

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

Application of San Diego Gas & Electric Company
(U 902-E) for Approval of SB 350 Transportation
Electrification Proposals.

Application 17-01-020
(Filed January 20, 2017)

And Related Matters.

Application 17-01-021
Application 17-01-022

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

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

September 5, 2017



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**PREPARED REBUTTAL TESTIMONY OF
RANDY SCHIMKA**

I. OVERVIEW AND PURPOSE

My rebuttal testimony will respond to the prepared direct testimony submitted by intervening parties regarding San Diego Gas & Electric Company’s (“SDG&E”) standard review proposal for approval of its Residential Charging Program. The Residential Charging Program is designed to facilitate the installation of 90,000 Level 2 (“L2”) chargers in customer’s homes, thereby accelerating transportation electrification (“TE”) in the light-duty passenger vehicle market segment while optimizing EV charging on SDG&E’s grid. The Rebuttal Testimony of Ms. Brown and Ms. Parikh addresses the modified Residential Charging Program at a high level, and I will address the details regarding how the program will work, many of which are already provided in my direct testimony. Moreover, since SDG&E has agreed to modify its Residential Charging Program in response to intervenor proposals, I will address the details regarding how the modified Residential Charging Program is different from the original program, while still achieving the goals of the program.

My rebuttal testimony is organized as follows:

- Section II – SDG&E’s response to Joint Testimony modifications
- Section III – SDG&E believes no income cap is needed to participate
- Section IV – Level 2 EVSE installation cost estimates are justified
- Section V – L1 charging and the rebate model have safety implications
- Section VI – An allowance-based program is better than a rebate-based program for DAC customers
- Section VII – Revised costs for SDG&E’s modified Residential Charging program
- Section VIII – Conclusion and Summary

1 **II. SDG&E’s RESPONSE TO JOINT TESTIMONY MODIFICATIONS**

2 The Natural Resources Defense Council (“NRDC”), Coalition of California Utility
3 Employees (“CCUE”), Plug In America, The Greenlining Institute, Sierra Club, Environmental
4 Defense Fund, the Alliance of Automobile Manufacturers, Greenlots, eMeter, a Siemens
5 Business (“Siemens”), and Electric MotorWerks, Inc. (“eMotorWerks”) (collectively, the “Joint
6 Parties”) collaborated on suggestions to modify SDG&E’s Residential Charging Program (“Joint
7 Parties’ Testimony”). SDG&E appreciates the opinions of this diverse cross-section of parties,
8 and after careful consideration of their proposals, SDG&E has agreed to modify its original
9 Residential Charging Program and adopt many of the Joint Parties’ recommendations. SDG&E
10 believes this modified Residential Charging Program remains in the interest of customers, the
11 EV industry, ratepayers, environment, and the State. In order to visually illustrate the modified
12 Residential Charging Program, attached is an illustrative Draft Program Overview.¹ The chart
13 below includes the project description identified in Appendix A to the Assigned Commissioner’s
14 Ruling Regarding the Filing of the Transportation Electrification Applications Pursuant to Senate
15 Bill 350” (“ACR”) (issued on September 14, 2016 in Rulemaking 13-11-007) for the modified
16 Residential Charging Program.

¹ See, Attachment 1, “San Diego Gas & Electric Residential Charging Program – Charging Faster and Cheaper.”

Program Components	SDG&E's Modified Residential Charging Program
Commission Review Mechanism	Standard Review
Objectives	<ul style="list-style-type: none"> • Offer participants a choice of rate options that can shift EV charging load and encourage grid optimization.² • Networked L2 EVSE allowance: \$500 to single family and MUD participants; \$600 to DAC participants. • Installation allowance: \$1,425 to single family and MUD participants; \$1,500 for DAC, CARE and FERA participants. • Offer participants option to own and maintain the EVSE or have the utility own and maintain the EVSE. • \$5.5M in funding to upgrade electric panels for DAC participants.
Market Segment and Vehicles Targeted	Residential; Networked L2 EVSE for light-duty ZEVs
Vehicle Goals	Provide up to 90,000 in-home, networked L2 EVSE to SDG&E qualified residential customers who drive ZEVs. Deploy 25% of networked L2 EVSEs in DACs.
Implementation Timeframe	Five-year enrollment and installation period starting in 2020, with a sixth year of construction for participants that sign up at the end of the enrollment period.
Program Partners	<ul style="list-style-type: none"> • EVSPs: provide networked L2 EVSE selected from RFP process. • Licensed, trained IBEW-affiliated contractors selected from RFP process. • Goal of at least 40% of overall program costs to be spent with DBE firms.
Leveraged Funding	Participants will pay costs that exceed allowance amounts for networked L2 EVSE and installation.
Stranded Asset Mitigation	<ul style="list-style-type: none"> • Networked L2 EVSEs help ensure compatibility with ZEVs on the market • RFP process ensures equipment is both backwards and forward compatible. • For utility-owned EVSE: Remove unused EVSE as requested by participant to be refurbished and recommissioned.
Grid Impacts	Networked L2 EVSEs allow for charging to occur in lowest priced super-off peak hours and provide flexibility to delay charging to times most beneficial to the grid.
Emissions Benefits & Accounting Methodology	Estimated Annual 2025 GHG Reduction: 123,226 MTCO ₂ ³
CA Regulation Supported by Program	SB 350; SB 32; 2016 ZEV Action Plan; Executive Order B-16-12; Executive Order B-30-15

² SDG&E Rebuttal Testimony (C. Fang) at 2:13 – 3:16.

³ SDG&E Direct Testimony (J.C. Martin) at 6:Table 8-1B.

Program Components	SDG&E's Modified Residential Charging Program
CPUC Regulation Supported by Program	P.U. Code § 740.3(c); P.U. Code § 740.8; P.U. Code § 740.12
Monitoring and Evaluation Plan	<ul style="list-style-type: none"> • Provide metrics on actual operating costs, installation costs, annual growth by ZEV type, and annual program growth to PAC on semi-annual basis. • Report on program metrics for five years after completion of construction.
Cost	<ul style="list-style-type: none"> • Estimated direct costs (100% Utility Ownership): \$241.8 M • Funding collected via one-way balancing account.

1 **1. Customer Rate Options**

2 Customer choice is important to SDG&E. Therefore, SDG&E agrees with the Joint
3 Parties⁴ that more rate options are desirable. The new rate options for the modified Residential
4 Charging Program are described in the Rebuttal Testimony of Cynthia Fang. These new rate
5 options will still work to shift EV charging load and encourage grid optimization.

6 **2. Disadvantaged Community (“DAC”) Installations**

7 SDG&E agrees with the Joint Parties suggestion⁵ to deploy 25% of the total number of
8 charging stations in DACs⁶ (an increase from the 20% originally proposed). SDG&E will track
9 and report on DAC and non-DAC annual EVSE growth, as discussed in the original filing.⁷

10 **3. Networked EVSE Criteria**

11 SDG&E agrees with the Joint Parties⁸ and the Electric Vehicle Service Provider
12 (“EVSP”) community that in order to increase Electric Vehicle Supply Equipment (“EVSE”)

⁴ Joint Parties’ Testimony at 1:14-26.

⁵ Joint Parties Testimony at 4:14-18.

⁶ Per the Cal-EnviroScreen Tool 3.0, using the SDG&E territory definition.

⁷ SDG&E Direct Testimony (R. Schimka) at 21:3-4.

⁸ Joint Parties Testimony at 3:8-18.

1 innovation, support the “Vehicle Grid Integration Roadmap,”⁹ and help drivers manage their
2 charging choices and pricing, the following criteria apply:

- 3 • Qualifying Level 2 EVSE should be networked (“Networked EVSE”)¹⁰
- 4 • EVSE should be able to record interval data consumption
- 5 • EVSE should be able to receive dynamic pricing signals
- 6 • EVSE should be able to send consumption data via a customer-provided Wi-Fi
7 connection to the EVSP backend and then to SDG&E for billing
- 8 • EVSE should be safety certified by UL or a Nationally Recognized Testing
9 Laboratory (“NRTL”).

10 Current Networked EVSE prices range from approximately \$600 to \$750,¹¹ depending on
11 cord lengths and power output. SDG&E agrees with the Joint Parties¹² and proposes as part of
12 its modified Residential Charging Program to provide an EVSE allowance of \$500 to single
13 family and multi-family participants, and an allowance of \$600 to DAC participants.
14 Participants will be required to contribute the difference between the allowance and the actual
15 cost of their chosen EVSE. The use of Networked EVSE will help to improve SDG&E’s load
16 factor through managed charging.¹³

17 **4. Customers Will Be Given Ownership Choice of EVSE**

18 In response to recommendations made by the Joint Parties,¹⁴ SDG&E’s modified
19 Residential Charging Program will offer customers the choice between SDG&E owning and
20 maintaining the EVSE or the customer owning and maintaining the EVSE.

⁹ Available at: <http://www.caiso.com/documents/vehicle-gridintegrationroadmap.pdf>.

¹⁰ Joint Parties Testimony at 3:8-18.

¹¹ Amazon website: <https://www.amazon.com/Best-Sellers-Automotive-Electric-Vehicle-Charging-Stations/zgbs/automotive/7427415011>.

¹² Joint Parties Testimony at 3:19-26.

¹³ SDG&E Rebuttal Testimony (J.C. Martin) at 1:17-23.

¹⁴ Joint Parties Testimony at 2:21 – 3:7.

1 In either case, SDG&E would still install, own, and maintain the 240-volt circuit from the
2 customer's electric panel to the EVSE, as well as manage the installation of the EVSE itself by
3 skilled and trained contractors.¹⁵ SDG&E agrees that allowing customers the choice of EVSE
4 ownership will provide the Commission with valuable data to help shape future policy. As
5 originally filed, SDG&E would still conduct a request for proposal ("RFP") process for the
6 charging equipment¹⁶ and for the skilled/trained contractors that will perform the EVSE
7 installations. Regardless of the ownership model, customers will utilize a web based portal to
8 choose and purchase an EVSE from the list of available units that are qualified from the SDG&E
9 RFP Process.¹⁷ During the EVSE purchase process, the appropriate SDG&E allowance will be
10 applied directly to the transaction.

11 **5. Customer Installation Cost Caps**

12 SDG&E adopts changes suggested by the Joint Parties¹⁸ for customer installation cost
13 caps. Under SDG&E's modified Residential Charging Program, SDG&E will provide an
14 installation allowance up-to and not-to-exceed \$1,425 for single family and multi-family
15 customers, based on actual cost. This allowance amount is in alignment with documented
16 historical EV Project residential installation cost data for the San Diego region.¹⁹ In order to be
17 more inclusive to low income customers, SDG&E proposes to leave the installation cap for DAC
18 customers unchanged at \$1,500,²⁰ but now includes California Alternate Rates for Energy

¹⁵ SDG&E Direct Testimony (L. Brown/P. Parikh) at 22, fn. 37.

¹⁶ SDG&E Direct Testimony (R. Schimka) at 23:18 – 25:8.

¹⁷ SDG&E Direct Testimony (R. Schimka) at 24:13 – 25:8.

¹⁸ Joint Parties Testimony at 4:4-13.

¹⁹ See,

<https://avt.inl.gov/sites/default/files/pdf/EVProj/HowDoResidentialChargingInstallationCostsVaryByGeographicLocations.pdf>

²⁰ SDG&E Direct Testimony (R. Schimka) at 16:13 – 17:1.

1 (“CARE”), and Family Electric Rate Assistance (“FERA”)²¹ customers, based on actual cost.
2 Customers will be responsible to contribute any installation costs that exceed their allowance.

3 **6. EVSE Ownership**

4 SDG&E continues to believe the utility ownership model is reasonable and can maximize
5 benefits and minimize costs,²² but in light of the Joint Parties’ recommendations, has agreed to
6 change its program to allow customers to choose which ownership model they prefer. For
7 budgetary purposes, SDG&E is requesting authority up to 100% utility ownership because we
8 have no way of accurately predicting which model customers will choose. We are also showing,
9 for illustrative purposes, what a 50% utility ownership / 50% customer ownership scenario
10 would look like in the Rebuttal Testimony of Michael Calabrese.²³

11 **7. EVSE Maintenance**

12 For customers who choose SDG&E to own and maintain the EVSE, SDG&E will repair
13 or replace failed units. In the case where the customer chooses to own and maintain the EVSE,
14 SDG&E will contribute a fixed amount to the EVSP at the time of purchase for an extended
15 warranty for the customer (if needed).²⁴ If a customer-owned EVSE has a problem, the customer
16 will be responsible for contacting the EVSP for repair and will be responsible for any associated
17 costs of the repair outside of the EVSP’s warranty or extended warranty terms.

18 For utility-owned EVSE, in the event of an EV sale or customer move, SDG&E will
19 determine whether to leave the EVSE installed or remove it and redeploy to another EV owner’s
20 home.

²¹ SDG&E website discusses CARE and FERA customer qualifications:
<https://www.sdge.com/residential/care-video>

²² SDG&E Direct Testimony (R. Schimka) at 17:5 – 20:2.

²³ SDG&E Rebuttal Testimony (M. Calabrese) at 6:12 – 10:4.

²⁴ SDG&E will discuss with the PAC and receive input to determine the amount to be contributed towards maintenance for customer-owned EVSE.

1 Detailed program design and implementation details will be determined with PAC input
2 and will be filed in the form of a Tier 2 advice letter.

3 **8. Electric Panel Upgrade Funding for DACs**

4 As part of the modified Residential Charging Program, SDG&E proposes to allocate up
5 to \$5.5M in total direct costs to fund electric panel upgrades for DAC customers. The price for a
6 panel upgrade is approximately \$1,500 - \$3,000 in single quantities.²⁵ SDG&E hopes to be able
7 to fund upgrades to approximately 1,800 electric panels for DAC customers as part of the
8 Program, including 8% sales tax and 15% contingency.

9 **9. Reporting on Relevant Metrics for Five Years After the Completion of** 10 **Construction**

11 In addition to reporting requirements already mentioned in testimony,²⁶ SDG&E agrees
12 to incorporate into its modified Residential Charging Program Joint Parties' recommendation to
13 report on relevant program metrics for five years after the completion of construction. SDG&E
14 believes this additional reporting will provide valuable information, specifically with respect to
15 charging load profiles and station utilization, and will help comply with Public Utilities Code
16 § 740.12(c). These additional reporting requirements will add \$300,000 in direct costs to the
17 project budget.

18 **10. DBE Commitments**

19 As specified in SDG&E's VGI Program (Power Your Drive) decision, SDG&E's
20 modified Residential Charging Program will incorporate a goal of at least 40% of overall
21 program costs to be spent with Diverse Business Enterprise ("DBE") firms.²⁷ SDG&E has a

²⁵ See, <http://www.oeregister.com/2015/11/03/how-much-does-it-cost-to-upgrade-to-200-amps/>

²⁶ SDG&E Direct Testimony (R. Schimka) at 20:11 – 21:6.

²⁷ Vehicle Grid Integration Decision 16-01-045 at 28.

1 strong belief that DBEs promote innovation of new products, services, and solutions while
2 promoting market competition. These are benefits for all ratepayers and market participants.

3 **11. Implementation Timeframe**

4 ChargePoint²⁸ states that SDG&E's Residential Charging program is at least a 7 ½ year
5 program. The ACR states that standard review projects should be "two to five years in
6 duration."²⁹ In its original proposal, SDG&E requested a 5-year enrollment and installation
7 period starting in 2020.³⁰ This period is reasonable because drivers will have an opportunity to
8 sign up for a period of 5 years once enrollment opens. To accommodate drivers that sign up at
9 the end of the 5-year enrollment window, a sixth year of construction was also proposed. This
10 same timeframe is requested for the modified Residential Charging Program.

11 **III. SDG&E BELIEVES NO INCOME CAP IS NEEDED TO PARTICIPATE**

12 The program will target DACs and low income customers but is designed for all EV
13 drivers to participate. If the program called for income caps on participation, the program would
14 not be as effective at accelerating TE in San Diego and at integrating EV charging with the grid.
15 Today's EV costs are still higher than similar Internal Combustion Engine ("ICE") models.
16 SDG&E believes that the addition of an income cap would add administrative burden and reduce
17 the number of willing EV drivers who would qualify as participants, contrary to the goals of SB
18 350. The purpose of the program is to break down barriers to TE, not create additional barriers.

19 SDG&E does not believe there will be an issue with free riders participating in the
20 program. SDG&E's program will proactively prevent free rider-ship from occurring because of
21 the Time of Use ("TOU") and Grid Integrated Rate ("GIR") choices that will be required by all

²⁸ ChargePoint Testimony at 19:8-12.

²⁹ ACR at p. 32.

³⁰ SDG&E Direct Testimony (R. Schimka) at 11: 9 – 12:3.

1 drivers in order to participate, as well as any contributions made by the driver for their EVSE and
2 installation. The benefits gathered from managed EV charging will come from all participants
3 due to their rate choice and the associated pricing incentives to move EV charging to the super
4 off-peak period. In addition, since SDG&E will require the purchase or lease of an EV before a
5 charging station will be installed, this will require customers to have some “skin in the game” to
6 participate in the program.

7 SDG&E’s program will also help ease drivers’ range anxiety, which is one of the key
8 barriers to purchasing an EV. Upon purchasing an EV, the vehicle normally comes with a Level
9 1 (“L1”) EVSE or cordset. A full charge on an empty battery electric vehicle (“BEV”) with a
10 range of 84 miles could take up to 17 hours to fully charge on an L1 EVSE. In comparison, a
11 vehicle with a L2 EVSE would take approximately 3.5-7 hours to charge from empty, which
12 would allow the owner to move the vehicle charging load out of the evening peak period and
13 charge in the super off peak period after midnight. SDG&E’s program will empower customers
14 to make the decision to drive electric by giving them the ability to charge an EV in less than half
15 the time it would otherwise take, and at a time of day when the grid has plenty of capacity.

16 SDG&E’s program also helps to reduce the cost of fuel which is another key barrier to
17 purchasing an EV. Drivers not enrolled in the program who are charging at L1 speed on
18 SDG&E’s residential tiered Domestic Rate (“DR”) rate would probably not see the fuel cost
19 savings that are expected to come with obtaining an EV because vehicle charging will likely
20 include hours in higher cost tiers.³¹ Drivers using an L2 EVSE on a TOU or GIR rate will be
21 able to take advantage of lower rates associated with the times when the energy market prices are
22 low (such as in the super off-peak period). SDG&E’s program will enable customers to make

³¹ SDG&E Rebuttal Testimony (J.C. Martin) at 4:3-5.

1 the decision to drive electric by reducing these barriers and at the same time reduce their cost of
2 fuel.

3 **IV. LEVEL 2 EVSE INSTALLATION COST ESTIMATES ARE JUSTIFIED**

4 Based on historical costs from The EV Project,³² SDG&E's projected cost of Level 2
5 EVSE installations, including permit and preparation costs, is an average of \$1,425 per site.³³

6 With input from local contractors, a separately derived cost estimate breakdown is provided in
7 Attachment 2 for reference. This cost estimate assumes that the installations are performed by
8 skilled and trained contractors, as required by the Program.³⁴ Joint Parties are supportive of the
9 average installation cost of \$1,425 and recommend it be funded in the form of an allowance with
10 a cap (which SDG&E agrees with).³⁵

11 TURN claims that SDG&E's estimated installation costs are inflated,³⁶ and points to a
12 ChargePoint data request that indicates installation costs in San Francisco are \$650 excluding the
13 permit and \$776 including the permit.³⁷ This cost difference of \$126 may cover the actual cost
14 for the permit in that jurisdiction, but it doesn't appear to cover the administrative costs of
15 permitting a job, as included in SDG&E's cost estimate and also highlighted by ChargePoint's
16 residential installation contractor QMerit on their website.³⁸

³² See, <https://avt.inl.gov/sites/default/files/pdf/EVProj/HowDoResidentialChargingInstallationCostsVaryByGeographicLocations.pdf>

³³ SDG&E Direct Testimony (R. Schimka) at 5:10-11.

³⁴ SDG&E Direct Testimony (L. Brown/P. Parikh) at 22, fn. 37.

³⁵ Joint Parties Testimony at 4:4:13.

³⁶ TURN Testimony (Borden) at 11:11 – 12:20.

³⁷ See Attachment 4: TURN-ChargePoint-01 Data Request, question 2.

³⁸ See <https://qmerit.zendesk.com/hc/en-us/articles/115010163928-Typical-Installation-Cost>:

A city permit is required by law before 240V electrical work is performed. The price can vary greatly depending on your city or jurisdiction. Beyond the price of the permit itself, time can be a factor as the installer is required to prepare and submit documentation in addition to being onsite for the final city inspection.

1 As part of the permit process for a residential EVSE installation, the following additional
2 administrative costs are incurred by the contractor:

- 3 • The contractor visits the site to scope the job and gather information about the
4 electric panel and the residence (is there adequate space available, what size is the
5 home, what large loads do they have?);
- 6 • The contractor uses the information about the residence to perform load
7 calculations (can the charging station load be added to the existing electric panel
8 and not overload it?);
- 9 • The contractor assembles the permit package paperwork, including
10 documentation showing the electrical diagram of the proposed work, the load
11 calculations, and the permit application;
- 12 • The contractor visits the permit office, applies for the permit, waits for the “over
13 the counter” review, pays the fees, and gets the permit;
- 14 • After the installation of the EVSE is completed, the contractor schedules an
15 inspection at the job site; and
- 16 • The contractor meets the inspector at the job site to get the job signed off.

17 In SDG&E’s installation cost estimate breakdown,³⁹ the above administrative tasks that
18 are required for permitting are included in the estimate at a cost of \$375.⁴⁰ SDG&E strongly
19 believes in the additional safety that the permitting process brings to the Program, and that the
20 total installation costs shown in the estimate are accurate and justified.⁴¹

21 **V. L1 CHARGING AND THE REBATE MODEL HAVE SAFETY IMPLICATIONS**

22 TURN⁴² and ORA⁴³ claim that L1 charging is sufficient for most drivers. However, their
23 testimony ignores the potential safety concerns related to L1 charging.

³⁹ See Attachment 2, “Residential EVSE Average Cost Installation Detail.”

⁴⁰ The sum of cells I7, I10, I13, and I19 in Attachment 2.

⁴¹ The cost estimate data from EV Project for San Diego area, which is also verified by local contractors is available at:

<https://avt.inl.gov/sites/default/files/pdf/EVProj/HowDoResidentialChargingInstallationCostsVaryByGeographicLocations.pdf>.

⁴² TURN Testimony (Borden) at 5:1-3.

⁴³ ORA Testimony at 1-7:2-3.

1 L1 charging using a standard 120-volt outlet can have safety issues for customers because
2 many existing garage outlets are older, and some may have loose electrical connections that
3 could heat up over time due to being exposed to maximum rated charging current for up to 10
4 hours or more on a daily basis.⁴⁴ On the other hand, a dedicated L2 charging circuit, installed by
5 a trained and qualified IBEW-affiliated contractor as part of SDG&E’s program, will help to
6 ensure a safer home EV charging experience for customers. The L2 charging hardware will be
7 installed on a dedicated 240-volt circuit, and the charging time is less than L1 (so there is less
8 time for an overheating condition to develop). See Attachment 5 for an excerpt from the Chevy
9 Volt manual with several safety warnings related to L1 charging, including a recommendation to
10 have an outlet inspected by an electrician before use.⁴⁵ The safety issues related to L1 charging
11 could be amplified in DAC areas and with CARE and FERA customers, where housing stock
12 may be older, or where there may be deferred maintenance on their electrical systems.

13 In addition to potential safety issues related to L1 charging, there are also potential safety
14 issues related to the implementation of a rebate model, which is favored by ChargePoint,⁴⁶ and
15 TURN.⁴⁷

16 Under SDG&E’s proposed modified Residential Charging Program that would provide
17 allowances to customers for the equipment and installation, trained and qualified contractors will
18 perform the installation of equipment that will be qualified through a competitive RFP process,
19 and then ultimately chosen by the customer. The installation work will be done to SDG&E’s

⁴⁴ For example, a Chevy Volt owner reports melted outlet from Level 1 charging:
<http://gm-volt.com/forum/archive/index.php/t-48618.html>.

⁴⁵ See Attachment 5. L1 charging is referred to as Portable Electric Vehicle Charging. “Warning
Improper use of portable electric vehicle charging cords may cause fire, electrical shock, or burns, and
may result in damage to property, serious injury, or death.”

⁴⁶ ChargePoint Testimony at 10:8 – 11:19.

⁴⁷ TURN Testimony (Borden) at 16:20 – 17:19.

1 electrical and safety specifications and managed by SDG&E, so the installations will be high
2 quality and safe.

3 In the case of a rebate model with aspects of the installation chosen or managed by
4 customers, some of these safety benchmarks could be more difficult to achieve without
5 SDG&E's management of the installation. SDG&E doesn't expect customers to be safety or
6 installation experts, or to be able to spot those types of issues related to their installations.
7 Because of this, SDG&E believes the best approach for the program is for the utility to manage
8 the installations while providing customers an allowance for the equipment.

9 **VI. AN ALLOWANCE-BASED PROGRAM IS BETTER THAN A REBATE-BASED**
10 **PROGRAM FOR DAC CUSTOMERS**

11 A rebate based program, as advocated by ChargePoint⁴⁸ and TURN⁴⁹, is not as
12 financially attractive to customers in general, and DAC, CARE, and FERA customers in
13 particular. In a rebate program model, customers purchase their equipment, have it installed, and
14 then submit their rebate paperwork. There is a period of time before the customer would get
15 reimbursed for their rebate. This can create cash flow issues for some customers.

16 This situation won't occur with SDG&E's modified Residential Charging Program,
17 because in the process of choosing and purchasing their EVSE on SDG&E's web-based portal,
18 the customer would only pay the difference between the appropriate allowance and the cost of
19 their chosen equipment. This is a much more customer-friendly way of managing the program.

20 **VII. REVISED COSTS FOR SDG&E'S MODIFIED RESIDENTIAL CHARGING**
21 **PROGRAM**

22 The following tables provide summary capital and Operations and maintenance ("O&M")
23 direct costs for two different scenarios:

⁴⁸ ChargePoint Testimony at 10:8 – 11:19.

⁴⁹ TURN Testimony at 16:20 – 17:19

- 1 • Table RS-1: SDG&E’s modified Residential Charging Program, showing a 100% utility ownership scenario;
- 2
- 3 • Table RS-2: SDG&E’s modified Residential Charging Program, showing a 50% utility / 50% customer-owned scenario.
- 4

5 SDG&E is asking for authority to spend up to \$241,773,125 in direct costs, which would
 6 cover the modified Residential Charging Program under the 100% utility ownership scenario.
 7 As explained in the Rebuttal Testimony of Norma Jasso, funding would be collected via a one-
 8 way balancing account.

Table RS-1

Modified Residential Charging Program - 100% Utility Ownership

Total Direct Costs

	CapEx	O&M	Total
EVSE Costs and Installation	\$ 200,458,125	\$ -	
Panel Upgrades	\$ 5,535,000	\$ -	
IT Costs	\$ 7,730,000	\$ -	
Customer Engagement	\$ -	\$ 600,000	
Advertising	\$ -	\$ 1,000,000	
Measurement & Evaluation	\$ -	\$ 550,000	
Billing Support	\$ -	\$ 400,000	
SDG&E Clean Transportation PM	\$ 3,000,000	\$ -	
Maintenance (Service Calls)	\$ -	\$ 22,500,000	
	<u>\$ 216,723,125</u>	<u>\$ 25,050,000</u>	<u>\$ 241,773,125</u>

9

Table RS-2

Modified Residential Charging Program - 50% / 50% Ownership

Total Direct Costs

	CapEx	O&M	Total
EVSE Costs for 45K Util Owned & 90K Install	\$ 174,943,125	\$ -	
Panel Upgrades	\$ 5,535,000	\$ -	
IT Costs	\$ 7,730,000	\$ -	
Customer Engagement	\$ -	\$ 600,000	
Advertising	\$ -	\$ 1,000,000	
Measurement & Evaluation	\$ -	\$ 550,000	
Billing Support	\$ -	\$ 400,000	
SDG&E Clean Transportation PM	\$ 3,000,000	\$ -	
Maintenance (Service Calls)	\$ -	\$ 22,500,000	
Utility EVSE Allowance 45K Customer Owned	\$ -	\$ 23,625,000	
	<u>\$ 191,208,125</u>	<u>\$ 48,675,000</u>	<u>\$ 239,883,125</u>

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VIII. CONCLUSION AND SUMMARY

This concludes my rebuttal testimony.

1 **IX. STATEMENT OF QUALIFICATIONS**

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

5 I have over 30 years of energy industry experience. My current duties involve project
6 management to support SDG&E's electric transportation efforts, including utility interfacing
7 with service providers wanting to install electric vehicle charging in residential, workplace, and
8 public locations, as well as SDG&E's own electric vehicle charging projects. I also contribute to
9 our Clean Transportation education and outreach efforts for electric vehicle customers, and am
10 the proud owner of two battery electric vehicles. I have driven over 90,000 all-electric miles in
11 daily work commuting and various EV road trips using public charging since 2011.

12 Prior duties at SDG&E focus on transmission grid control systems, transmission system
13 cyber security, NERC and CIP reliability standards, distribution system reliability, substation
14 engineering, and project management.

15 My education is in the general area of electrical engineering and business. I graduated
16 from San Diego State University in 1985 (BS Electrical Engineering), 1990 (MS Electrical
17 Engineering), and 1992 (Executive MBA). I am a registered Electrical Engineer in the State of
18 California.

19 I have previously testified before the California Public Utilities Commission.

ATTACHMENT 1 - SDG&E DRAFT MODIFIED RESIDENTIAL PROGRAM OVERVIEW

San Diego Gas & Electric




Residential Charging Program
CHARGING FASTER AND CHEAPER

CHOOSE YOUR RATE

I want to be billed on an hourly rate for my car.



I want to be billed separately for my car.

I want my home and my car billed together on the same rate.

 **OR**  **OR** 


EV GRID INTEGRATED RATE **EV-TOU** **EV-TOU-2**

CHOOSE YOUR OWNERSHIP AND MAINTENANCE


 **OR** 

PARTICIPANT TO OWN AND MAINTAIN CHARGER **SDG&E TO OWN AND MAINTAIN CHARGER**

CHOOSE YOUR CHARGER



**STILL HAVE QUESTIONS?
CONTACT SDG&E**


A Sempra Energy utility

ATTACHMENT 2 - SDG&E EVSE INSTALLATION COST ESTIMATE BREAKDOWN

Residential EVSE Average Cost installation detail

Initial Site Visit, Job Design, and Electrical Permit

Initial site visit (collect information for load calculations, inspect panel, take photos, travel time)

2 hrs @ \$ 75 = \$ 150

Administrative preparation for permit submittal (Perform load calculations, job design, generate site drawing to accompany permit application, misc. permit paperwork)

2 hrs @ \$ 50 = \$ 100

Obtaining permit (travel time, wait time, over the counter process, batch submittal if possible)

1 hrs @ \$ 50 = \$ 50

Avg Cost of Permit

= \$ 206

After completion, return to meet with City Inspector to signoff job (travel time, wait time)

1 hrs @ \$ 75 = \$ 75

Install 40 amp charging circuit & EVSE

Labor for average installation (installing circuit breaker, stubbing through wall, running conduit to EVSE location, pull wire, terminate, test, clean up)

5 hrs @ \$ 75 = \$ 375

Material for average installation (circuit breaker, conduit, wire, junction box, NEMA receptacle, misc. hardware)

\$ 200

Misc. job items

Administrative tasks to close out and bill job

1 hrs @ \$ 50 = \$ 50

Contractor Markup

\$ 200

Total: \$ 1,406

ATTACHMENT 3 – TURN-CHARGEPOINT DATA REQUEST 01

A.17-01-020

PG&E Electric Vehicle Infrastructure and Education Senate Bill 350 Transportation
Electrification Program
TURN Data Request

Data Request Number: TURN-ChargePoint 01

Date Sent: July 26, 2017

Response Due: August 2, 2017

1. Please describe generally ChargePoint's offerings and experience in the residential charging station sector.

ChargePoint began offering products and services to the residential and multi-family market in 2015. As of July 2017, ChargePoint has over 2,630 residential charging ports across California.

ChargePoint's residential and multi-family offering, ChargePoint Home, is available in plug and hardwire versions, with charging speeds of 32A or 16A, and comes with 12', 18' or 25' cord lengths. ChargePoint Home starts at \$499 and is available to purchase on Amazon.com.

These stations can be installed indoors or outdoors and are UL listed, meeting the stringent requirements of the nation's leading safety standards organization and backed by a 3-year warranty. Home provides charging speeds up to 6x faster than a standard 110V outlet delivering up to 25 miles of Range Per Hour (RPH). It comes with a standard J1772 connector, which can charge any EV on the road. ChargePoint Home is ENERGY STAR certified.

ChargePoint Home pairs with ChargePoint's mobile app and updates automatically with the latest software upgrades over WiFi. EV owners can use the mobile app to remote start, schedule and set charging reminders as well as see all of their residential, public and workplace charging with a single ChargePoint account. Additionally, they can see details on energy use and how many miles added based on the car model. The mobile app will also recommend the best time to charge based on utility rate schedules.

The installation requirements will vary depending whether the station is Plug-In or Hardwired. Home requires a dedicated 20 Amp (for the 16A/12 RPH) or dedicated 40 Amp (for the 32A/25 RPH). The Plug-In station needs to be installed indoors and can be removed and relocated if the EV owner moves. A licensed electrician can install the right outlet and mount the station. The Hardwired station can go indoors or outdoors and must be installed by a licensed electrician.

ChargePoint has partnered with QMerit to offer installation services for ChargePoint Home. In order to get a Home station installed, and EV owner can request a quote

through QMerit's website (<https://chargepoint.qmerit.com>), choose an installer and schedule their installation. Installers will verify that there is the right electrical capacity or appropriate outlet, then hook up the station and plug in to make sure everything works.

2. In ChargePoint's experience, what is the average cost to install a Level 2 (L2) EVSE in a single-family home? Please describe how this estimate is derived, the approximate number of installations it is based on, and any supporting materials.

ChargePoint itself does not directly provide installation services. However, we do from time to time engage with installers as well as our installer network provider, QMerit. Based on anecdotal conversations with installers, we believe the average installation cost for California is around \$650 excluding permit costs, assuming the charger is within 25 feet of the panel, the panel is in the garage, there is surface mounted conduit with no special coring, and no panel upgrade is required. Permit costs and processes are highly variable, so this number does not include the cost of acquiring a permit. Based on our conversation, about 80% of installs fall into this basic scope of work, with a minority being more expensive due to electrical upgrade requirements and particularly burdensome permitting processes. Beyond anecdotal reports, we recently completed installation of around 30 charging stations for the CEC "Next-Generation Grid Communication for Residential Electric Vehicles Pilot" Program in SDG&E Territory, the average install cost, including permitting was \$776.

3. What is the approximate range of costs to install a residential L2 charger (maximum and minimum)? What are the factors that drive high or low costs?

From conversations with installation partners and customers, we have heard of installs ranging between \$500-\$3000. Costs can differ based on if a panel upgrade is required, and any other variations on the factors listed above such as distance and complexity of conduit run from charger to the panel and the existing electrical wiring, and requirements of the permitting process in a particular locality.

Data Request Response prepared by: Anthony Harrison
ChargePoint witness: Dave Packard

ATTACHMENT 4 – SDG&E-TURN DATA REQUEST 01

SDG&E-TURN Data Request #1, Question #2:

- 2. Borden, p. 17: Please provide a breakdown of TURN's L2 EVSE installation cost assumptions, including individual cost factors such as permitting costs. If workpapers or spreadsheets exist showing such a breakdown, then please produce those. Please indicate if these installation cost assumptions contemplate the use of Union labor.**

As stated by ChargePoint in DR TURN-ChargePoint-01 (reproduced on Borden, p. 12), "we believe the average installation cost for California is around \$650 excluding permit costs" and "[b]eyond anecdotal reports, we recently completed installation of around 30 charging stations for the CEC "Next-Generation Grid Communication for Residential Electric Vehicles Pilot" Program in SDG&E Territory, the average install cost, including permitting was \$776." Based on this accounting and SDG&E workpapers, TURN estimates the following costs for L2 installation:

	<u>Cost Estimate</u>	<u>Source</u>
Installation	\$570 - \$650	ChargePoint
Permit	\$206	SDG&E Workpapers
EVSE	\$525	SDG&E Workpapers
Total	\$1301-\$1381	

TURN does not know whether ChargePoint's estimate includes union labor rates. TURN's rebate program proposal would be open to any qualified licensed electrical contractor of a resident's choosing.

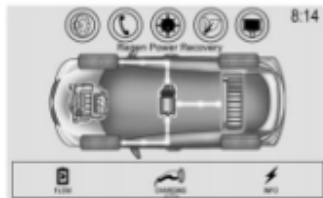
ATTACHMENT 5 – CHEVY VOLT USER MANUAL

Excerpts from 2016 Chevrolet Volt Owner's Manual (pages 118 and 119). Note bullet items about having an electrician inspect and verify the electrical system, and the various safety warnings for using the supplied Level 1 charging equipment.

118 Instruments and Controls



Engine and Regen Power Recovery - Engine is active. Power from the wheels returns to the battery during regenerative braking or coasting.



Regen Power Recovery - Power from the wheels returns to the battery during regenerative braking or coasting.



Power Off - No power is flowing to the wheels.

Programmable Charging **Important Information About Portable Electric Vehicle Charging**

- Charging an electric vehicle can stress a building's electrical system more than a typical household appliance.
- Before you plug into any electrical outlet, have a qualified electrician inspect and verify the electrical system (electrical outlet, wiring, junctions, and protection devices) for heavy-duty service at a 12 amp continuous load.



- Electrical outlets may wear out with normal usage or be damaged over time, making them unsuitable for electric vehicle charging.
- Check the electrical outlet/plug while charging and discontinue use if the electrical outlet/plug is hot, then have the electrical outlet serviced by a qualified electrician.
- When outdoors, plug into an electrical outlet that is weatherproof while in use.
- Mount the charging cord to reduce strain on the electrical outlet/plug.

Danger

Improper use of portable electric vehicle charge cords may cause a fire, electrical shock, or burns, and may result in damage to property, serious injury, or death.

(Continued)

Danger (Continued)

- Do not use extension cords, multi-outlet power strips, splitters, grounding adaptors, surge protectors, or similar devices.
- Do not use an electrical outlet that is worn or damaged, or will not hold the plug firmly in place.
- Do not use an electrical outlet that is not properly grounded.
- Do not use an electrical outlet that is on a circuit with other electrical loads.

Programmable Charge Modes

This vehicle has three programmable charge modes. To view the current charge mode status in the center stack display, touch Energy in the infotainment display and then touch Charging at the bottom of the touch screen.

The Charge Start and Charge Complete time estimates are also displayed on the screen. These estimates are most accurate when the vehicle is plugged in and in moderate temperature conditions.

Charge Mode Status



Immediately : The vehicle starts charging as soon as it is connected to an electrical outlet. See *Plug-In Charging* ⇨ 206.



Delayed Based on Departure Time : The vehicle estimates the charging start time considering the programmed departure time for the current day of the week. Charging begins at the start time and is complete by the departure time only if sufficient time is allowed after the charge cord is plugged in.

