

Application No. A.14-04-014

Exhibit No.: SDG&E-8

Witness: James P. Avery

Application of SAN DIEGO GAS & ELECTRIC  
COMPANY (U902E) for Approval of its  
Electric Vehicle-Grid Integration Pilot Program.

Application No. 14-04-014  
(Filed April 11, 2014)

And Related Matter.

Rulemaking 13-11-007

**PREPARED REBUTTAL TESTIMONY OF  
JAMES P. AVERY  
CHAPTER 1  
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY  
BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

**APRIL 13, 2015**



## TABLE OF CONTENTS

I.	OVERVIEW AND PURPOSE .....	1
II.	SDG&E’S VEHICLE-GRID INTEGRATION PILOT PROGRAM PROPOSAL MEETS THE NEEDS OF ITS CUSTOMERS AND THE REGION IT SERVES .....	2
III.	ASSESSMENT OF THE SUGGESTIONS MADE BY THE VARIOUS PARTIES.....	3
	A.    Benefits All Utility Customers.....	4
	B.    Protecting Customers and Ensuring Net Benefits Are Achieved .....	4
	C.    Meeting The Governor’s Goals In Their Entirety.....	6
	D.    The Need For Data To Help Inform Commission Policy .....	7
IV.	UNDERSTANDING THE POSITIVE IMPACT THE VEHICLE-GRID INTEGRATION PILOT PROGRAM WILL HAVE ON THE MARKET .....	7
	A.    The Customer And Customer Choice .....	8
	B.    Time For Change – SDG&E’s Proposal Is A Catalyst To Sector-Wide Growth And Innovation .....	8
	C.    Parties’ “Innovation” Arguments Ignore the Growth in Jobs and Work Created by SDG&E’s Proposal .....	9
	D.    Size Of The Pilot – 550 VGI Facilities.....	9
	E.    Performance Based Incentives .....	11
V.	CONCLUSION.....	12

1 **PREPARED REBUTTAL TESTIMONY OF**

2 **JAMES P. AVERY**

3 **CHAPTER 1**

4 **I. OVERVIEW AND PURPOSE**

5 The purpose of my rebuttal testimony is to address the following areas implicated by various  
6 parties' testimony:

- 7 • Clarify and emphasize how San Diego Gas & Electric Company's ("SDG&E") Vehicle-  
8 Grid Integration ("VGI") Pilot Program proposal ("pilot") is designed to meet the needs  
9 and unique resource conditions of its service territory and to the communities it serves.
- 10 • Address proposals and comments offered by intervenors and the potential impacts of  
11 those proposals on ratepayers and the benefits of the pilot.
- 12 • Address the state of Electric Vehicle ("EV") transportation development, drivers of  
13 innovation, and alignment with the alternative fuel transportation goals of the State of  
14 California.

15 My rebuttal testimony is organized as follows:

- 16 • Section II – SDG&E's VGI proposal meets the unique needs of its customers and the  
17 region it serves.
- 18 • Section III – Assessment of suggestions made by various parties to this proceeding.
- 19 • Section IV – Framework for understanding the positive impact the pilot program will  
20 have on EV transportation development.
- 21 • Section V – Conclusion

22 I have previously submitted testimony in this proceeding supporting the April 2014  
23 application and the January 2015 supplemental testimony.

1 **II. SDG&E’S VEHICLE-GRID INTEGRATION PILOT PROGRAM PROPOSAL**  
2 **MEETS THE NEEDS OF ITS CUSTOMERS AND THE REGION IT SERVES**

3 Building upon previous California Public Utilities Commission (“Commission”) authorized  
4 policy research,<sup>1</sup> SDG&E’s proposal is timely and responsive to the opportunity today to introduce  
5 an effective means (*i.e.*, through pricing and enabling technology) to decrease the likelihood of EV  
6 loads needlessly impacting circuit and system peak demand within SDG&E’s service territory, and  
7 consequently, reducing upwards pressure on electric rates to all ratepayers. Moreover, SDG&E’s  
8 pilot is designed to meet the specific needs of its service territory and the unique resource conditions  
9 and sensitivities of the communities it serves, including the following:

- 10 • SDG&E’s service territory is in a “load pocket” and this creates unique challenges to  
11 avoid certain system criticalities;
- 12 • As a “load pocket,” SDG&E is transmission constrained, and there is a need for local  
13 generation; and
- 14 • SDG&E’s service territory has less system load diversity because it is “residential  
15 customer heavy.”

16 Under these unique circumstances, SDG&E’s pilot can avoid potential reliability issues and  
17 reduce the need for costly system upgrades or additional new fossil generation. Indeed, SDG&E’s  
18 proposed VGI rate not only sends appropriate price signals that reflect grid conditions to EV  
19 drivers/customers, it also reflects individual circuit conditions, thereby avoiding unnecessary  
20 investments in the distribution grid. The goal of avoiding unnecessary grid investments is a concept

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<sup>1</sup> SDG&E (Krevat) LK-12, fn.22. Testimony served in this proceeding will be cited to as follows: Party nickname (witness surname) page(s):lines(s). Examples: TURN (Jones) 6:18-7:5; ORA (Aliaga-Caro) 2-5:11-16. SDG&E’s rounds of testimony will be cited as “SDG&E” [for the direct case served April 11, 2014 and as revised June 3, 2014 (Cynthia Fang) and July 29, 2014 (J.C. Martin)], “SDG&E Supp.” [supplemental served January 14, 2015], otherwise using the forgoing format. Please note that SDG&E witness James P. Avery subsequently adopted the testimony of Lee Krevat submitted with the original application. SDG&E Supp. (Avery) ST-4:16-ST-5:2.

1 being explored in various Commission proceedings, including the Distribution Resource Planning  
2 rulemaking<sup>2</sup> and the utilities' Distribution Resource Plan applications that are due to be filed on July  
3 1, 2015.<sup>3</sup> Moreover, since the Alternative-Fueled Vehicle Rulemaking was launched in 2009,  
4 SDG&E has supported the Commission's goal to ensure the efficient integration of EV loads with  
5 the grid.

6 Unfortunately, some parties ignore that SDG&E has the only proposal designed to efficiently  
7 integrate the additional demand from EV charging into grid operations. The Environmental Defense  
8 Fund ("EDF") is not among these parties because it specifically recognizes that SDG&E's proposal  
9 builds upon the need for taking advantage of any viable step toward preserving existing system and  
10 circuit capacity to the benefit of all ratepayers.<sup>4</sup> As discussed below in Section III. C., SDG&E's  
11 proposal is also consistent with the State's goals in this area.

### 12 **III. ASSESSMENT OF THE SUGGESTIONS MADE BY THE VARIOUS PARTIES**

13 SDG&E has applied the following criteria embodied in the benefits of SDG&E's proposal to  
14 address certain suggestions made by various parties:

- 15 • Demonstrates net benefits to all ratepayers
- 16 • Protects EV drivers and all ratepayers (ensure assets continue to be used and useful)
- 17 • Provides equitable deployment of assets and services
- 18 • Provides customer choice to EV drivers through pricing

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<sup>2</sup> R.14-08-013, *Order Instituting Rulemaking Regarding Policies, Procedures and Rules for Development of Distribution Resources Plans Pursuant to Public Utilities Code Section 769*, filed August 13, 2014. Assigned Commissioner's Ruling on Guidance for P.U. Code Section 769 available at: <http://www.cpuc.ca.gov/NR/rdonlyres/9F82A335-B13A-4F68-A5DE-3D4229F8A5E6/0/146374514finalacr.pdf>.

<sup>3</sup> R.14-08-013, p. 2, paragraph 1.

<sup>4</sup> EDF (Fine) 5:24-6:15.

- Supports Governor's 2020 grid-integrated infrastructure and 2025 vehicle deployment goals, and the State's clean air and climate change objectives
- Collects data and findings to help inform Commission policy

The following discusses SDG&E's proposal in light of these criteria:

**A. Benefits All Utility Customers**

While some of the parties are narrowly focused on a specific aspect of the evolving EV charging business, SDG&E's proposal focuses on plans that achieve net benefits for all ratepayers in exchange for their investment in grid-integrated charging facilities.

**B. Protecting Customers and Ensuring Net Benefits Are Achieved**

A number of parties ask that ratepayers fund portions of and not the entire infrastructure necessary to support charging facilities and grid-integrated charging services, end-to-end, as SDG&E has proposed.<sup>5</sup> They suggest that the host (*i.e.*, a non-SDG&E or SDG&E-managed entity) would be responsible for operating and maintaining the electric vehicle supply equipment ("EVSE").<sup>6</sup> Applying SDG&E's assessment criteria, this approach is flawed for the following reasons.

First, unless the EVSE, and corresponding price signal provided to the EV driver/customer is managed by the utility, there is no assurance to all ratepayers that the facility will provide benefits

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<sup>5</sup> The Utility Reform Network ("TURN") (Borden) 3:9-10, 15:2-3; Utility Consumers' Action Network ("UCAN") (Croyle) 13, paragraph 2; ChargePoint (Quinn) 23:11-18; Green Power Institute (Morris) 9:18-24.

<sup>6</sup> Electric Vehicle Supply Equipment (EVSE) – "The conductors, including the ungrounded, grounded, and equipment grounding conductors, the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatuses installed specifically for the purpose of delivering energy from the premises wiring to the electric vehicle." (Source: Society of Automotive Engineers ("SAE") J1772 paragraph 3.12 and NEC article 625.2); SAE J1772 adds: "Charging cords with NEMA 5-15P and NEMA 5-20P attachment plugs are considered EVSEs." Trade Organizations referenced are: NEMA (National Electrical Manufacturer's Association); SAE (Society of Automotive Engineers); and, NEC (National Electrical Code – National Fire Protection Association).

1 directly to all ratepayers. This means that, without utility management, there is no assurance that  
2 grid-integrated charging with pricing that incentivizes the EV driver/customer to charge during off  
3 peak periods will remain used and useful. Thus, without utility management, the risk of avoidable  
4 system upgrades and the addition of new fossil generation is increased. This is a real and present  
5 concern of SDG&E. SDG&E's proposal offers a viable step toward preserving existing system and  
6 circuit capacity to the benefit of all of its ratepayers.

7         Second, protection of the assets funded by all ratepayers must be protected end-to-end to  
8 ensure that they remain used and useful and deliver the proposed benefits. Utility ownership of the  
9 assets under Commission oversight ensures this protection. But relying on a site host, or a non-  
10 utility managed entity, to maintain charging equipment does not. For example, SDG&E ownership  
11 of assets ensures that they will be maintained and operational in the event the equipment provider is  
12 no longer able to do so, such as in the case of poor maintenance, equipment and operating system  
13 failure, or bankruptcy (as discussed further in Mr. Schimka's rebuttal testimony, Chapter 3). In  
14 these situations, where the assets are owned by the service provider, the equipment could be subject  
15 to liens, court proceedings and disputes between stakeholders. In contrast, if SDG&E owns the  
16 assets, SDG&E could dispatch a maintenance crew (*e.g.*, under a maintenance contract with a third  
17 party) to fix or replace any malfunctioning equipment.

18         Finally, when the site host owns the equipment, repair or replacement of inoperable  
19 equipment would be subject to the competing resource demands of the property manager, who could  
20 simply choose to forego the repair/replacement cost. SDG&E has a public utility obligation to serve  
21 its customers and is subject to the continuing oversight of the Commission. Third party EV service  
22 providers do not have this obligation, and the Commission lacks any oversight powers over these  
23 entities. SDG&E's proposed ownership ensures that the assets remain used and useful over the asset  
24 life to the benefit of its ratepayers.

1           **C. Meeting The Governor’s Goals in Their Entirety**

2           While many of the parties claim to support portions of the Governor’s goals, SDG&E’s  
3 proposal responds to Governor Brown’s goals in their entirety. As conveyed in Executive Order B-  
4 16-2012, the third ordering paragraph, first and sixth bullets, the 2020 infrastructure goal calls for  
5 *grid integrated* charging infrastructure.<sup>7</sup> The 2013 Zero Emission Vehicle (“ZEV”) Action Plan,  
6 published February 2013 by the Governor's Interagency Working Group on Zero-Emission Vehicles,  
7 in response to this Executive Order (B-16-2012), cites specific milestones from the Executive Order  
8 and directs the Commission, California Air and Resources Board, California Energy Commission,  
9 and other relevant state agencies to take specific actions to achieve the goals of the Executive  
10 Order.<sup>8</sup> Under the section entitled “Plan for and integrate peak vehicle demand for electricity into  
11 the state's energy grid,” one task assigned to the Commission reads: “Pilot infrastructure systems that  
12 avoid or minimize demand impacts on the grid from PEV charging through energy storage, demand  
13 response, distributed generation or other mechanisms.”<sup>9</sup> To help meet this assignment, the  
14 Commission has encouraged the regulated utilities to file proposals to address and accomplish this  
15 action item, as SDG&E has done with its proposed pilot program. Although it appears that most  
16 parties support proposals to promote EV adoption in principle, many of these parties disregard the  
17 grid-integrated aspect associated with the 2020 infrastructure goal. SDG&E believes grid

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<sup>7</sup> “IT IS FURTHER ORDERED that these entities establish benchmarks to help achieve by 2020:  
• The State’s zero-emission vehicle infrastructure will be able to support up to one million vehicles; and...

• Electric vehicle charging will be integrated into the electricity grid...”

<sup>8</sup> See Executive Order B-16-2012 at <http://gov.ca.gov/news.php?id=17472>, and the Zero Emission Action Plan at [http://opr.ca.gov/docs/Governor's\\_Office\\_ZEV\\_Action\\_Plan\\_\(02-13\).pdf](http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf).

<sup>9</sup> See p. 13 at Zero Emission Action Plan at [http://opr.ca.gov/docs/Governor's\\_Office\\_ZEV\\_Action\\_Plan\\_\(02-13\).pdf](http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf).



1 integration is a critical element to meeting the Governor’s goals and the ZEV Action Plan, and  
2 necessary for ratepayers to benefit from EV infrastructure investment.

3 **D. The Need for Data to Help Inform Commission Policy**

4 TURN’s testimony asserts that there is a lack of a research basis behind portions of  
5 SDG&E’s proposal.<sup>10</sup> However, collecting and analyzing data is one of the purposes and benefits of  
6 SDG&E’s proposed pilot program.<sup>11</sup> As referenced in Mr. Martin’s testimony (Chapter 5),  
7 SDG&E’s pilot directly builds upon the results of its previous EV-related pricing study, and where  
8 other data, findings and experience were available, these elements have been incorporated into  
9 SDG&E’s proposal. It should also be noted that the data and findings from the pilot will be timely  
10 and necessary to inform California state policy necessary to meet its EV infrastructure deployment,  
11 EV adoption and Greenhouse Gas reduction goals.

12 **IV. UNDERSTANDING THE POSITIVE IMPACT THE VEHICLE-GRID**  
13 **INTEGRATION PILOT PROGRAM WILL HAVE ON THE MARKET**

14 While certain parties claim that SDG&E’s proposal is anticompetitive, from a layperson’s  
15 perspective these claims appear to focus on preserving the status quo for incumbent EV service  
16 providers.<sup>12</sup> Preserving the status quo, however, means maintaining the incumbents’ large market  
17 share and sustaining their particular business model. If SDG&E’s proposal is denied and this trend  
18 is perpetuated, *grid-integrated* charging infrastructure (per the Governor’s goals) would not advance.  
19 Indeed, a site host or third party (not regulated by the Commission) offering EV charging will have  
20 no incentive to offer time variant pricing reflecting grid conditions, or other load management or  
21 grid integrated charging solutions. As discussed above, this outcome will ultimately increase

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<sup>10</sup> TURN (Borden) 24:7-9.

<sup>11</sup> SDG&E (Krevat) LK-11:16 – 12:14.

<sup>12</sup> ChargePoint (Quinn) 18:11-22:13, 23:19-20; ORA (Durvasula) 3-1:19-20, 3-3:12-15; UCAN (Croyle) 44-48; CESA (Lin) 2:20-3:3.

1 demand on SDG&E’s grid and the corresponding need to add distribution and transmission capacity  
2 and new peaking generation.

3 **A. The Customer and Customer Choice**

4 ChargePoint narrowly defines the “customer” as the site host, and “customer choice” as  
5 choice of EVSE, but this view fails to recognize that in the eyes of the EV driver, he/she is the  
6 customer, and that choice also includes location, time of day, and the ability to shop for the best  
7 price given their charging needs. As described in SDG&E’s testimony, SDG&E’s proposed VGI  
8 Rate offers choice in pricing by hour of the day, reflecting grid conditions, and gives the customer  
9 the opportunity to reduce their fueling costs. Contrary to this approach, it is common today to find  
10 third party service providers pricing in the form of flat fees that do not offer pricing that varies based  
11 on grid conditions. The perpetuation of a flat fee-type business model does not promise to offer  
12 time-of-use choice to the EV driver/customer “at the pump.” SDG&E is not aware of any  
13 commercial efforts to link EV charging prices to grid conditions. It appears that SDG&E is the only  
14 party proposing grid-integrated charging in this proceeding.

15 **B. Time for Change – SDG&E’s Proposal is a Catalyst to Sector-Wide Growth and**  
16 **Innovation**

17 The current EV charging space lacks an incentive for third party service providers to explore  
18 grid-integrated EV charging solutions. Implementing SDG&E's proposal will provide the lacking  
19 impetus to innovate and will incentivize other service providers to offer more value by deploying EV  
20 charging load management solutions and grid-integrated pricing. Without proper incentives, the  
21 market will continue to ignore the impact of new EV load on the grid and the resulting costs to all  
22 ratepayers. The EVSE networks and related operating systems that have this potential to grid-  
23 optimize charging, in some respects, are underutilized assets, an inefficiency that is passed on to all  
24 users of the electric grid. SDG&E’s innovative pilot will unlock the value of these operating  
25 systems that support EV charging networks.

1           **C. Parties’ “Innovation” Arguments Ignore the Growth in Jobs and Work Created**  
2           **by SDG&E’s Proposal**

3           Certain parties’ testify that limiting the utility to providing a “make-ready stub” is the best  
4 way to foster innovation.<sup>13</sup> This position ignores not only the benefits of grid integrated charging  
5 that I describe above, it also ignores the opportunities that SDG&E’s proposal creates for third party  
6 providers of charging services, operating systems, software and equipment. SDG&E’s proposal will  
7 offer new avenues of product development and significantly increase the volume of work available  
8 to software and equipment providers for this nascent industry. SDG&E's proposal depends on  
9 multiple third parties offering equipment, software, operating systems and network solutions.  
10 Indeed, the proposed Request for Proposal (“RFP”) process offers a chance for multiple third parties  
11 to develop innovative products, services and pricing. Ratepayers will benefit from the Request for  
12 Information (“RFI”)/RFP process proposed by SDG&E because it is expected that this form of  
13 competitive bidding will encourage innovation at least cost and improve the customer experience.<sup>14</sup>  
14 Mr. Schimka’s rebuttal testimony (Chapter 3) expands on the discussion of SDG&E’s competitive  
15 bidding process for third parties addressing the allegation that SDG&E’s proposal stifles innovation  
16 by being too prescriptive – an allegation that is simply wrong.

17           **D. Size of the Pilot – 550 VGI Facilities**

18           Parties continue to object to SDG&E’s robust goals with respect to the maximum size of the  
19 pilot (550 VGI facilities, with 10 EVSE each, on average).<sup>15</sup> While SDG&E’s supplemental

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<sup>13</sup> ChargePoint (Quinn) 23:4-8; TURN (Borden) 15:23-24; 17:19-21. SDG&E witness Mr. Pulliam offers supplemental and rebuttal testimony (Chapter 2) addressing the innovation arguments from a market competition perspective.

<sup>14</sup> SDG&E (Krevat) LK-14:1-2.

<sup>15</sup> TURN (Borden) 3:11-15; ChargePoint (Quinn) 20:10-20; ChargePoint (Monsen) 8:1-7.

1 testimony addressed these concerns,<sup>16</sup> it is evident that more clarification is needed. The principal  
2 concern appears to be with the risk that ratepayers will fund unwanted, underused facilities.<sup>17</sup> While  
3 this is a proper concern, the objections ignore several elements of SDG&E's proposal that  
4 substantially mitigate this risk. In addition, the number of charging stations proposed by the pilot (at  
5 full deployment) together with existing charging stations will still fall short of the number of EVSEs  
6 required in the San Diego region by the Governor's 2020 goal for grid-integrated infrastructure.<sup>18</sup>

7 First, it should be noted that the 550 facilities is a goal and that spending and construction of  
8 VGI facilities will be driven by customer demand from potential multi-unit dwelling ("MuD") and  
9 workplace settings (i.e., high usage, long duration parking locations).<sup>19</sup> Consequently, the size of the  
10 pilot is limited not only to 550 VGI facilities, but by customer demand at MuD and workplace  
11 settings. Reaching the authorized limit would be a powerful indication of customer interest and  
12 program success.

13 Second, SDG&E has testified that a process of verifying that EVs will use the VGI facilities  
14 at these locations (with the screening criteria identified in SDG&E (Schimka) RS-7:8-18) adds  
15 another layer of asset usage assurance. That is, since property managers typically are very judicious  
16 about allocating parking for charging facilities, this will tend to ensure that VGI facilities are used  
17 and useful. As such, with the volume of VGI facilities driven by customer demand and host  
18 preferences, the concerns about stranded investment raised by some parties are mitigated.

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<sup>16</sup> SDG&E Supp. (Schimka and Martin) ST-46, and Appendix A (As the volume of VGI facilities increases, the net benefits increase, scale economies improve and SDG&E circuit representation improves).

<sup>17</sup> *E.g.*, TURN (Borden) 7:19-33.

<sup>18</sup> SDG&E Supp. (Schimka and Martin) ST-41:1-6.

<sup>19</sup> *Id.*, ST-48:14 -ST-49:12.

1 Finally, the proposed balancing account is a vehicle well suited to allow for increased  
2 transparency of the tracking of adoption of VGI facilities over the five year installation period  
3 proposed.

#### 4 **E. Performance Based Incentives**

5 SDG&E appreciates the supportive and forward thinking testimony of EDF regarding  
6 incentives. Although SDG&E is open to the discussion of risk-reward balanced performance-based  
7 shareholder incentives introduced by EDF and others, these structures are typically best applied to  
8 more mature markets where there is some significant history of performance upon which goals can  
9 be based.<sup>20</sup> Data is needed from SDG&E's proposed pilot and such data would enable the  
10 Commission to explore how performance-based goals could be set in the future. Furthermore, given  
11 the complexity of inter-dependencies and shared accountability among the various entities necessary  
12 to achieve effective vehicle-grid integration, there is a strong likelihood that the future EV space will  
13 be different from the one in which the utilities propose to support in their current pilot proposals.  
14 For example, the VGI Rate itself depends on enabling EVSE technology and operating systems  
15 provided by third parties, and there is much to learn about how these systems will provide an  
16 excellent experience for the EV driver/customer. Development of an effective and fair risk/reward  
17 mechanism will no doubt be complicated and contentious. While SDG&E does not object to  
18 exploration of such a mechanism, to do so in the context of this application will significantly delay  
19 deployment of EV charging infrastructure and frustrate progress toward meeting the Governor's  
20 goals. Thus, SDG&E believes it would be more prudent to consider incentive mechanisms in a  
21 future phase of the Alternative Fuel Vehicle rulemaking after parties have gained experience and  
22 additional data becomes available.

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<sup>20</sup> EDF (Fine) 27:14 – 28:21; TURN (Hawiger) 2:9-14.

1 | **V. CONCLUSION**

2 | This concludes my prepared rebuttal testimony.