>
<td></td>
</tr>
<tr>
<td>ADA / Parking</td>
<td>$303,300</td>
<td></td>
</tr>
<tr>
<td>Transformer</td>
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<td></td>
</tr>
<tr>
<td>IT Costs</td>
<td>$280,000</td>
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<tr>
<td>Network Communications</td>
<td>$39,960</td>
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<td>Customer Engagement</td>
<td>$200,000</td>
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</tr>
<tr>
<td>Measurement and Evaluation</td>
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<td></td>
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<tr>
<td>Charger / EVSE Maintenance &amp; Warranty</td>
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<td>Tax and Contingency</td>
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<td>$10,397</td>
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<tr>
<td>Subtotal</td>
<td>$4,535,069</td>
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<tr>
<td><strong>Program Total (Capital and O&amp;M)</strong></td>
<td></td>
<td><strong>5,029,627</strong></td>
</tr>
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Table A-3
AB1083 Local Parks Charging Infrastructure Program
After Sales Tax, Unloaded, Unescalated, Direct Cost Estimate

<table>
<thead>
<tr>
<th>Item</th>
<th>Capital</th>
<th>O&amp;M</th>
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<td>Engineering and Design</td>
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<td>Trench, Conduit, Wire &amp; Installation</td>
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<tr>
<td>Switchgear / Meters</td>
<td>$192,225</td>
<td></td>
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<td>Program and Project Management</td>
<td>$350,000</td>
<td></td>
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<tr>
<td>Chargers / EVSE</td>
<td>$612,000</td>
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<tr>
<td>ADA / Parking</td>
<td>$252,750</td>
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<tr>
<td>Transformer</td>
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<td>IT Costs (Included in State Parks)</td>
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<td>Network Communications</td>
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<td>Customer Engagement</td>
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<td>Measurement and Evaluation</td>
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<td>$75,000</td>
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<td>Charger / EVSE Maintenance &amp; Warranty</td>
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<td>$30,600</td>
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<td>Tax and Contingency</td>
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<td>Subtotal</td>
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Program Total (Capital and O&M) $3,799,045
Table A-4: SDG&E AB 1082 School Pilot Site Scenarios

<table>
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<th>Sites</th>
<th># of Level 2 Stations</th>
<th># of DC FC</th>
<th>Total Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1</td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Site 2</td>
<td>0</td>
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</tr>
<tr>
<td>Site 3</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Site 4</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Site 5</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Site 6</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Site 7</td>
<td>4</td>
<td>0</td>
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</tr>
<tr>
<td>Site 8</td>
<td>4</td>
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</tr>
<tr>
<td>Site 9</td>
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</tr>
<tr>
<td>Site 10</td>
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<td>4</td>
</tr>
<tr>
<td>Site 11</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Site 12</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Site 13</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Site 14</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Site 15</td>
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<td>Site 16</td>
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<td>Site 17</td>
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<td>Site 18</td>
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<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Site 19</td>
<td>8</td>
<td>2</td>
<td>10</td>
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<tr>
<td>Site 20</td>
<td>8</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Site 21</td>
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</tr>
<tr>
<td>Site 22</td>
<td>8</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Site 23</td>
<td>8</td>
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</tr>
<tr>
<td>Site 24</td>
<td>8</td>
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<tr>
<td>Site 25</td>
<td>8</td>
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<tr>
<td>Site 26</td>
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<td>Site 29</td>
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<td>Site 30</td>
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<td>10</td>
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<tr>
<td>Totals</td>
<td>184</td>
<td>12</td>
<td>196</td>
</tr>
</tbody>
</table>
### Table A-5: SDG&E AB 1083 State Parks and Beaches Pilot Site Scenarios

<table>
<thead>
<tr>
<th>Sites</th>
<th># of Level 2 Stations</th>
<th># of DC FC</th>
<th>Total Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Park / Beach Site #1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>State Park / Beach Site #2</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>State Park / Beach Site #3</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>State Park / Beach Site #4</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>State Park / Beach Site #5</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>State Park / Beach Site #6</td>
<td>4</td>
<td>0</td>
<td>4</td>
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<tr>
<td>State Park / Beach Site #7</td>
<td>6</td>
<td>2</td>
<td>8</td>
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<tr>
<td>State Park / Beach Site #8</td>
<td>6</td>
<td>0</td>
<td>6</td>
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<tr>
<td>State Park / Beach Site #9</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>State Park / Beach Site #10</td>
<td>10</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>State Park / Beach Site #11</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>State Park / Beach Site #12</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

| Totals                               | 64                    | 10         | 74             |

### Table A-6: SDG&E AB 1083 City and County Parks Pilot Site Scenarios

<table>
<thead>
<tr>
<th>Sites</th>
<th># of Level 2 Stations</th>
<th># of DC FC</th>
<th>Total Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Diego City / County Park Site #1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>San Diego City / County Park Site #2</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>San Diego City / County Park Site #3</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>San Diego City / County Park Site #4</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>San Diego City / County Park Site #5</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>San Diego City / County Park Site #6</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>San Diego City / County Park Site #7</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>San Diego City / County Park Site #8</td>
<td>10</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>San Diego City / County Park Site #9</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>San Diego City / County Park Site #10</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

| Totals                               | 56                    | 10         | 66             |
PREPARED DIRECT TESTIMONY OF

KELLEN C. GILL

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

CHAPTER 2

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

JULY 30, 2018
# TABLE OF CONTENTS

I. INTRODUCTION ......................................................................................................................... 1

II. COST RECOVERY, RATE IMPACTS, AND BILL IMPACTS .................................................. 1

III. STATEMENT OF QUALIFICATIONS ...................................................................................... 4
I. INTRODUCTION

My direct testimony presents San Diego Gas & Electric Company’s (“SDG&E”) proposed cost recovery, along with the associated rate and bill impacts for the two transportation electrification (“TE”) pilots, comprised of electric vehicle (“EV”) public charging infrastructure for schools and educational institutions (“School Pilot”), and state parks and beaches, and county and city parks (“Parks Pilot”) (collectively, the “Pilots”) that are the subject of this application (“Application”). As explained in the prepared direct testimony of Randy Schimka (Chapter 1), SDG&E submits this Application to reduce barriers and facilitate widespread TE in the light-duty vehicle segment. This application is consistent with the “Assigned Commissioner’s Ruling Providing Guidance to Utilities Electing to Submit Applications Pursuant to Assembly Bills 1082 and 1083,” dated January 24, 2018, in Rulemaking 13-11-007 (“ACR”).

II. COST RECOVERY, RATE IMPACTS, AND BILL IMPACTS

SDG&E proposes to recover the costs of implementing the TE proposals through distribution rates, consistent with the recovery of similar costs. Table KCG-1, below, presents the illustrative class average electric rate impacts for 2021 through 2023 of the proposed revenue requirements, as presented in the prepared direct testimony of SDG&E Witness Amanda D.

---

1 Costs are primarily charging equipment and installation, electrical infrastructure for charging stations, customer support, and staff necessary for IT, project management and equipment maintenance functions. See Prepared Testimony of Randy Schimka (Chapter 1) for a detailed description of the costs.
White (Chapter 3), compared to SDG&E’s current rates. In addition, the revenue requirements presented in the testimony of Witness White reflect revenue requirements beginning in 2019. SDG&E proposes to combine the 2019, 2020 and 2021 revenue requirement and begin recovery of the revenue requirement in 2021, to coincide with SDG&E’s rate change occurring on January 1, 2021. The amount SDG&E will recover in rates beginning in 2021 is based on the revenue requirement presented in Witness White’s testimony of $2.456 million (without Franchise Fees and Uncollectibles (“FF&U”)), or $2.548 million (with FF&U). SDG&E proposes to recover ongoing costs associated with the School Pilot and Parks Pilot in a future General Rate Case.

Table KCG-1: Illustrative Class Average Electric Rates Impact

<table>
<thead>
<tr>
<th></th>
<th>Current 1/1/18 (¢/kWh)</th>
<th>Proposed Rate (¢/kWh)</th>
<th>Change from Current (¢/kWh)</th>
<th>Change from Current (%)</th>
<th>Proposed Rate (¢/kWh)</th>
<th>Change from Current (¢/kWh)</th>
<th>Change from Current (%)</th>
<th>Proposed Rate (¢/kWh)</th>
<th>Change from Current (¢/kWh)</th>
<th>Change from Current (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>27.561</td>
<td>27.578</td>
<td>0.017</td>
<td>0.06%</td>
<td>27.589</td>
<td>0.028</td>
<td>0.10%</td>
<td>27.588</td>
<td>0.027</td>
<td>0.10%</td>
</tr>
<tr>
<td>Small Comm.</td>
<td>26.242</td>
<td>26.260</td>
<td>0.018</td>
<td>0.07%</td>
<td>26.271</td>
<td>0.029</td>
<td>0.11%</td>
<td>26.270</td>
<td>0.028</td>
<td>0.11%</td>
</tr>
<tr>
<td>Med &amp; Lg C&amp;I</td>
<td>21.385</td>
<td>21.395</td>
<td>0.010</td>
<td>0.05%</td>
<td>21.401</td>
<td>0.016</td>
<td>0.07%</td>
<td>21.400</td>
<td>0.015</td>
<td>0.07%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>19.468</td>
<td>19.479</td>
<td>0.011</td>
<td>0.06%</td>
<td>19.486</td>
<td>0.018</td>
<td>0.09%</td>
<td>19.485</td>
<td>0.017</td>
<td>0.09%</td>
</tr>
<tr>
<td>Lighting</td>
<td>21.635</td>
<td>21.654</td>
<td>0.019</td>
<td>0.09%</td>
<td>21.666</td>
<td>0.031</td>
<td>0.14%</td>
<td>21.665</td>
<td>0.030</td>
<td>0.14%</td>
</tr>
<tr>
<td>System Total</td>
<td>23.997</td>
<td>24.010</td>
<td>0.013</td>
<td>0.05%</td>
<td>24.018</td>
<td>0.021</td>
<td>0.09%</td>
<td>24.018</td>
<td>0.021</td>
<td>0.09%</td>
</tr>
</tbody>
</table>

In 2021, the illustrative annual bill impact based on the revenue requirements is an increase of approximately $1.02 in 2021 for a typical residential customer using 500 kWh per month in both the Inland and Coastal climate zones, as compared to current rates. On a

---

2 Rates effective January 1, 2018 per Advice Letter (“AL”) 3167-E, approved April 30, 2018 and effective January 1, 2018.
3 Timing of implementation is dependent upon approval.
4 See the Prepared Testimony of Amanda White (Chapter 3) for further details regarding the revenue requirements.
percentage basis, this equates to an illustrative annual bill impact of 0.06%. In 2023, the
illustrative annual bill impact based on the revenue requirements is approximately $1.60 for a
typical residential customer using 500 kWh per month in both the Inland and Coastal climate
zones, as compared to current rates. On a percentage basis, this equates to an illustrative annual
increase of 0.10%.

This concludes my prepared direct testimony.

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\textsuperscript{5} \textit{Id.}
III. STATEMENT OF QUALIFICATIONS

My name is Kellen Childs Gill and my business address is 8330 Century Park Court, San Diego, California 92123. I am employed by SDG&E as a Rate Strategy Project Manager in the Customer Pricing Department. My primary responsibilities include planning, development, and implementation of rate related proceedings and preparation of various regulatory filings.

I began work at SDG&E in March 2015 as a Regulatory Case Manager. Prior to joining SDG&E, I was employed by Sempra Energy, where I worked in several positions of increasing responsibility in tax, accounting, internal audit and legislative policy beginning in June 2007.

I graduated from the University of San Diego with a Bachelor’s degree in Business Administration and a minor in Accounting. I went on to earn a Master of Science in Accountancy with an emphasis in entity taxation from San Diego State University. I am also a Certified Public Accountant licensed to practice in the state of California.

I have previously testified before the California Public Utilities Commission.
PREPARED DIRECT TESTIMONY OF
AMANDA D. WHITE
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY
CHAPTER 3

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

JULY 30, 2018
# TABLE OF CONTENTS

I. PURPOSE AND SUMMARY ........................................................................................................ 1

II. REVENUE REQUIREMENT OVERVIEW ............................................................................. 2

III. COSTS ASSOCIATED WITH SDG&E’S 100% OWNERSHIP FOR THE PROGRAM PROPOSALS .................................................................................................................. 3
   A. Capital Expenditures ........................................................................................................... 3
   B. O&M Costs ......................................................................................................................... 4
   C. Total Capital Expenditures and O&M Costs Before Adjustments ............................... 5
   D. Adjustments to Capital and O&M Costs ........................................................................ 5
      1. Overhead Loaders ........................................................................................................ 5
      2. Escalation of Future Costs .......................................................................................... 6
   E. Total Costs After Adjustments ....................................................................................... 7

IV. REVENUE REQUIREMENT ASSOCIATED WITH SDG&E’S OWNERSHIP FOR THE PROGRAM PROPOSALS .......................................................................................................................... 8
   A. Return of Capital .............................................................................................................. 10
   B. O&M Costs ....................................................................................................................... 10
   C. Return .............................................................................................................................. 10
   D. Tax .................................................................................................................................. 11
      1. Property Tax ................................................................................................................. 11
      2. Federal and State Income Tax .................................................................................... 12
         a. Federal Income Tax .................................................................................................. 12
         b. State Income Tax ................................................................................................. 12
   E. Franchise Fees and Uncollectible ................................................................................. 13

V. CONCLUSION ......................................................................................................................... 13

VI. STATEMENT OF QUALIFICATIONS ............................................................................... 14
PREPARED DIRECT TESTIMONY OF
AMANDA D. WHITE
CHAPTER 3

I. PURPOSE AND SUMMARY

The purpose of my testimony is to identify the costs associated with San Diego Gas & Electric Company’s (“SDG&E”) Assembly Bill (“AB”) 1082 and AB 1083 transportation electrification (“TE”) pilot proposals (“Pilots”), comprised of electric vehicle (“EV”) public charging infrastructure for schools and educational institutions (“School Pilot”), and parks and beaches (“Parks Pilot”) (collectively, the “Pilots”). The Parks Pilot includes a request for public charging infrastructure at state parks and beaches, and an additional proposal for chargers at city and county parks. The Pilots include: (1) a description of the methodology used by SDG&E in determining the revenue requirements for the proposals; and (2) the resulting annual revenue requirements for the Pilots. The costs and revenue requirements for the Pilots are based on SDG&E owning the electric vehicle supply equipment (“EVSE”), also referred to as an EV charger.

Since the School and Parks Pilots include services and capital costs above and beyond those authorized by the California Public Utilities Commission (“Commission” or “CPUC”) in any other proceeding, including SDG&E’s most recent general rate case (“GRC”), all costs associated with the Pilots are incremental, and thus additive to any currently authorized levels of revenue requirement.

SDG&E is requesting that the Commission approve, for the years 2019-2022, the capital costs, operations & maintenance (“O&M”) costs, and the associated revenue requirement for the School and Parks Pilots, as explained in more detail below in Section III and IV of my testimony. SDG&E is also seeking approval to roll forward for recovery in a subsequent GRC...
(currently estimated to be Test Year 2022) any undepreciated book value of utility-owned plant balances associated with the Pilots.

In addition, SDG&E is requesting that, under the Assigned Commissioner’s Ruling ("ACR"), the Commission approve, for the years 2019-2022, the capital costs, O&M costs, and the associated revenue requirement for the city and county parks portion of the Parks Pilot, as explained in more detail below in Section III and IV of my testimony. SDG&E is also seeking approval to roll forward for recovery in a subsequent GRC (currently estimated to be Test Year 2022) any undepreciated book value of utility-owned plant balances associated with the Pilots.

Please refer to the prepared direct testimony of Norma G. Jasso (Chapter 4) for cost recovery details regarding the balancing account requested for recovering the costs of the Pilots.

II. REVENUE REQUIREMENT OVERVIEW

The revenue requirements for each Pilot shown in Section IV of this testimony are designed to capture all costs necessary to run the Pilot proposals. These costs, referred to as capital costs, provide benefits to its users over multiple years of the asset’s useful life. They include asset or equipment costs for chargers, transformers, and overhead equipment. O&M costs consumed within a one-year period that are incurred to maintain equipment – as well as provide support to customer outreach and billing – are also part of the revenue requirement.

The capital costs require cash outflows, and are financed through contributions from shareholders, along with borrowed funds from lending institutions. Shareholders and lenders are paid back for the principal portion of their contributions and loans through the depreciation expense of the revenue requirement (referred to as a “return of investment”). Interest costs on

1 January 24, 2018, Assigned Commissioner’s Ruling Providing Guidance to Utilities Electing to Submit Applications Pursuant to Assembly Bills 1082 and 1083, in Rulemaking (“R.”) 13-11-007.
the portion of debt that is borrowed from lenders to finance a portion of the projects are also
collected as part of the revenue requirement. In addition, while being paid back for their
contribution, shareholders are allowed to earn an after-tax return (approved by the Commission)
on their investment. Taxes on the return are collected as part of the revenue requirement, so that
shareholders are made whole on an after-tax basis.

In summary, the components of the revenue requirement include recovery of O&M costs
on a dollar-for-dollar basis, capital costs through depreciation, taxes, and return (interest on debt
financing, and shareholder return) (see Section IV, below).

III. COSTS ASSOCIATED WITH SDG&E’S 100% OWNERSHIP FOR THE
PROGRAM PROPOSALS

SDG&E proposes the School Pilot and Parks Pilot. For more detail regarding the capital
and O&M costs of the Pilots, see the prepared direct testimony of Randy Schimka (Chapter 1 of
this Application).

A. Capital Expenditures

Table ADW-1 below identifies the capital expenditures for the Schools Pilot and the
Parks Pilot (including both state parks and beaches and city and county parks) for the years
2019 - 2022, prior to adjustments for overheads and escalation factors.

---

2 Amounts reflected throughout the tables and appendices of this testimony may not add to the exact
sum totals shown, due to rounding associated with supporting spreadsheets.
Table ADW-1
EV Charging Infrastructure
Capital Expenditures
(Excludes escalation & loaders; Includes sales tax)

(000's)

<table>
<thead>
<tr>
<th>Capital Expenditures</th>
<th>Schools</th>
<th>State Parks &amp; Beaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformer &amp; Installation</td>
<td>$0</td>
<td>$329</td>
</tr>
<tr>
<td>Electrical Services</td>
<td>$0</td>
<td>$2,533</td>
</tr>
<tr>
<td>Chargers (EVSE)</td>
<td>$0</td>
<td>$777</td>
</tr>
<tr>
<td>IT Software &amp; Hardware</td>
<td>$210</td>
<td>$70</td>
</tr>
<tr>
<td>Total Capital Expenditures</td>
<td>$210</td>
<td>$3,708</td>
</tr>
</tbody>
</table>

Table ADW-2
EV Charging Infrastructure
O&M Costs
(Excludes escalation & loaders; Includes sales tax)

(000's)

<table>
<thead>
<tr>
<th>O&amp;M Costs</th>
<th>Schools</th>
<th>State Parks &amp; Beaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Communication Fees</td>
<td>$0</td>
<td>$57</td>
</tr>
<tr>
<td>Customer Engagement</td>
<td>$0</td>
<td>$100</td>
</tr>
<tr>
<td>Measurement &amp; Evaluations</td>
<td>$0</td>
<td>$75</td>
</tr>
<tr>
<td>Maintenance - Equipment</td>
<td>$0</td>
<td>$17</td>
</tr>
<tr>
<td>Total O&amp;M Costs</td>
<td>$0</td>
<td>$249</td>
</tr>
</tbody>
</table>

B. O&M Costs

Table ADW-2 below identifies the O&M costs for the Schools Pilot and Parks Pilot — including the state parks and beaches, and city and county parks — prior to any applied loaders and escalators. O&M consists of ongoing service costs, which will be provided by either third-party vendors or SDG&E internal labor for customer engagement, measurement evaluation, and maintenance.
C. Total Capital Expenditures and O&M Costs Before Adjustments

Table ADW-3 below identifies the total capital expenditures (referred to as Capital Costs in the tables) and O&M costs for the Schools Pilot and Parks Pilot before adjustments for loaders and escalation.

<table>
<thead>
<tr>
<th>Total Costs</th>
<th>Schools</th>
<th>State Parks &amp; Beaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs</td>
<td>$210</td>
<td>$3,708</td>
</tr>
<tr>
<td>O&amp;M Costs</td>
<td>$0</td>
<td>$249</td>
</tr>
<tr>
<td>Total Costs</td>
<td>$210</td>
<td>$3,958</td>
</tr>
</tbody>
</table>

D. Adjustments to Capital and O&M Costs

1. Overhead Loaders

Overhead loaders are used to allocate undistributed company overhead costs across capital projects and O&M. Overhead costs are those activities and services that are associated with direct costs, such as payroll taxes and pension and benefits. Or they are costs that cannot be economically direct-charged, such as administrative and general overheads. Overhead loaders used to develop the revenue requirement for the Pilots are for illustrative purposes only and are subject to change. The overhead loader values adhere to the methodology proposed by the Federal Energy Regulatory Commission (“FERC”). They were derived using the same


ADW - 5
methodology applied in SDG&E’s most recent GRC filing. If the Pilots are approved, then the Commission-approved overhead loaders in effect at the time of approval will be used.

2. Escalation of Future Costs

Cost escalation factors are used to reflect the effect of inflation on SDG&E’s costs. SDG&E’s escalation costs were derived using IHS/Market Global Insight’s 2nd Quarter 2017 Power Planner forecast, which was published in June 2018.

Table ADW-4 below shows the capital expenditures for the Pilots, adjusted for SDG&E overhead loaders and cost escalation.

<table>
<thead>
<tr>
<th>Capital Expenditures</th>
<th>Schools</th>
<th>State Parks &amp; Beaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformer &amp; Installation</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Electrical Services</td>
<td>$0</td>
<td>$3,466</td>
</tr>
<tr>
<td>Chargers (EVSE)</td>
<td>$0</td>
<td>$998</td>
</tr>
<tr>
<td>IT Software &amp; Hardware</td>
<td>$227</td>
<td>$76</td>
</tr>
<tr>
<td>Total Capital Expenditures</td>
<td>$227</td>
<td>$4,983</td>
</tr>
</tbody>
</table>

Table ADW-5 below shows the O&M costs Pilots, adjusted for SDG&E overhead loaders and cost escalation.

<table>
<thead>
<tr>
<th>Capital Expenditures</th>
<th>City and County Parks</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformer &amp; Installation</td>
<td>$0</td>
<td>$148</td>
</tr>
<tr>
<td>Electrical Services</td>
<td>$0</td>
<td>$1,271</td>
</tr>
<tr>
<td>Chargers (EVSE)</td>
<td>$0</td>
<td>$499</td>
</tr>
<tr>
<td>IT Software &amp; Hardware</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Total Capital Expenditures</td>
<td>$0</td>
<td>$1,917</td>
</tr>
</tbody>
</table>
E. **Total Costs After Adjustments**

After updating the capital expenditures and O&M costs with the appropriate adjustment factors noted above, the Schools Pilot and Parks Pilot — separated between the state parks and beaches and city and county parks proposal — for purposes of calculating the revenue requirement are shown in Table ADW-6 below.

### Table ADW-5
**EV Charging Infrastructure**
**O&M Costs**
(Includes escalation, loaders, and sales tax)

<table>
<thead>
<tr>
<th>O&amp;M Costs</th>
<th>Schools</th>
<th>State Parks &amp; Beaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Communication Fees</td>
<td>$0</td>
<td>$60</td>
</tr>
<tr>
<td>Customer Engagement</td>
<td>$0</td>
<td>$107</td>
</tr>
<tr>
<td>Measurement &amp; Evaluations</td>
<td>$0</td>
<td>$80</td>
</tr>
<tr>
<td>Maintenance - Equipment</td>
<td>$0</td>
<td>$18</td>
</tr>
<tr>
<td><strong>Total O&amp;M Costs</strong></td>
<td>$0</td>
<td>$266</td>
</tr>
</tbody>
</table>

### Table ADW-6
**EV Charging Infrastructure**
**Summary of Capital Expenditures & O&M Costs (Total Costs)**
(Includes escalation, loaders, and sales tax)

<table>
<thead>
<tr>
<th>Total Costs</th>
<th>Schools</th>
<th>State Parks &amp; Beaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs</td>
<td>$227</td>
<td>$4,983</td>
</tr>
<tr>
<td>O&amp;M Costs</td>
<td>$0</td>
<td>$266</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td>$227</td>
<td>$5,249</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Costs</th>
<th>City and County Parks</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs</td>
<td>$0</td>
<td>$1,917</td>
</tr>
<tr>
<td>O&amp;M Costs</td>
<td>$0</td>
<td>$126</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td>$0</td>
<td>$2,043</td>
</tr>
</tbody>
</table>
IV. REVENUE REQUIREMENT ASSOCIATED WITH SDG&E’S OWNERSHIP FOR THE PROGRAM PROPOSALS

The revenue requirement includes SDG&E’s 100% ownership for the pilot proposals. It represents the total dollars that need to be collected each year in order to recover the costs and provide for returns associated with the Pilots. The components that make up the revenue requirement are: return of capital (via depreciation); O&M costs; debt and equity returns; federal and state taxes; franchise fees; and uncollectible revenue. The total revenue requirements for the Pilots are identified below in Tables ADW-7A, ADW-7B, and ADW-8, respectively. A more detailed description of the components of the revenue requirement is presented in the sections that follow.

| Table ADW-7A |
| San Diego Gas & Electric |
| AB 1082 EV Charging Infrastructure - Schools |
| (000's) |
| Annual Revenue Requirement |

<table>
<thead>
<tr>
<th>Revenue Requirement</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF&amp;U:</td>
<td>($24)</td>
<td>$13</td>
<td>$54</td>
<td>$78</td>
<td>$122</td>
</tr>
<tr>
<td>O&amp;M:</td>
<td>$0</td>
<td>$266</td>
<td>$274</td>
<td>$19</td>
<td>$559</td>
</tr>
<tr>
<td>Working Capital:</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Depreciation:</td>
<td>$0</td>
<td>$121</td>
<td>$452</td>
<td>$782</td>
<td>$1,355</td>
</tr>
<tr>
<td>Return on Common:</td>
<td>$0</td>
<td>$77</td>
<td>$367</td>
<td>$644</td>
<td>$1,088</td>
</tr>
<tr>
<td>Return on Preferred:</td>
<td>$0</td>
<td>$2</td>
<td>$12</td>
<td>$21</td>
<td>$35</td>
</tr>
<tr>
<td>Return On Debt:</td>
<td>$0</td>
<td>$30</td>
<td>$144</td>
<td>$252</td>
<td>$426</td>
</tr>
<tr>
<td>Federal Taxes:</td>
<td>($563)</td>
<td>($130)</td>
<td>$136</td>
<td>$206</td>
<td>($351)</td>
</tr>
<tr>
<td>State Taxes:</td>
<td>($77)</td>
<td>($8 )</td>
<td>$58</td>
<td>$94</td>
<td>$67</td>
</tr>
<tr>
<td>Property Taxes:</td>
<td>$0</td>
<td>$0</td>
<td>$18</td>
<td>$82</td>
<td>$100</td>
</tr>
<tr>
<td>Total</td>
<td>($664)</td>
<td>$373</td>
<td>$1,516</td>
<td>$2,177</td>
<td>$3,402</td>
</tr>
</tbody>
</table>
### Table ADW-7B

**San Diego Gas & Electric**

**AB 1083 EV Charging Infrastructure - State Parks & Beaches**

**Annual Revenue Requirement**

(000’s)

<table>
<thead>
<tr>
<th>Revenue Requirement</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF&amp;U:</td>
<td>($24)</td>
<td>$9</td>
<td>$33</td>
<td>$41</td>
<td>$59</td>
</tr>
<tr>
<td>O&amp;M:</td>
<td>$0</td>
<td>$246</td>
<td>$253</td>
<td>$37</td>
<td>$536</td>
</tr>
<tr>
<td>Working Capital:</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Depreciation:</td>
<td>$0</td>
<td>$88</td>
<td>$262</td>
<td>$432</td>
<td>$782</td>
</tr>
<tr>
<td>Return on Common:</td>
<td>$0</td>
<td>$43</td>
<td>$178</td>
<td>$305</td>
<td>$526</td>
</tr>
<tr>
<td>Return on Preferred:</td>
<td>$0</td>
<td>$1</td>
<td>$6</td>
<td>$10</td>
<td>$17</td>
</tr>
<tr>
<td>Return On Debt:</td>
<td>$0</td>
<td>$17</td>
<td>$70</td>
<td>$119</td>
<td>$206</td>
</tr>
<tr>
<td>Federal Taxes:</td>
<td>($563)</td>
<td>($140)</td>
<td>$78</td>
<td>$106</td>
<td>($519)</td>
</tr>
<tr>
<td>State Taxes:</td>
<td>($77)</td>
<td>($12)</td>
<td>$34</td>
<td>$52</td>
<td>($3)</td>
</tr>
<tr>
<td>Property Taxes:</td>
<td>$0</td>
<td>$0</td>
<td>$9</td>
<td>$38</td>
<td>$47</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>($664)</td>
<td>$252</td>
<td>$923</td>
<td>$1,141</td>
<td>$1,652</td>
</tr>
</tbody>
</table>

### Table ADW-8

**San Diego Gas & Electric**

**EV Charging Infrastructure - City and County Parks**

**Annual Revenue Requirement**

(000’s)

<table>
<thead>
<tr>
<th>Revenue Requirement</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF&amp;U:</td>
<td>$0</td>
<td>$8</td>
<td>$22</td>
<td>$31</td>
<td>$60</td>
</tr>
<tr>
<td>O&amp;M:</td>
<td>$0</td>
<td>$126</td>
<td>$129</td>
<td>$12</td>
<td>$267</td>
</tr>
<tr>
<td>Working Capital:</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Depreciation:</td>
<td>$0</td>
<td>$32</td>
<td>$180</td>
<td>$332</td>
<td>$544</td>
</tr>
<tr>
<td>Return on Common:</td>
<td>$0</td>
<td>$25</td>
<td>$138</td>
<td>$246</td>
<td>$409</td>
</tr>
<tr>
<td>Return on Preferred:</td>
<td>$0</td>
<td>$1</td>
<td>$4</td>
<td>$8</td>
<td>$13</td>
</tr>
<tr>
<td>Return On Debt:</td>
<td>$0</td>
<td>$10</td>
<td>$54</td>
<td>$96</td>
<td>$160</td>
</tr>
<tr>
<td>Federal Taxes:</td>
<td>$0</td>
<td>$8</td>
<td>$43</td>
<td>$73</td>
<td>$124</td>
</tr>
<tr>
<td>State Taxes:</td>
<td>$0</td>
<td>$3</td>
<td>$22</td>
<td>$38</td>
<td>$63</td>
</tr>
<tr>
<td>Property Taxes:</td>
<td>$0</td>
<td>$0</td>
<td>$7</td>
<td>$32</td>
<td>$39</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$0</td>
<td>$213</td>
<td>$599</td>
<td>$868</td>
<td>$1,680</td>
</tr>
</tbody>
</table>

**ADW - 9**
A. Return of Capital

The return of capital is equal to annual book depreciation, which uses the straight-line remaining life method. Consistent with the FERC Code of Federal Regulations, SDG&E assumes the following useful lives for each asset category as presented in Table ADW-9 below.

<table>
<thead>
<tr>
<th>Asset Category</th>
<th>FERC Useful Life Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chargers</td>
<td>5</td>
</tr>
<tr>
<td>New Electric Service</td>
<td>55</td>
</tr>
<tr>
<td>Transformers &amp; Installation</td>
<td>34</td>
</tr>
<tr>
<td>Computer Software</td>
<td>5</td>
</tr>
</tbody>
</table>

Table ADW-9
Capital - FERC Useful Life

B. O&M Costs

O&M costs represent the total costs required to ensure the ongoing successful operation of the Pilots. O&M costs are included in the revenue requirement and treated as a pass-through item on a dollar-for-dollar basis.

C. Return

The current authorized annual return components of the revenue requirement for the Pilots consist of return on debt (4.59 percent), return on preferred stock (6.22 percent), and return on equity (10.20 percent). These values are then weighted by their authorized capital allocation.

---

4 This method is consistent with Standard Practice U-04-W, Determination of Straight-Line Remaining Life Depreciation Accruals. The CPUC issued this standard practice in 1961 as a guide for determining proper depreciation accruals.

5 Study conducted by Sargent and Lundy on life expectancy of chargers. Results of study and request for adoption of a 5-year life for chargers was submitted in SDG&E’s most recent GRC Application (“A.”) 17-10-007 to the CPUC in October 2017.

percentages and multiplied by the average rate base\(^7\) to determine the revenue requirement for each return component. The authorized weighted returns are listed in Table ADW-10 below.

The next Cost of Capital proceeding is scheduled for test year 2020. The final decision in the Cost of Capital proceeding will be reflected in the revenue requirement ultimately approved in this proceeding at that time.

<table>
<thead>
<tr>
<th>Capital Authorized Ratio %</th>
<th>Capital Cost</th>
<th>Weighted Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-Term Debt</td>
<td>45.25%</td>
<td>4.59%</td>
</tr>
<tr>
<td>Preferred Equity</td>
<td>2.75%</td>
<td>6.22%</td>
</tr>
<tr>
<td>Common Equity</td>
<td>52.00%</td>
<td>10.20%</td>
</tr>
<tr>
<td>100.00%</td>
<td></td>
<td>7.55%</td>
</tr>
</tbody>
</table>

Table ADW-10
SDG&E Rate of Return (ROR) Calculation

D. Tax

1. Property Tax

The annual property tax expense for the Pilots is calculated by multiplying the period ending rate base by SDG&E’s effective property tax rate of 1.520 percent.\(^8\)

---

\(^7\) D.16-06-054 at 216 (“SDG&E defines rate base ‘as the net investment of property, plant, equipment and other assets that SDG&E has acquired or constructed to provide utility services to its customers’”).

\(^8\) Consistent with previous filings, SDG&E’s effective property tax rate is calculated by dividing the total property taxes due by county (per SDG&E property tax bills) by the total assessed value by county.
2. Federal and State Income Tax

a. Federal Income Tax

Federal income tax expense is calculated by multiplying federal Earnings before Income Tax ("EBIT")\(^9\) by the current corporate federal income tax rate of 21 percent, which was reduced from 35 percent as part of the Tax Cuts and Jobs Act of 2017. In accordance with established Commission policy, federal income taxes are computed on a normalized basis for utility ratemaking purposes.\(^{10}\) An annual breakout of the federal tax component of the revenue requirement is provided in Table ADW-7A for the Schools Pilot, ADW-7B for the state parks and beaches portion of the Parks Pilot, and Table ADW-8 for the city and county parks portion of the Parks Pilot.

b. State Income Tax

State income tax expense is calculated by multiplying state EBIT\(^{11}\) by the current California Corporation Franchise Tax rate of 8.84 percent. State income taxes are not normalized. They instead are calculated on a flow-through basis.\(^{12}\)

---

\(^{9}\) For ratemaking purposes, federal EBIT is calculated as the sum of Common and Preferred Stock Returns minus prior year state taxes, multiplied by a tax gross-up factor. The tax gross-up factor is mathematically required to compute a pre-tax earnings number that, once taxes are applied, results in SDG&E’s achievement of its authorized rate of return.

\(^{10}\) Normalization requires that any tax adjustments for deferred taxes (due to accelerated federal tax depreciation methods) are not included when calculating the annual required taxes due from ratepayers through the revenue requirement.

\(^{11}\) For ratemaking purposes, state EBIT is calculated as the sum of Common and Preferred Stock Returns, minus any deferred state income tax, multiplied by a tax gross-up factor. The tax gross-up factor is mathematically required to compute a pre-tax earnings number that, once taxes are applied, results in SDG&E’s achievement of its authorized rate of return.

\(^{12}\) Consistent with Commission policy, flow-through accounting treats temporary differences between recognition of expenses for book purposes and their tax return treatment as current adjustments to the revenue requirement.
E. Franchise Fees and Uncollectible

Franchise Fees and Uncollectible ("FF&U") are the final calculated components of the revenue requirement. Franchise fees cover the payments made to counties and incorporated cities, pursuant to local ordinances granting a franchise to the company to place utility property in the public right of way. Uncollectibles represent the estimated uncollectible expenses incurred by SDG&E. FF&U is calculated by multiplying the sum of all other revenue requirement components by the authorized multipliers for franchise fees and uncollectibles.

V. CONCLUSION

This concludes my prepared direct testimony.

\[13\] FF&U multipliers used for these revenue requirements are consistent with those supported in D.16-06-054.
VI. STATEMENT OF QUALIFICATIONS

My name is Amanda D. White. I am employed with San Diego Gas & Electric Company (SDG&E). My business address is 8330 Century Park Court, San Diego, CA 92123-1576. I am currently Principal Business Analyst – Financial and Strategic Analysis Department, and I am responsible for the calculation of revenue requirements for specific cases or projects filed before the CPUC. In addition, I am also responsible for conducting financial analysis and project evaluations requiring the use of and the development of various revenue requirement models. I have held this position since March 2015.

I received a Bachelor of Science degree in Management from Virginia Tech, Blacksburg, in 2000 and a Masters of Business Administration from Purdue University, West Lafayette, in 2010. In 2011, I joined San Diego Gas & Electric, and have held various positions, including Energy Advisor and Senior Business Analyst in the Electric & Fuel Procurement Department.

I have not previously testified before the California Public Utilities Commission.
PREPARED DIREC TESTIMONY OF
NORMA G. JASSO
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY
CHAPTER 4

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

JULY 30, 2018
# TABLE OF CONTENTS

I. INTRODUCTION .................................................................................................................. 1
II. REGULATORY ACCOUNT MECHANISM................................................................... 1
III. STATEMENT OF QUALIFICATIONS ........................................................................... 3
PREPARED DIRECT TESTIMONY OF

NORMA G. JASSO

CHAPTER 4

I. INTRODUCTION

The purpose of my prepared direct testimony on behalf of San Diego Gas & Electric Company (“SDG&E”) is to discuss the regulatory account mechanism related to SDG&E’s transportation electrification proposals that are the subject of this application and are related mainly to requirements imposed by Assembly Bill (“AB”) 1082 and 1083. The two pilots are comprised of a pilot for electric vehicle (“EV”) public charging infrastructure for schools and educational institutions (“School Pilot”), and a pilot for charging infrastructure at state, city, and county parks and beaches (“Parks Pilot”) (collectively, the “Pilots”). The Pilots are detailed in the prepared direct testimony of Randy Schimka (Chapter 1). SDG&E proposes to record revenue and costs associated with the Pilots in a balancing account with two sub-accounts. Details of the revenue requirement are presented by Witness Amanda D. White in her prepared direct testimony (Chapter 3).

II. REGULATORY ACCOUNT MECHANISM

SDG&E requests authority to establish a one-way balancing account to record the authorized revenue requirement and costs associated with the proposed Pilots. SDG&E proposes to recover costs from all electric customer classes through distribution rates.

The Light-Duty Balancing Account (“LDBA”) will record the revenue requirement, operating and maintenance (“O&M”) costs, and capital-related costs (i.e., depreciation, taxes and return) in two sub-accounts: (1) Schools; and (2) State Parks & Beaches. The city and county parks proposal will be included in the State Parks & Beaches sub-account if the city and county parks proposal is approved.
The balance in the LDBA will be addressed in SDG&E’s Annual Electric Regulatory Account Update filing in 2022. The annual filing is scheduled to be submitted as a Tier 2 advice letter in October of each year. In this Tier 2 advice letter, SDG&E presents the forecasted year-end balances of certain regulatory accounts for amortization in rates, effective January 1 of the following year. SDG&E proposes to address the final disposition and closing of the LDBA in a post-2019 General Rate Case (currently estimated to be Test Year 2022).

This concludes my prepared direct testimony.
III. STATEMENT OF QUALIFICATIONS

My name is Norma G. Jasso. I am employed by SDG&E, as the Regulatory Accounts Analysis Manager in the Financial Analysis Department. My business address is 8330 Century Park Court, San Diego, California 92123. My current responsibilities include managing the process for the development, implementation, and analysis of regulatory balancing and memorandum accounts. I assumed my current position in July 2013.

I received a Bachelors of Business Administration degree with an emphasis in Accounting from the University of San Diego in 1981. I earned a Masters of Business Administration from the University of Phoenix in 1996. I have been employed with SDG&E and Sempra Energy since December 1997. Other positions I have held include Sundry Services Policy and Compliance Project Manager II, Affiliate Compliance Manager, Senior Business Analyst, and Accounting Systems Analyst.

This material was personally reviewed by me and I believe it to be correct and that it is factual in nature. Insofar as the material is in the nature of opinion or judgment, it represents my best judgment.

I have previously testified before the California Public Utilities Commission.
PREPARED DIRECT TESTIMONY OF
TONY RAFATI
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY
CHAPTER 5

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

JULY 30, 2018
# TABLE OF CONTENTS

I. INTRODUCTION ......................................................................................................................... 1
II. SUMMARY OF NET EMISSION REDUCTIONS FOR PILOTS ............................................. 2
III. METHODOLOGY FOR CHARGER UTILIZATION ............................................................... 5
IV. METHODOLOGY FOR NET EMISSION REDUCTIONS ....................................................... 5
V. CONCLUSION ............................................................................................................................... 7
VI. STATEMENT OF QUALIFICATIONS ...................................................................................... 8
PREPARED DIRECT TESTIMONY OF

TONY RAFATI

CHAPTER 5

I. INTRODUCTION

This chapter summarizes net emission reduction estimates for San Diego Gas & Electric Company’s (“SDG&E”) proposed Assembly Bill (“AB”) 1082¹ (“School Pilot”) and AB 1083² (“Parks Pilot”) Electric Vehicle (“EV”) Charging Infrastructure Pilots (collectively, “Pilots”). The emission reduction estimates focus on greenhouse gas (“GHG”) reductions.³ This chapter also describes the methodology used to estimate the Pilots’ related emission reductions.

SDG&E’s Pilots are intended to provide EV charging infrastructure for approximately 30 school locations, 12 state parks and beaches, and 10 city and county parks. The Program design is described in detail in the prepared direct testimony of Randy Schimka (Chapter 1).

My testimony supports the January 24, 2018 Assigned Commissioner’s Ruling (“ACR”) guidance to utilities to, among other things, explain the expected GHG and air quality benefits of the Pilots in relation to its other transportation electrification activities and investments.⁴

Reductions of GHG and air quality benefits are beneficial to public health and are policy

¹ California Legislative Information, Assembly Bill No. 1082 (October 10, 2017), see https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB1082.
² California Legislative Information, Assembly Bill No. 1083 (October 10, 2017), see https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB1083.
³ GHG examples include carbon dioxide (“CO₂”), methane, and nitrous oxide. Criteria Pollutant are not included in this testimony because they do not represent a large portion of light duty gasoline powered vehicle emissions. Criteria Pollutant examples include nitrogen dioxide and particulate matter.
⁴ January 24, 2018, Assigned Commissioner’s Ruling Providing Guidance to Utilities Electing to Submit Applications Pursuant to Assembly Bills 1082 and 1083, in Rulemaking (“R.”) 13-11-007 at 5.
objectives of Senate Bill (“SB”) 350 transportation electrification programs.⁵ All ratepayers benefit from GHG and Criteria Pollutant emission reductions. Reduced emissions “reduce[] harm to climate, health and the economy.⁶

GHG and air quality benefits of the programs are incremental to other transportation electrification activities and investments sponsored by SDG&E.

II. SUMMARY OF NET EMISSION REDUCTIONS FOR PILOTS

The Light Duty (“LD”) EVs utilizing the Pilots’ charging infrastructure are intended to displace vehicles burning fossil fuels. Displacing fossil-fueled vehicles with EVs results in reductions in hydrocarbon-related emissions, such as GHGs and Criteria Pollutants. However, EV charging results in electricity generation related emissions.⁷ But overall, net emissions are reduced by displacing vehicles burning fossil fuels. Net emission reductions reported in my testimony are calculated by subtracting EV charging related emissions from displaced fossil fuel emissions.

Those reductions are calculated on a Well-to-Wheels (“WtW”) basis, consistent with methodologies used by the California Air Resources Board (“CARB”) Low Carbon Fuel Standard, 2016 Mobile Source Strategy, and Vision planning model.⁸ Well-to-Wheels analysis

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⁵ September 14, 2016, Assigned Commissioner’s Ruling Regarding the Filing of the Transportation Electrification Applications Pursuant to Senate Bill 350 at 5-6, in R.13-11-007; see also California Public Utilities Code (“P.U.C.”) §740.12(a)(1).


⁷ Electricity-related emissions are generally lower than fossil fuel-related emissions for comparable vehicle operations (e.g., emissions per vehicle mile traveled or per hour of operation).

⁸ Well-to-wheel emissions analysis considers the energy or emissions intensity of all stages of fuel production and final use of a fuel in a vehicle (i.e., the production, transport, and consumption of fuels in a vehicle). See CARB, Mobile Source Strategy (May 2016) at 38, available at https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf.
The analysis includes both Tank-to-Wheels ("TtW") emissions, resulting from vehicle operations, as well as upstream Well-to-Tank ("WtT") emissions resulting from energy production processes, which includes fuel production, transportation, refining, and delivery to the vehicle.

**Figure 5-1**

For the purposes of this chapter, LD vehicles include the Emission Factors Model ("EMFAC") 2014 designated Light Duty Automobiles/Passenger Cars ("LDA") category of vehicles with a Gross Vehicle Weight Rating ("GVWR") of less than 6,000 pounds ("lbs").

Net emission reduction estimates for the Pilots are presented for both first-year and vehicle lifetime. Tables 5-1 and 5-2 below present the emission reductions estimates for each vehicle group. It includes the number of vehicles in each group, as well as the assumed displaced fossil fuel type used to estimate net emission reductions.

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10 GVWR means the value specified by the manufacturer as the loaded weight of a single vehicle.

Table 5-1 presents the first-year emission reductions estimates for the Pilots, totaling 1,283 Metric Tons (“MT”) of Carbon Dioxide equivalent (“CO2e”), 0.6 MT Nitrox Oxides (“NOx”), and 0.04 MT of Particulate Matter up to 2.5 microns (“PM2.5”).

<table>
<thead>
<tr>
<th>Pilot</th>
<th>eVMT fueled (000)</th>
<th>Displaced Fuel</th>
<th>Annual Net Emission Reductions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>CO2e (MT)</td>
</tr>
<tr>
<td>School Pilot</td>
<td>1,820</td>
<td>Gasoline</td>
<td>554</td>
</tr>
<tr>
<td>Parks Pilot (State)</td>
<td>1,238</td>
<td>Gasoline</td>
<td>377</td>
</tr>
<tr>
<td>Parks Pilot (City/County)</td>
<td>2,397</td>
<td>Gasoline</td>
<td>353</td>
</tr>
<tr>
<td>Total</td>
<td>5,454</td>
<td>--</td>
<td>1,283</td>
</tr>
</tbody>
</table>

eVMT = electric Vehicle Miles Traveled

Table 5-2 below presents the lifetime emission reduction estimates for the Pilots, totaling 13,587 Metric Tons (“MT”) of Carbon Dioxide equivalent (“CO2e”), 6.5 MT Nitrox Oxides (“NOx”), and 0.43 MT of Particulate Matter up to 2.5 microns (“PM2.5”).

<table>
<thead>
<tr>
<th>Pilot</th>
<th>eVMT fueled (000)</th>
<th>Displaced Fuel</th>
<th>Lifetime Net Emission Reductions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>CO2e (MT)</td>
</tr>
<tr>
<td>School Pilot</td>
<td>21,835</td>
<td>Gasoline</td>
<td>5,864</td>
</tr>
<tr>
<td>Parks Pilot (State)</td>
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<td>Parks Pilot (City/County)</td>
<td>28,762</td>
<td>Gasoline</td>
<td>3,734</td>
</tr>
<tr>
<td>Total</td>
<td>65,453</td>
<td>--</td>
<td>13,587</td>
</tr>
</tbody>
</table>

eVMT = electric Vehicle Miles Traveled
III. METHODOLOGY FOR CHARGER UTILIZATION

This section describes the methodology used to estimate the Pilot’s Chargers’ utilization. Utilization is defined as the electric Vehicle Miles Traveled (“eVMT”) enabled by the Pilot’s Chargers. Annual utilization in miles that is enabled by the Pilot’s Chargers is used to calculate emission reductions – since a mile traveled using electric fuel is assumed to avoid a mile traveled using petroleum fuel. Daily eVMT was estimated based on the Portland General Electric (“PGE”) Transportation Electrification Plan. The PGE plan includes assumptions for both Direct Current Fast Charger (“DCFC”) and Level 2 (Charger) (“L2”) stations regarding the number of charges per station, and average electricity used per charge. These PGE assumptions are used to estimate daily utilization in eVMT per charger for DCFC (172.6 miles per day) and L2 (28.3 miles per day). Combining VMT with estimated miles per Gallon Gasoline Equivalent (“GGE”), described in the following section, results in total GGE usage for electricity and petroleum fuels.

IV. METHODOLOGY FOR NET EMISSION REDUCTIONS

This section describes the methodology used to estimate the GHG and Criteria Pollutant emission reductions summarized above. The methodology utilizes publicly available data from CARB and Argonne National Lab (“ANL”). In general, LDA vehicle estimates use CARB’s data for TtW emission estimates, and ANL’s data for WtT emission estimates.

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The CARB Vision modules provide TtW emission estimates for the LDA vehicles considered for the Pilots.\textsuperscript{13} The data used for LDAs are from the 2016 Vision 2.1 Passenger Vehicle Module. The Vision Modules include vehicle model years from 1961 through 2051. But vehicles with model years earlier than 2019 were filtered out – since few LDA EVs are included in earlier model years – and since it is assumed that EV purchases would likely displace a similar model year fossil fuel vehicle.

Data from the Vision Modules were consolidated and summary data were created by vehicle groups and fuel types. Summary data includes Vehicle Miles Traveled (“VMT”) per vehicle, miles per GGE, and operating days per year. Summary data also includes TtW emissions per GGE. The summary data is used to estimate first-year and lifetime GGE consumption and TtW emissions per GGE for each vehicle and fuel type.

The ANL Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model (“GREET”) is used to provide WtT emission estimates for each fuel type. GREET fuel types considered are electricity and reformulated gasoline.\textsuperscript{14} GREET WtT emission estimates were normalized to pounds per GGE, and are combined with Vision TtW summary data to obtain total Well-to-Wheels emissions per GGE.

CARB Vision data was also used to estimate average vehicle lives. Average vehicle life is estimated to be twelve years for this analysis. This estimate is based on the 50 percent

\textsuperscript{13} More information on CARB’s Vision Modules are available at https://www.arb.ca.gov/planning/vision/downloads.htm#2016vision21lr.

population survival period derived from Vision population data for model year vehicles 2019 through 2030.

Per GGE emissions are multiplied by eVMT for each program to obtain the total emission reduction estimates. The net emission estimates in Tables 5-1 and 5-2 are calculated by subtracting WtW emissions for electric fueled vehicles from WtW emissions for the displaced gasoline fueled vehicles, resulting in first year and lifetime net emissions reductions.

V. CONCLUSION

SDG&E’s proposed Pilots provides GHG emission reductions and air quality improvements for all SDG&E ratepayers.

This concludes my prepared direct testimony.
VI. STATEMENT OF QUALIFICATIONS

My name is Tony Rafati. My business address is 8306 Century Park Court, San Diego, California, 92123. I am employed by SDG&E as Policy Manager in the Clean Transportation team. I have been employed at SDG&E since 2010 and have held positions of increasing responsibility in the Energy Efficiency and Demand Response programs.

I graduated from San Diego State University in San Diego, California, earning a Bachelor of Science degree in Electrical Engineering. I received a Master’s of Business Administration degree with an emphasis in Finance from the University of San Diego. I hold a Juris Doctor degree from Thomas Jefferson School of Law and I am a licensed attorney in the state of California.

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