

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

1. Page 2 of Chapter 1 says that ratepayers will benefit from increased environmental benefits, GHG reductions, and increased alternative fuel use. How will SDG&E measure these benefits? What kind of control group or counterfactual can be used to test the impact of the program on PEV adoption and electric miles driven?

SDG&E Response:

SDG&E intends to measure environmental benefits, (e.g., GHG reductions and increased alternative fuel use) as outlined in SDG&E's Research Plan – Data Collection and Analysis.¹ This plan provides a link between the hypothesized assumptions described in Chapter 6 section I and results illustrate in Chapter 6 section IV.² Many environmental benefits accrue from avoided gasoline use, which can be derived from the quantity of EVs and their respective Zero Emission Miles (ZEM) driven. The data collection and analysis planned includes: Estimated percentage of EV purchases related to the VGI Pilot Program (gathered through surveys of EV customers using the VGI facilities); and Estimate of VGI Pilot program-related increases in ZEV miles traveled per EV (gathered through surveys of EV customers using the VGI facilities).³ Surveys results from EV customers using the VGI facilities will provide insight on changes in driver behavior due to the VGI Pilot Program.

¹ See Chapter 6, Section V. pages JCM-35 through JCM-37.

² See Chapter 6, JCM-35, lines 10 – 11.

³ See Chapter 6, JCM-36, lines 10-13.

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
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DATE RESPONDED: MARCH 11, 2015

2. Does SDG&E propose to distinguish the environmental benefits of smart charging from the PEV adoption impacts of the program? For example, how will SDG&E quantify the benefits of the VGI rate design (e.g. avoiding renewable curtailment during negative pricing events) which are distinct from those from making charging equipment (e.g. induced adoption by MUD residents and employees), or other aspects of the program design?

SDG&E Response:

Benefits from the VGI Pilot rate and grid integrated charging are primarily Electricity Supply Cost avoidance (e.g., Energy, Losses, Ancillary Services, Capacity, and T&D). SDG&E intends to conduct measurement and evaluation studies on the VGI Pilot Program conducted according to the Load Impact Protocols adopted in D.08-04-050.⁴ Environmental benefits from “making charging equipment” relates to avoided gasoline usage and is included in SDG&E’s Research Plan, which includes collecting: Estimated percentage of EV purchases related to the VGI Pilot Program (gathered through surveys of EV customers using the VGI facilities); and Estimate of VGI Pilot program-related increases in ZEV miles traveled per EV (gathered through surveys of EV customers using the VGI facilities).⁵

⁴ See Chapter 6, JCM-37, lines 1 -4.

⁵ See Chapter 6, JCM-36, lines 10-13.

ED DATA REQUEST
ED-SDG&E-DR-01
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SDG&E RESPONSE
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3. For environmental benefits counted as accruing under the application, which are already accounted for under the Clean Vehicle Rebate Program?

SDG&E Response:

The Clean Vehicle Rebate Project (CVRP) does not account for or attribute environmental benefits to the rebates provided to EV owners/lessees. CVRP is funded by the California Air Resources Board (ARB) and administered statewide by the Center for Sustainable Energy (CSE) in order to promote the production and use of zero-emission vehicles, including electric, plug-in hybrid electric and fuel cell vehicles.⁶ The CVRP is part of ARB's Air Quality Improvement Program (AQIP) established by the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (Assembly Bill (AB) 118, Statutes of 2007, Chapter 750).⁷ Assembly Bill 118 does not state any accounting requirement of environmental benefits associated with AQIP projects, although fuel-cycle assessment or life-cycle assessments is a criteria for project funded preferences by AQIP.^{8 & 9}

The environmental benefits, (referred to in Chapter 6 as Societal Benefits: Avoided Gasoline CO₂; LCFS Benefits; and Criteria Pollutants) are included in SDG&E's VGI Cost Effectiveness Tests. These societal benefits are included in the Social Cost Test (SCT) and attributed to both EV Market scenarios.¹⁰ The SCT attempts to quantify the change in the total resource costs to society as a whole¹¹. Both EV Market scenarios (SDG&E VGI Rate scenario and Non-utility Flat Fee Scenario) contain the same Societal Benefits, since both EV Market scenarios assume the same number of EVs and gasoline displacement. Therefore they are not specifically "counted as accruing under the application", rather they are attributed to the societal impacts of both EV Market scenarios.

⁶ See: What is the Clean Vehicle Rebate Project? <http://energycenter.org/clean-vehicle-rebate-project/faqs/what-clean-vehicle-rebate-project-0>

⁷ See ARB's AQIP web page, first sentence. <http://www.arb.ca.gov/msprog/aqip/aqip.htm>

⁸ See Assembly Bill No 118. <http://www.arb.ca.gov/msprog/aqip/bkgrnd.htm#AB118>

⁹ Note the CVRP Final Reports do not provide environmental benefits accountings. See CVRP Final Report for Fiscal Year 2009-2001, and CVRP Final Report for Fiscal Year 2012-2013. <http://www.arb.ca.gov/msprog/aqip/cvrp.htm>

¹⁰ See Chapter 6, Table 6-1 on page JCM-7 and Table 6-12 on page JCM-33.

¹¹ California Standard Practice Manual (Oct. 2001), page 19.

**ED DATA REQUEST
ED-SDG&E-DR-01
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A.14-04-014
SDG&E RESPONSE
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4. Why is the pricing proposal in this pilot only available to customers that use SDG&E-owned infrastructure? What barriers exist to making this available to other retail customers?

SDG&E Response:

- a. SDG&E is proposing to make the VGI Pilot Project available to site owners and drivers that are customers of SDG&E, as discussed in Randy Schimka's Testimony on page RS-2.
- b. The barriers that exist to making this available to other retail customers are primarily conversion costs. Many existing charging stations are connected to site owner existing electrical panels and would have to be converted to a separate electric service similar to the proposed VGI electrical/billing architecture as outlined in Supplemental Testimony on page ST-42.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

5. Who will be identifying potential sites – customers via self-identification, third parties or the utility?

SDG&E Response:

SDG&E expects all three groups mentioned in the question will help identify potential VGI sites. However, as outlined in Randy's Schimka's testimony on pages RS-6 and RS-7, the potential VGI site host ultimately has to meet the screening criteria for selection, including providing a strong "indication of interest" and willingness to participate for the selection process to move forward.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

6. What specific marketing channels does SDG&E propose to use to reach customers? Will this marketing be aimed at facility hosts, drivers or other entities? What budget will be directed to each of these audiences?

SDG&E Response:

Per testimony on pages RS-6 and RS-7, (incremental costs are described on pages RS-14 to RS-18), SDG&E will use established channels of communication with service territory agencies, municipalities, trade associations, planning councils, low-income and diverse community groups. SDG&E also has working relationships with workplace and MuD customers. SDG&E has regular workshops, outreach, and assigned account relationships with account executives for these customers. SDG&E also works with Smart City San Diego, CleanTech San Diego, and other general education and outreach venues. Marketing efforts will be aimed primarily at potential VGI facility hosts.

ED DATA REQUEST
ED-SDG&E-DR-01
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A.14-04-014
SDG&E RESPONSE
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DATE RESPONDED: MARCH 11, 2015

7. How will SDG&E encourage sites to size infrastructure (Level 1 vs. Level 2) cost effectively in balancing the tradeoff between high load factor and price-responsive charging?

SDG&E Response:

Several factors will be taken into account to arrive at an optimized Level 1 / Level 2 mix for potential VGI sites, as listed in testimony on page RS-7, including:

- Available transformer capacity;
- Number of VGI installations, and number of charging stations;
- Site conditions for installation;
- Types of vehicles at site;
- Usage patterns.

ED DATA REQUEST
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A.14-04-014
SDG&E RESPONSE
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8. Why should an EVSE be demand response capable? Isn't it possible that a facility or a vehicle could provide this functionality?

SDG&E Response:

Demand response (DR) capable is different than providing DR benefits. The VGI Pilot rate provides EV drivers with a dynamic DR price signal¹² and the VGI Pilot infrastructure provides EV drivers the technology to understand and manage their EV charging to provide DR benefits including “improved grid performance, renewable energy consumption and EV energy storage utilization.”¹³

It would be difficult for a facility to provide Demand Response capabilities for VGI chargers located on a separate service. Production EVs in the market today currently do not have the necessary internal functionality to implement the VGI rate on their own. EV functionality is currently unable to include: making EV-to-EVSE associations, receiving circuit specific VGI hourly prices, including driver preferences (maximum price, required kWh, and departure time) in their charging optimization algorithm. EV OEMs have demonstrated on/off DR capabilities using telematics capabilities of their vehicles, unfortunately many EVs do not have telematics capabilities nor do all EV drivers choose to pay for telematics service subscriptions.

¹² CPP and dynamic rates are considered Demand Response activities. (See Chapt. 6, footnote 31 on page JCM-37).

¹³ See Chapter 1 section B.2 (LK-12 and -13).

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

9. What mix between workplaces, apartments and points of interest will SDG&E target?
How will they target these levels? How were these target levels determined?

SDG&E Response:

As outlined in Testimony on pages RS-1 and RS-2, as well as Supplemental Testimony on pages ST-47 and ST-48, SDG&E intends to install VGI systems at workplace and multi-unit dwelling locations because of their frequently used, long dwell time charging opportunities as outlined on page ST-47 in the Supplemental Testimony, so those types of sites will be targeted.

Ultimately, willing host sites expressing interest will drive the VGI sign-up process.

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

10. How would SDG&E make sure that a host and a charging station meet their operational expectations for access, authentication, grid prioritization, and user prioritization¹⁴? What should those expectations be for ratepayer-supported investments?

SDG&E Response:

SDG&E plans on using multiple vendors to implement the VGI system with the expectation that innovation will be encouraged in certain areas (such as authentication methods, for example). SDG&E's VGI prototype system provides drivers 3 different ways to authenticate to the system and begin a charging session.

During the site selection evaluation and prioritization effort described in Randy Schimka's testimony on page RS-7, facilities will be screened for potential usage and EV driver access. Ultimately, the use of the VGI facility, including user prioritization, will be the responsibility of the site host.

VGI pricing will be used to manage on-peak charging on event days, which is a form of grid prioritization. While some drivers may charge on-peak on event days, SDG&E expects that many drivers will arrange for charging during lower price hours and avoid charging during higher price hours.

¹⁴ For an explanation of these terms see:

http://www.arb.ca.gov/msprog/zevprog/infrastructure/071514presentations/07_crisostomo.pdf

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

11. Is the education and outreach program broadly targeting PEV buyers to encourage PEV adoption, or is it aimed at encouraging installation of infrastructure at sites? How will these different marketing targets be prioritized?

SDG&E Response:

SDG&E conducts education and outreach efforts with all customers, some of which are potential PEV buyers, and would also conduct these same efforts with potential VGI site hosts, targeting workplace and MuD sites. As part of SDG&E's general education and outreach efforts, such as community events or the annual Electric Vehicle Day, SDG&E talks about the benefits of PEV adoption. As part of the "Workplace Charging Challenge" with the DOE and the "Drive the Dream" workplace charging challenge with Governor Brown, SDG&E agreed to be leaders in the workplace charging space. Therefore, a portion of SDG&E's education and outreach efforts is dedicated to acting as a resource to those businesses that have questions about their charging options. SDG&E believes it must conduct education and outreach to both the broad potential buyers' market and to potential site hosts for the VGI program to be successful; it does not view one segment as having a priority.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

12. How will sites be prioritized if demand exceeds funding?

SDG&E Response:

As outlined in Randy Schimka's testimony on page RS-7, there are several factors that will be used to evaluate and prioritize interested sites. That same evaluation and prioritization process will be used if demand exceeds funding:

- Date of indicated interest (first-in-line priority);
- Current and expected volume of EV drivers;
- Number of VGI installations desired;
- Type of VGI installation (workplace, MuD);
- Nearby transformer available capacity;
- Distance between transformer and new service point;
- Site conditions related to construction feasibility (i.e., trenching surface, EV Supply Equipment (EVSE) mounting surface, condition of facility);
- Land and property ownership;
- If leasing, term and conditions of lease; and
- Existing /available Americans with Disabilities Act (ADA) accessible parking.

**ED DATA REQUEST
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A.14-04-014
SDG&E RESPONSE
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DATE RESPONDED: MARCH 11, 2015**

13. How will SDG&E's proposal enable innovation related to EVSE hardware and other charging technologies? What metrics will be used to evaluate the value of different types of technology? How will the competitive solicitation protocol be established? Will bidders be able to unbundle bids by separating elements in equipment hardware (meters, EVSE, interfaces), from software (user experience, charge controls)?

SDG&E Response:

SDG&E expects its RFP process will attract third parties and enable innovation related to EVSE hardware and related charging technology and systems. The RFP process will include various criteria that will be used to evaluate proposals, including the type of equipment that the vendor is proposing along with the features offered by the equipment. The competitive solicitation protocol will be established by SDG&E's Supply Management group. SDG&E expects that various bidders will partner together to offer complete VGI solutions that will include hardware, network services, and software.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

14. How will this program enable a faster rollout than NRG's program under the 2012 Settlement, which also provides free infrastructure to workplaces and apartments, yet has encountered barriers in installation?

SDG&E Response:

NRG's REV program in San Diego does NOT include "free infrastructure" for workplaces and apartments. The host site is expected to share 50% of the installation costs, and the EV driver must sign up for a monthly subscription plan that includes dedicated parking to have an EVSE installed after the infrastructure is in place. SDG&E is not proposing this model for the VGI pilot project.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

15. In designing its proposal, how did SDG&E determine which activities that it had greatest competitive advantage in and which were most appropriate for third parties and customers?

SDG&E Response:

SDG&E did not perform a competitive advantage analysis by activity as described in this question.

**ED DATA REQUEST
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SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

16. If a site is overdue for an upgrade upstream of the separate PEV service drop due to prior load growth– how will the costs for these sites be assessed? What if a site has a simultaneous increase in PEV load and non-PEV load that triggers an upgrade – how will the costs of infrastructure needed to support non-EV load be attributed and allocated?

SDG&E Response:

SDG&E does not believe any situation will occur where the 12kV overhead or underground circuit will need to be upgraded before a new VGI service is installed with downstream charging equipment. The reason for this is that distribution circuits typically are capable of serving several megawatts of customer load and a VGI installation with a new electric service will only require on the order of 50-75 kW of capacity on that circuit.

Even if a situation should occur where a new VGI installation would overload a distribution circuit, distribution system infrastructure upgrades that are caused by increased customer loads are paid for by all ratepayers and are not the responsibility of one particular VGI site host (just like any other added load to a circuit).

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

17. How will the size of the new electrical panel be determined? What if a customer is willing to pay for a larger panel or more conduit or trenching than SDG&E identifies to accommodate future growth in PEV adoption? How will these costs be treated?

SDG&E Response:

The size of the new service / electrical panel will be determined by the amount of connected VGI charging station load. SDG&E expects that in most cases this will be a 200 amp panel, but there could be some exceptions.

The issue with a customer wanting to expand their SDG&E-owned and ratepayer-funded VGI installation is that it could lead to future ownership and maintenance confusion. SDG&E believes that a better solution would be for the potential host site to request the number of VGI charging stations they can justify and would be willing to support up front.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

18. Will SDG&E require that a charging port have a dedicated parking spot for a PEV? Or a dedicated parking spot for one driver? What is the schema for site control and operations contemplated under the Program?

SDG&E Response:

SDG&E will be working with host sites to maximize usage of the proposed VGI charging stations and will encourage site hosts to develop policies and procedures for their EV drivers using the VGI stations. However, SDG&E does not control certain aspects of host site properties, such as parking regulations, use of dedicated EV parking, or driver behavior. It is expected that tools similar to those used by SDG&E (e.g., a phone app and/or website will notify drivers when their car is done charging) will be included in proposals from third parties to help facilitate host site parking management and VGI facility use.

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

19. Does SDG&E require that each site have a separate utility service drop? What if using the existing service drop is more cost effective? Why not use the submetering protocol contemplated in D.13-12-002?

SDG&E Response:

SDG&E requires that each VGI installation have a separate electric service, for several reasons. Many installations of EVSE that are attached to an existing panel are limited in size and scope because the panel is usually near capacity (physically and electrically).

SDG&E did not contemplate using the submetering protocol as part of the VGI project because it was not yet completed when SDG&E filed the VGI application in April 2014. However, SDG&E does intend to evaluate and consider the EV Submeter Pilot Phase 1 Data Reporting and Transfer requirements¹⁵ to transfer metered data from the third parties to SDG&E's billing system in the VGI pilot.

¹⁵ See SDG&E's EV Submeter Pilot Phase 1 - Submeter Meter Data Management Agent Submeter MDMA Registration Agreement, Attachment 2- EV Submeter Pilot Phase 1 Data Reporting and Transfer Requirements (07/2014). http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SF_183-2000.pdf

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

20. What if a selected site already has retained a preferred contractor to do all its construction work?

SDG&E Response:

SDG&E will be using an RFP process to choose third parties to construct VGI facilities. A defined set of criteria will be used to evaluate and choose these third party contractors to ensure they meet basic requirements (e.g., cost, quality, performance, safety training/certification, DBE qualifications, experience, and more, see page RS-19). SDG&E recommends that interested contractors work within the VGI RFP process to participate.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

21. How will SDG&E incentivize facilities to participate in this pilot?

SDG&E Response:

SDG&E believes that the VGI proposal is compelling on its own and will attract host sites to participate. SDG&E has not proposed offering any additional incentives to host sites to participate in the Pilot.

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

22. Can non-SDG&E customers use infrastructure in this proposed pilot? If not, why not and how does this comport with the requirements for accessibility and interoperability under SB 454?

SDG&E Response:

SDG&E's VGI charging stations will be installed at workplace and MuD locations, which are typically private sites (SB 454 is directed toward public facilities). Site hosts will give permission to EV drivers who can charge at these VGI sites, and SDG&E is assuming that this permission will mainly be granted only to employees of the workplace site and residents of the MuD sites. If visitors want to use the charging stations, the site owner or manager has the option of opening a VGI account and hosting the charging session for visitors.

SDG&E's VGI Pilot Program will not necessarily be legally bound by SB 454, since VGI infrastructure will be installed in workplace and MuD locations likely exempt from providing "publicly available parking space" as defined in SB 454, such as parking for employees, tenants, visitors, residents of a common interest development, or residents of an adjacent building.

SB 454 is applicable to "electric vehicle charging station" meaning one or more *publicly available parking spaces* served by electric vehicle service equipment.¹⁶ Furthermore, "Publicly available parking space" shall not include a parking space that is part of, or associated with, a private residence, a parking space that is reserved for the exclusive use of an individual driver or vehicle *or for a group of drivers or vehicles, such as employees, tenants, visitors, residents of a common interest development, or residents of an adjacent building*, or a parking space provided by a producer of electric vehicles as a service. Nothing in this article limits the ability of an owner or lessee of a publicly available parking space whose primary business is other than electric vehicle charging from restricting use of the parking space, such as limiting use to customers and visitors of the business.¹⁷

¹⁶ Health and Safety Code Section 44268(c). Emphasis added.

¹⁷ Health and Safety Code Section 44268(g). Emphasis added.

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

23. How does utility ownership of infrastructure impact the ability of drivers to provide the three VGI benefits listed on LK-13?

SDG&E Response:

The three VGI benefits listed on LK-13, “Reducing system ramping need by building loads during the lowest demand periods; providing load to absorb low cost energy supply; and avoiding local distribution impacts by minimizing load when local distribution system is near capacity”, are achieved by infrastructure that helps EV drivers understand and manage their EV charging in response to the VGI rate. The VGI rate incorporates CAISO, System, and Circuit pricing to help achieve these three grid integration benefits. SDG&E’s VGI Pilot infrastructure requirements are designed to implement the VGI rate. Without utility ownership, there is no guarantee the EV driver will see the VGI rate and the rate’s incentives to manage charging consistent with efficient grid operation.

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

24. Will customers be offered different types of pricing strategies and communication strategies to evaluate what is most effective at encouraging participation?

SDG&E Response:

SDG&E is proposing the new day-ahead, VGI hourly rate as part of the VGI pilot program, as outlined in Cynthia Fang's Chapter 3 testimony on page CF-4. While all customers will be offered the same VGI hourly rate, it changes hourly based on commodity prices and grid conditions at the system and circuit level.

SDG&E is not proposing to test the effectiveness of different pricing strategies on customer participation. SDG&E's proposal is for a single, hourly pricing strategy that would be offered to the customer group as a whole.

Customers will not be offered different types of communication strategies, just one that educates customers about the VGI rate.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

25. Will SDG&E work with one network charge service provider or will SDG&E contract with multiple providers? Will you use multiple vendors to provide the same types of services and equipment, or do you intended to use a single provider?

SDG&E Response:

SDG&E intends to contract with more than one qualified service provider. It is expected that these service providers will offer a variety of equipment and network solutions.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

26. What contractual requirements will SDG&E require of site hosts?

SDG&E Response:

SDG&E will require site hosts to sign an easement document that will allow the placement of utility equipment (the VGI facility) on their property for the VGI pilot.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

27. What physical characteristics of workplace parking lots make them most attractive for infrastructure installations? How will SDG&E identify sites that have these characteristics?

SDG&E Response:

The most attractive workplace parking lots will have a transformer with sufficient VGI capacity near the location where the charging stations are proposed to be installed, an existing ADA parking space that can be used, as well as soil or landscaping in front of the parking spaces that can be easily trenched for the necessary electrical conduit.

SDG&E will evaluate and prioritize sites that have these characteristics as outlined in Randy Schimka's testimony on page RS-7 after a site host expresses interest.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

28. Are there parking lot management rules related to authentication and physical access that would disqualify a workplace from participating in this pilot? Does SDG&E expect that sites will modify its parking management strategy to accommodate infrastructure deployment?

SDG&E Response:

SDG&E does not outline in its testimony any parking lot management rules that would disqualify a workplace from participating in VGI, since parking lots are managed by the owner or property manager. Each site host will be evaluated initially as outlined on page RS-7 to see if any issues would prevent participation.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

29. What research has SDG&E done on the needs and interests of parking lot operators? How has this research influenced the design of the program? In a workplace context, what parking lot management models are conducive to getting the most benefits out of charging infrastructure investments? In a multi-unit dwelling context, what parking lot management models are conducive to getting the most benefits out of charging infrastructure investments?

SDG&E Response:

As noted above, many of the parking (lot) decisions are made through site owners, property managers and related – “parking lots” is too narrow of a characterization. As such, there are usually a complexity of factors that play into decisions for the commitment for the installation of charging facilities, parking and facility use overall. Over the last three years, SDG&E has worked with various EV Service Providers and site hosts to install EV charging equipment (some of which include parking lot operators). This work and research led to the development of two landmark documents that depict the best thinking and best practices for MuDs and workplace parking. Please see citations on page RS-7, and noted here at <http://www.pevcollaborative.org/Policy-makers>.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

30. What experience does SDG&E have with offering customers elective or schedulable hour-by-hour charging prices? How did this experience inform this proposal?

SDG&E Response:

Experimental versions of this VGI rate were tested with SDG&E employees with VGI-related enabling charging equipment at SDG&E's Century Park campus prior to the VGI Pilot project application. These experiences helped refine the VGI Pilot project proposal. The VGI-like charging facilities were expanded at Century Park in 2015 as more employees purchased PEVs. For historic reference, SDG&E provided a commercial retail Hourly Pricing Option (HPO) as early as 2004.¹⁸

¹⁸ See California Demand Response Programs for 2004, Hourly Pricing Option (HPO) "Program is a daily-adjusted hourly rate structure that provides cost savings for customers who can shift energy usage to non-peak hours. Participants receive Day-Ahead notice of the hourly rates. (page 3)
http://www.energy.ca.gov/releases/2004_releases/2004-07-28_DEMANDRESPONSE.PDF

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

31. Will multiple customers be allowed to reserve time at a given charging station? How will SDG&E manage moving cars to accommodate the reservations of different individuals? Specifically, how will it manage parking to ensure that charging is available for drivers that are willing to pay for it? For example, if Driver A parks at a Level 2 station for 8 hours and elects to minimize costs by charging for the first and last two sets of hours (by avoiding the middle four peaking hours), but Driver B is willing to pay to access the charging station during the four peaking hours, how will SDG&E resolve this accessibility issue? How will it deal with non-EVs that park in these spots? How will it settle disputes between customers?

SDG&E Response:

- a. There is no provision for reservations in the VGI Pilot program. However, it will be up to host site owners or property managers to decide how their VGI facilities will be used.
- b. SDG&E is not planning to move cars to accommodate reservations of different individuals. Again, it will be up to host site owners or property managers to decide how their VGI facilities will be used.
- c. Parking issues will be managed by site hosts, with encouragement from SDG&E to maximize station availability and usage.
- d. SDG&E will install EV parking signage as part of the VGI pilot project. However, parking management will be done by site hosts.
- e. VGI site hosts will manage their parking and customer disputes related to access. SDG&E will provide customer service for billing and VGI facility maintenance.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

32. How are sites incentivized to participate? Is there any incentive beyond the free infrastructure upgrade?

SDG&E Response:

SDG&E believes that the VGI pilot program offering (VGI rate with enabling facility) is a sufficient incentive.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

33. Is the 10 charging stations per site (described on page RS-3) a maximum, minimum or average? What if for a particular site there are diminishing marginal costs of installing more than 10 stations? Why are small lots excluded? What are the challenges at small lots?

SDG&E Response:

- a. The 10 charging stations per site is an average that was used for cost estimating purposes.
- b. SDG&E believes that some sites will have less than 10 charging stations, and some will have more. Some large workplace or MuD sites may ask for more than 10 VGI charging stations, and those requests will be evaluated as outlined in testimony on page RS-7.
- c. Small parking lots are not optimum for a vehicle charging project like VGI because site hosts highly value their parking resources. SDG&E expects fewer “small site” hosts will volunteer to participate if they have to set aside several reserved EV parking spaces (which could turn out to be a sizable percentage of their total parking resources).

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

34. Page RS-3 says: *“Hourly pricing for each day will be made available on the VGI mobile and web application, on a day-ahead basis.”* Is the price based on the day-ahead market price or is the price made available a day in advance of the charging reservation?

SDG&E Response:

The VGI price is based on the day-ahead market price and is available to drivers the day before prices are in effect. The EV driver can then use those prices to make driving / charging decisions for the next day.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

35. What impact does SDG&E anticipate its technology solution will have on standards development for interoperability and vehicle communications? What technology risks has SDG&E identified related to its proposal? How will SDG&E avoid locking-in to a technology that later becomes obsolete?

SDG&E Response:

Technology risks are categorized as potential software and hardware update issues, and can be addressed in the proposals by third parties. Software/Firmware updates will be included in operation and maintenance requirements. Hardware changes, if required, can be coordinated with planned EVSE replacements¹⁹, and can be included in the proposals submitted by third parties.

¹⁹ See Chapter 2, VI.A Replacement Costs. "The charging equipment and cables will be replaced one time during the course of the VGI Pilot Program"

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

36. What efforts has SDG&E taken to measure the need for workplace charging? RS-5 and RS-6 describe survey work that describes SDG&E employees perceptions regarding the need for workplace charging – what efforts have been made to validate whether these perceptions are supported by objective, empirical analysis?

SDG&E Response:

SDG&E has conducted or participated in several efforts that have provided useful information about the need for workplace charging, as follows:

- SDG&E conducted public workshops from 2011-2013 that covered such topics as residential charging, workplace charging, and MuD charging, and interacted with PEV owners and potential PEV owners that were interested in charging;
- SDG&E has interacted and visited with customers at their workplaces and MuD locations who are interested in having charging stations installed to consult with them about electric service details;
- SDG&E has been an active participant in the California Plug-in Electric Vehicle Collaborative (PEVC), and helped to author many of their workplace and MuD charging materials²⁰;
- SDG&E has also been an active participant in the San Diego Electric Vehicle Infrastructure (REVI) working group, which produced the PEV Readiness Assessment report²¹;
- SDG&E is a member and participant of the new San Diego Regional Alternative Fuel Coordinating Council (REFUEL) group led by SANDAG in partnership with the San Diego Regional Clean Cities Coalition (SDRCCC);
- In March 2014, SDG&E conducted an additional internal employee survey that gathered useful information about upcoming potential employee electric vehicle purchases and workplace charging needs.

Throughout these various efforts described above, SDG&E has gathered information from customers and employees about their PEV charging needs. SDG&E has not validated the internal survey perceptions discussed on RS-5 and RS-6.

²⁰ <http://www.pevcollaborative.org/Policy-makers>

²¹ <https://energycenter.org/programs/pev-planning/san-diego>

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

37. Will SDG&E attempt to build infrastructure in locations that have no PEVs? If so, how will it identify locations that do not currently have electric vehicles but might buy electric vehicles if the infrastructure were provided?

SDG&E Response:

SDG&E intends to prioritize the installation of VGI installations with the information collected as shown in Randy Schimka's testimony on page RS-7. Locations that have no PEVs and/or not expected to have PEVs will not be as attractive as sites that have PEVs.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

38. How will Americans with Disabilities Act (ADA) requirements impact the design of charging installations?

SDG&E Response:

SDG&E believes ADA requirements will play a role in the design of VGI charging installations (per testimony on pages RS-12). The City of San Diego has put together a technical policy that outlines the requirements for EV charging station accessibility (link below).

- Specific dimensions are required for accessible EV charging stations (which may reduce parking space count to provide accessible parking);
- An accessible EV charging station is required (1 for each 25 stations);
- Specific accessible EV charging station signage is required;
- Disabled access to accessible EV charging equipment is required.

Link to City of San Diego Technical Policy 11B-1 (Accessibility to EV Charging Stations):
<http://www.sandiego.gov/development-services/pdf/industry/tpolicy11b1.pdf>

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

39. Page RS-8 says: “*SDG&E and stakeholders will also learn whether building to one grid-integrated charging specification will reduce technology risk and lower project costs.*” Does SDG&E assume that its program will drive charging communication standards development? What assumptions will the RFP make about how to communicate VGI messages, given that there are many ways to accomplish this? What different communication pathways does SDG&E intend to test?

SDG&E Response:

SDG&E intends for the VGI Pilot Program to inform charging communication standards development. The RFP will likely leverage existing standards (e.g., OCPP, OpenADR, SEP 2.0, GreenButton, and protocols used in the EV Submeter Pilot Phase 1 Data Reporting and Transfer Requirements). Communication pathways include business-to-business, business-to-driver, and business-to-EVSE.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

40. Pages RS-11 and RS-12 describe what SDG&E considers to be a good mix of Level 1 and Level 2 charging at a given location. What analysis was used to reach this conclusion? How does this mix differ based on the vehicle type, location type (workplace or residential) and other factors?

SDG&E Response:

SDG&E developed the estimate for the Level 1 and Level 2 station mix based on field experience gained over the last 3 years with various installations. SDG&E is committed to ensuring that the mix of Level 1 and 2 in the VGI facility configuration meets the needs of the host sites.

Based on expected driver needs, parking space turnover, and experience, SDG&E estimates that workplace site needs will probably lead to a higher mix of Level 2 charging, while MuD sites could lead to more Level 1 charging since residents will not be moving cars in the middle of the night.

The Level 1 / Level 2 charging mix can also be influenced by estimated installation costs related to existing infrastructure capacity.

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

41. Page RS-13 says that a new transformer will be needed in 25% of the sites. What is the basis for this assumption? Can the VGI features be used to minimize the upgrade costs? How will this be tested?

SDG&E Response:

- a. The basis for this estimate is witness Randy Schimka's field experience in working with the many EVSE projects in San Diego over the past 3 years. Mr. Schimka has been involved in the following projects:
- 8 ECotality (EV Project) DC Fast Charge sites at retail locations;
 - Approximately 100 ECotality (EV Project) Level 2 Commercial sites, including workplace, shopping center, retail, municipal, and university / college locations;
 - 17 NRG eVgo Freedom Station sites (with Level 2 and DC Fast) at retail locations;
 - 4 Nissan Dealer / NRG eVgo DC Fast Charge sites;
 - 3 Green Charge Network DC Fast charge sites with energy storage at 7-11 properties;
 - 5 NRG eVgo Ready for EV Level 2 sites at Multi-Unit Dwellings;
 - 30 City of San Diego / OPConnect Level 2 charging sites at parks and libraries;
 - 12 County of San Diego / ChargePoint Level 2 charging sites at county properties;
 - 4 Tesla Supercharging sites;
 - 2 EV Oasis DC Fast charge sites, including the forthcoming Encinitas DC Fast charging plaza;
 - Misc. other projects that were scoped but not constructed for various reasons.
- b. A transformer upgrade will be needed when VGI charging load to be added is greater than the capacity of the existing transformer. Unfortunately, the electric service has to be designed to accommodate this maximum load, not a reduced or minimized VGI load on event days.

ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015

42. Please provide a cost breakdown, grouping all costs into three categories: variable by the number of chargers, variable by number of sites, and non-variable costs.

SDG&E Response:

Please see attached spreadsheet. The fixed cost assumptions were scaled for the VGI pilot program as it was filed. Fixed cost assumptions could rise or fall if the VGI pilot changes in duration or size.



SDG&E VGI Capital
and O&M costs.xlsx

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

43. Is the Total Rate Adjustment Component (TRAC) cost recovered in the proposed PEV rate? Why or why not?

SDG&E Response:

No, TRAC is not recovered in the proposed PEV rate. As noted in the Testimony of Cynthia Fang (pp. CF-2, footnote 12), TRAC is applicable to residential customers, and is not addressed here.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

44. Do the proposed rates recover the installation and equipment costs? How are these costs recovered?

SDG&E Response:

As noted in the Testimony of Cynthia Fang (pp CF-20, lines 3-5), “SDG&E proposes to recover the costs of implementing the VGI Pilot Program, which consists of costs for such things as charger equipment, transformers, services and meters as addressed in the testimony of Mr. Atun, through distribution rates, consistent with the recovery of similar costs.” These costs would then be recovered from all customers.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

45. Why is the C&I rate used as a basis for the new PEV rate?

SDG&E Response:

As noted in the Testimony of Cynthia Fang (pp CF-7, lines 3-5), “The use of class average energy rates is intended to provide an hourly price structure while limiting the scope of study related to SDG&E’s proposed VGI Pilot Rate in its initial implementation.” The Medium/Large C&I rate class average rate was selected over that of the other customer classes due to the fact that the demand for these charging facilities is expected to exceed 20 kW which is consistent with SDG&E’s rates for M/L C&I customers (demand greater than 20 kW).

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

46. What throughput per station (kWh/charging station) does SDG&E assume for its cost-benefits analysis in Chapter 6? How many vehicles does SDG&E assume would be charged per station per day?

SDG&E Response:

The total daily throughput of any individual charging station varies by EV charging location, price available at a location, and EV Market scenario. The average annual throughput per VGI facility charger in the SDG&E VGI Rate scenario is 2.474 MWh (2018-2028). The Pilot Charger Utilization is one EV per charger per day.

Explanation for update:

The average annual throughput per VGI facility charger in the SDG&E VGI Rate scenario of 2.109 MWh was incorrectly based on a subset of vehicles. The corrected average annual throughput of 2.474 MWh represents all the usage at a VGI facility charger.

**ED DATA REQUEST
ED-SDG&E-DR-01
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 24, 2015
DATE RESPONDED: MARCH 11, 2015**

47. Page JCM-17 lists the assumed marginal PEV adoption due to this proposal. How are these estimates calculated?

SDG&E Response:

The EV Additions are incremental EVs purchased in recognition that a workplace and MuD charging project of the size proposed in SDG&E's application will result in additional EV adoption by drivers.²² These additions are an SDG&E provided assumption. These EV additions are included in both Market Scenarios (SDG&E VGI Price scenario and Non-utility Flat Fee scenario) for Cost-Effectiveness tests illustrative results in Chapter 6 Section IV. Please note that EV adoption due to the presence of workplace and MuD charging is a hypothesis to be tested by SDG&E's VGI Pilot Program.²³ Current and expected volume of EV drivers is part of SDG&E's site selection criteria to evaluate and prioritize VGI Pilot Program siting.²⁴ SDG&E's Research Plan intends to replace hypothesized assumptions used in the illustrative cost effectiveness results with observed results in order to more rigorously evaluate the cost-effectiveness of SDG&E's VGI Pilot Program.²⁵

²² See Chapter 6 page JCM-16.

²³ See Chapter 6, page JCM-16, footnote 11.

²⁴ See Chapter 6, RS-7, line 9.

²⁵ See Chapter 6, pages JCM-35 to JCM-37