TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

1. SDG&E's Testimony, page LK-14, discusses the company's request to the Commission to use funds it receives from revenue generated by the sale of cap-and- trade allowances consistent with the P.U.C Code Sect. 748.5(c). Please identify the amount of the funding requested and to what use (i.e., capital or O&M) the company can direct it.

SDG&E Response:

Answer to 1:

A level of funding was not requested in this testimony – only that the Commission determine if the VGI Pilot Program or parts of it would be eligible for such funding. On page LK-14, lines 7 to 9, SDG&E requests that the CPUC determine that this project (i.e., the VGI pilot program) is eligible to receive funding from the revenues generated by the sale of cap-and-trade allowances consistent with the P.U. Code 748.5c (emphasis added). Lines 9 to 16 go on to clarify that per D.12-12-033, Conclusion of Law 46 and 7, that in order to receive such a designation the Commission must make this determination.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

2. SDG&E's Testimony, page RS-2, lines 1-7, lists the timeline and scale of the VGI Pilot Program. Will SDG&E install 10 charging stations at every site installation?
    a. Would SDG&E ever install less than 10 charging stations at a site installation? If not, please explain SDG&E's rationale for requiring that 10 charging stations be installed at every site installation.
    b. Please provide any documents SDG&E reviewed when determining the appropriate number of charging stations to install at each site.
    c. Please provide copies of any reviews, studies, workpapers, business cases that SDG&E produced internally or requested contractors to produce.

SDG&E Response:

Answer to 2a:

The volume of EVSE per VGI facility must be sufficiently sized to achieve some scale economies. The costs identified in Randy Schimka's testimony are used to estimate overall Pilot Program costs. To that end, each VGI charging facility is expected to average about 10 EVSE per facility, and it is possible to have more than one VGI facility per location, depending on the needs at that location. Each VGI facility installation will be designed to meet the vehicle charging needs of the drivers at each location as determined by the host site owner, property manager or decision-making entity. There may be some sites where less than 10 charging station would be installed, however, those sites would tend to cost more than the budgeted amount per charging station.

Answer to 2b:

In order to determine the appropriate number of charging stations per VGI facility, SDG&E relied on the field experience of engineer Randy Schimka to strike a balance between charging station availability and usage, minimizing average charging site costs, while providing enough charging resources for drivers that minimizes congestion.

Answer to 2c:

Assuming this question is still speaking about materials used to determine the number of charging stations per VGI facility, there are no such materials. SDG&E relied on the field experience of Randy Schimka and his work with EVSPs and commercial host customers, since 2011 to gather all the relevant knowledge necessary to realize that 10 charging stations per VGI facility would work well from a financial and operational efficiency perspective.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

3. SDG&E's Testimony, page RS-11, lines 14-16 states "VGI sites will require a new transformer, and up to 25% of the new electric services will require an upgraded transformer, while the remaining 50% of the new electric services will connect to an existing transformer."
    a. Please clarify what this sentence means. Does it mean that 25% of VGI sites that SDG&E chooses would require a new transformer, up to 25% would require an upgraded transformer, and the remaining 50% would connect to an existing transformer? Please provide the alternative explanation if this interpretation is incorrect.
    b. Does the phrase "up to 25% of the new electric services will require an upgraded transformer" mean that SDG&E would cap the number of VGI sites that require an upgraded transformer to 25% of the total number of sites? Please provide the alternative explanation if this interpretation is incorrect.
    c. Would SDG&E also cap the number of VGI sites that require a new transformer? If so would it be capped at 25% of the total number of sites?
    d. If SDG&E would cap the number of VGI sites requiring an upgraded transformer and/or a new transformer, please explain how SDG&E will administer the allowances.
    e. Will SDG&E prioritize potential VGI sites that would not require upgraded and/or new transformers over those that would? If so, please provide a detailed explanation of the prioritization scheme. If not, why not?
    f. Why is SDG&E proposing to install VGI-related electric services at locations that require new or upgraded transformers? Please provide a detailed explanation of why SDG&E cannot limit the installations for its pilot program to locations that do not require new or upgraded transformers.
    g. What is the statistical justification for the requirement that SDG&E installs VGI-related electric services at locations that require new or upgraded transformers? Please provide all studies and/or analysis related to this topic.

SDG&E Response:

Overall, the assumptions applicable to estimating the costs of the program are based on the actual working experience of Randy Schimka with charging facility installations and their costs available at the time of the filing. As described in Mr. JC Martin's testimony, all assumptions will be replaced with actual cost data – and important deliverable of the pilot program. Furthermore, this also underscores the importance of using a balancing account approach to increase the visibility of the actual costs as they are realized through SDG&E's competitive bidding process.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

Response to Question 3a (Continued)

Answer to 3a:

The quoted text in the question is not the complete sentence in the testimony. From the testimony on page RS-11, line 12-13 states that each VGI installation will be fed from a new electric service that is separately metered. The percentages quoted in lines 13-16 are estimates about transformer requirements for each VGI installation. Due to Randy Schimka's extensive field work with EVSPs who have installed EVSE previously, SDG&E believes that up to 25% of the VGI installations will require a new transformer, up to 25% of the installations will require an upgraded transformer, and the remaining 50% will connect to an existing transformer. These estimates were used to construct the cost estimates for the new electric services in the VGI application.

Answer to 3b:

No, this does not mean that SDG&E would cap the number of VGI sites that require an upgraded transformer to 25% of the total number of sites. These percentages are estimates that have been observed in actual EVSE construction projects over the past 3 plus years.

Answer to 3c:

No, SDG&E has not inserted language in the testimony that caps the number of VGI sites requiring a new transformer. Should the CPUC approve SDG&E's VGI Pilot, and specify a "not to exceed" level of funding, the project will be managed to meet that funding level.

Answer to 3d:

For the purposes of project flexibility, SDG&E does not advocate the use of hard cap numbers for transformer upgrades. Overall VGI project costs will be managed to CPUC funding guidelines, and this will, in turn, drive the management of locational choices.

Answer to 3e:

As outlined in Testimony on page RS-7 on line 5, SDG&E envisions interested parties expressing interest in a VGI installation, with certain information being gathered about the site and the level of current and projected EV adoption. This information will then be used to prioritize the installation among all interested parties. SDG&E will use its discretion for certain sites where the high installation cost estimates may be prohibitive.

Response to Question 3 (Continued)

Answer to 3f:

SDG&E's objective is to achieve and equitable deployment of VGI facilities and charging opportunities throughout its service area. If SDG&E limited VGI project installations to only those sites that do not require new transformers or upgrades, this will not be achieved.

Answer to 3g:

VGI installations will all require new electric services. If this was not done, it would be difficult to split out VGI usage from site host accounts and then bill drivers accordingly. Randy Schimka's work on many of the EVSE installations in the region over the past 3 years, led to the assessment that the power availability on existing customer site electric panels is usually limited to a small number of EVSE that can be added. This situation does not provide a scalable EVSE installation plan for the future, and it would make progress more difficult to achieve the Governor's goals.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

4. SDG&E's Testimony, page RS-15, lines 15-19 states "The charging equipment and cables will be replaced one time during the course of the VGI Pilot Program. Due to expected improvements in EVSE design and longevity, SDG&E expects these replacement units to last 10 years through the end of the VGI Project. The O&M funds for these replacements will be added to the project budget at a 20% annual level over a 5-year time period."
    a. How many years does SDG&E expect will make up "the course of the [proposed] VGI Pilot Program" in the context of the sentence spanning lines 15-16.
    b. Please confirm that SDG&E estimates that it will require two generations of charging equipment and cables to complete the proposed VGI Pilot program.
    c. Please explain why the charging equipment and cables would need to be replaced during the course of the proposed VGI Pilot program.
    d. In which year of the proposed Pilot Program would the charging equipment and cables be replaced?
    e. Why does SDG&E assume that the replacements units would "last 10 years"? Has SDG&E done any research regarding the expected life of charging equipment? If so, please provide any materials SDG&E relied on in making this determination.
    f. On page RS-15, line 22, SDG&E's witness states the replacement cost for access control equipment as $14,700. This amount differs significantly from the installation costs for access control equipment, $47,700, listed on page RS-14, line 13. Please explain this discrepancy.
    g. Please divide all identified capital costs between original and replacement equipment and installation costs in each year of the proposed VGI Pilot program.

SDG&E Response:

Answer for 4a:

Jonathan Atun's Testimony, on pages JBA-1 through 5, discusses the entire length of the VGI Project. As filed, the VGI Project will run from 2015 through 2037.

Answer for 4b:

Yes, SDG&E has estimated that the VGI Project will require two generations of charging equipment and cables as part of the O&M maintenance efforts. This estimate was a proxy for actual maintenance costs, and was used due to a lack of actual field maintenance data. Furthermore, this process also underscores the importance of using a balancing account approach to increase the visibility of actual costs realized through SDG&E's competitive bidding process over time

Response to Question 4 (Continued)

Answer for 4c:

As stated above, actual maintenance data isn't available from public charging stations. Knowing that some equipment malfunctions are bound to occur, and that some cables will fail due to their use, SDG&E added proxy estimated replacement costs to simulate expected O&M costs as the equipment needs service.

Answer for 4d:

For purposes of estimating maintenance costs, SDG&E inserted EVSE and cord replacement funding in year 5 of the VGI Project. So a system installed in year 1 had a budgeted replacement in year 6. A system installed in year 3 had a budgeted replacement in year 8, and so on.

Answer for 4e:

The 10 year lifespan used by SDG&E is an estimate that was based on current equipment quality and technology and extrapolating it into the future with expected increases in quality and longevity over time as the available EVSE products mature. This is only an estimate and will be solidified through the proposed RFP process for maintenance services.

Answer for 4f:

Installation costs of $47,700 for access control equipment include labor and materials that are not part of the budgeted maintenance replacement estimate. For example, when originally installing the access control equipment, trenching to each of the 10 EVSE in a VGI installation must be done. However, during the equipment replacement for maintenance purposes, work such as the trenching and wiring is not repeated.

Answer for 4g:

Original capital costs by year are included in table JBA-1 in Jonathan Atun's testimony. All of the estimated replacement equipment costs are O&M, and not Capital.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

Response to Question 4g (Continued)

The O&M annual costs for the replacement equipment for the years 2020-2037 are as follows:

2020: $ 243,744
2021: $ 905,333
2022: $2,228,512
2023: $3,899,896
2024: $4,596,306
2025: $4,352,563
2026: $3,690,973
2027: $2,367,794
2028: $ 696,410
After 2028: $0

Total: $22,981,530 (matches table in Appendix A in Jonathan Atun's testimony on page A1).

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

5. SDG&E's Testimony, page RS-16, lines 8-15, discusses customer engagement costs, subsections (b) and (c) respectively list contract labor annually for the first 4 years of the project and annually for years 3 and 4 of the project for the same activities and for the same amount. Please explain why years 3 and 4 would require duplicative contract labor in addition to the contract labor hired for the first four years for the same activities listed in subsection (b).

SDG&E Response:

Answer for 5:

Within the entire Customer Engagement aspects of the pilot program, there will be a blend of up-front education and outreach collateral and related communications related program support costs, as well as the more labor intensive day to day costs of working directly with VGI customers. Regarding the latter, these costs recognize all aspects of the implementation of this Pilot Program requiring a combination of utility labor (from the SDG&E organizations identified in lines 9 to 15 on page RS 16), and labor from 3rd parties to engage and work with customer host site prospects, from outreach and education, through to host site contract signing, as well as any follow up work necessary during and after construction of a VGI facility.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

6. SDG&E's Testimony, page RS-5, lines 19-21 states, "The VGI [prototype] charging facility has been well received by employees and has helped to refine this VGI Pilot Program proposal." Please provide copies of all documents and/or analysis that contain a showing of how SDG&E used the VGI prototype charging facility to "refine this VGI Pilot Program proposal."

SDG&E Response:

Answer for 6:

SDG&E gathered data from employees before and during the implementation of its VGI demonstration facility at its Century Park campus. Input from individual employees, survey data, tracking of VGI facility kW and kWh usage data (e.g., comparing usage of low price days and high cost days), and email and discussion based feedback from employees regarding the VGI pricing app, the active use of the SDG&E employee Alternative Fuel Vehicle club for feedback and to refine all aspects of the VGI facility and pricing for refinement (e.g., a valid constructive improvement-based comment, even from one employee was given serious consideration). Timeline – first initiated in 2013 to test a static TOU rate, and then transitioned to the day ahead hourly rate for testing in 2014.

Data example from two days of SDG&E campus VGI charging (one day with higher pricing due to power system events and one day with regular pricing):

8/27/14 – Event price day - 80 cents/kWh from 0900 to 1600; 18 cents/kWh before and after
9/3/14 – Regular price day - 17 to 19 cents/Kwh from 0700 to 1900

8/28/14 – Event price day - 36 kWh consumed over 12 sessions; 9 sessions before pricing went up, 2 sessions during event pricing times, and 1 session after prices returned to normal
9/3/14 – Regular price day – 51 kWh consumed over 15 sessions, 7 sessions before 8am, balance of 8 sessions spread evenly throughout the day

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

7. Regarding the PEV Pricing and Technology study, approved by the CPUC June 2010, Advice Letter 2157-E:
    a. Please provide a narrative description of the way in which SDG&E used the PEV Pricing and Technology study to inform and/or refine its VGI Pilot Program proposal.
    b. Please provide copies of all documents and/or analysis that contain a showing of how SDG&E used the PEV Pricing and Technology study to inform and/or refine its VGI Pilot Program proposal.

SDG&E Response:

Answer for 7.a:

Overall, SDG&E's PEV Pricing and Technology Study (Study)[1] demonstrated that, "simple enabling technology of charging timers make it easy and convenient to charge overnight so that a strong tendency for overnight charging is induced by a small rate differential".[2] The study also shed light on how persistent the charging behavior was over time, due to the longitudinal nature of the data collection (2011 through 2013).[3]

The Study also revealed the existence of a learning effect over time due to the TOU rates. "To formally test for the presence of a learning effect, a regression model with random effects was estimated…"[4] "The results show significant average learning effect for customers on the EPEV-L and EPEV-M rates for both on-peak and super off-peak charging, but weaker learning effects for those on the EPEV-H rate."[5] This is reflected in SDG&E's testimony on Price Awareness:

> "As was learned in SDG&E's PEV Rate and Technology Experiment, creating price awareness requires at least two components: knowledge of the unit price (in this case, the hourly electricity pricing), and total cost reflected in the monthly bill or *over some relevant period of time." [emphasis added]*[6]

The VGI Pilot is an informative study of customer preferences which "…builds off the results of the Study, the results of which indicate that pricing and enabling technology play a strong role in influencing charging time decisions."[7] A key finding of the Study is that, "Participant EV

[1] Nexant, Inc. Final Evaluation for San Diego Gas & Electric's Plug-in Electric Vehicle TOU Pricing and Technology Study. SDG&E.COM/EV. N.p., 20 Feb. 2014. Web. 01 Jan. 2015. <https://www.sdge.com/sites/default/files/documents/1681437983/SDGE%20EV%20%20Pricing%20&%20Tech%20Study.pdf?nid=10666>
[2] Nexant, Inc. Study pages 5.
[3] Nexant, Inc. Study pages 22 to 27.
[4] Nexant, Inc. Study page 20.
[5] Nexant, Inc. Study page 27.
[6] Chapter 2, page RS-20.
[7] Chapter 1, page LK-11 & LK-12. Supplemental Testimony, page A-1

Response to Question 7a (Continued)

charging behavior responds to price signals" (Study page 4). However, "The [*Study's price*] elasticities are defined as applying to EV charging during the [*three*] TOU time periods. However, customer decision - making probably takes place at a more granular level of time."[8]

SDG&E's understanding of these Study results for home EV charging under TOU rates are used as the foundational context for SDG&E's VGI Pilot Application for workplace and MuD charging under the proposed VGI rate.

Answer for 7.b

The PEV Pricing and Technology study is referenced in several locations in SDG&E's testimony:

- Chapter 1, page LK-11 & LK-12 and Supplemental Testimony, page A-1
- Chapter 2, page RS-20.

[8] Nexant, Inc. Study page 32 (italics added for context). Supplemental Testimony, page A-2.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

8. SDG&E's Testimony, page RS-7, lines 5-18 lists the criteria that SDG&E would use to evaluate and prioritize interested sites for VGI installation. Please explain the order in which the criteria would be utilized in order to prioritize interested sites.
    a. Please quantify each of the qualitative criteria listed. E.g., although your response should not be limited by this example, if there are ranges of distances between transformer and new service points that are ranked as more desirable than other ranges, what are the ranges and why. Please provide rationale for all quantifications you provide. If quantifications are not available, please provide a detailed explanation regarding why the utility believes that such is not necessary.
    b. Please identify and explain in detail the rationale for any weighting SDG&E will apply to the listed criteria.
    c. Line 9 lists "current and expected volume of EV drivers" as one of the criteria that would be used. Please explain how SDG&E would gauge the expected volume of EV drivers? What type of research would be done? Would the site owner need to provide any documentation to prove the current number or EV drivers or to support the expected volume of EV drivers?

SDG&E Response:

The criteria listed in SDG&E's testimony, page RS-7, lines 5-18 will be used to evaluate and prioritize interested sites for VGI installation. The order isn't as important for prioritization as the overall information gathered for each candidate site. Certain sites may drop off if cost estimates come in much higher than target funding.

Answer for 8a:

- Date of indicated interest (first-in-line priority) – queuing information; VGI sites will be considered and built on a first come, first served basis
- Current and expected volume of EV drivers – will provide information about the number of VGI facilities desired by the host at the site, and also about the level of commitment that the host site is prepared to make with respect to dedicated EV parking resources
- Number of VGI installations desired – provides information about size of installation and number of electrical services and other infrastructure required
- Type of VGI installation (workplace, MuD) – site categorization; desire is to have roughly equal representation
- Nearby transformer available capacity – provides information about type of site and rough potential cost (new transformer, upgraded transformer, or existing transformer)
- Distance between transformer and new service point - provides information that can be used in cost estimate calculations

Response to Question 8a (Continued)

- Site conditions related to construction feasibility (i.e., trenching surface, EV Supply Equipment (EVSE) mounting surface, condition of facility) - provides information that can be used in cost estimate calculations
- Land and property ownership – provides information about easement characteristics required
- If leasing, term and conditions of lease – provides general information about site and VGI feasibility
- Existing /available Americans with Disabilities Act (ADA) accessible parking – provides information that can be used in cost estimate calculations

Answer for 8b:

The information collected above will be used to establish a cost estimate for VGI installation at the site. Per CPUC funding requirements, the overall VGI site portfolio will be managed to those requirements.

Answer for 8c:

SDG&E will gauge the expected volume of EV drivers by engaging in an informal dialogue with the potential site hosts. Given the fact that parking places are at a premium in many sites, and host site managers are reluctant to give up parking exclusively for EV drivers unless there is a real need, SDG&E feels that host site managers will accurately represent their current and expected EV driver volume.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

9. SDG&E's Testimony, page RS-9, lines 3-4, states: "SDG&E will develop source selection criteria before the RFP is released to the marketplace." Please explain the process SDG&E would use to develop source selection criteria. Would the criteria be available for Commission and third-party review prior to their implementation? If not please elaborate as much as possible regarding what the source selection criteria would entail.

SDG&E Response:

Answer to 9:

The RFP source selection criteria categories for the VGI project is outlined in Randy Schimka's testimony on page RS 9. The criteria will be determined by the SDG&E VGI project team, and this has not been completed yet. Per SDG&E's Supply Management group, in most cases the source selection criteria and weighting are not shared with the marketplace prior to the RFP.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

10. SDG&E's Testimony, page RS-12, lines 2-4 states, "The ultimate blend of Level 1 and Level 2 EVSE will be customized to meet specific host site needs, in light of SDG&E's managed EV charging load opportunities and available electrical capacity."
    a. Please explain in detail how SDG&E plans to consider its "managed EV charging load opportunities" when planning for the number of Level 1 and Level 2 EVSE. Please provide any analysis that supports the response to this request and identify any criteria that SDG&E will use for the balancing of customers' stated preferences and any SDG&E charging load opportunities.
    b. Please explain in detail how SDG&E plans to consider its "available electrical capacity" when planning for the number of Level 1 and Level 2 EVSE. Please provide any analysis that supports the response to this request and identify any criteria that SDG&E will use for the balancing of customers' stated preferences and any SDG&E capacity limitations.

SDG&E Response:

Answer to 10a:

As stated above and in Randy Schimka's testimony, the blend of Level 1 and 2 EVSE will be determined based on the host customer and EV driver's charging needs. For example, a MuD host may have an abundance of EV drivers with lower battery capacity plug-in hybrids where Level 1 EVSE may be more than sufficient to meet charging needs. While a workplace site, due to parking availability and a high percentage of all-electric EVs may prefer a blend with more Level 2 EVSE of Level 1. For all installations, transformer capacity serving that site will also be taken into account in an effort to optimize the utilization of existing utility resources, and the blend of Level 1 and 2 EVSE provides that flexibility.

Answer to 10b:

As noted above, the available electrical capacity at a site is a contributing factor to the overall cost to provide VGI equipment at that site. A mix of Level 1 and Level 2 charging at a site helps optimize system utilization and manage costs, while serving the EV charging needs of EV drivers at a site.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

11. SDG&E Testimony, p. JBA-3, lines 3-8 states "No escalation factors were applied to third-party vendor costs associated with ongoing O&M because SDG&E intends to enter into fixed price contractual agreements with these vendors. SDG&E also assumes no change to the pricing of Electric Vehicle Supply Equipment component costs. This assumption is supported by current and historical charging station prices provided by Clipper Creek, Inc."
    a. Please explain why SDG&E assumes no change to the pricing of EVSE component costs over time. Please include any information provided by Clipper Creek, Inc.
    b. Why has SDG&E used only one source of cost estimates and why did the company choose Clipper Creek, Inc. as that sole source?

SDG&E Response:

Answer to 11a:

Based on experience with much of the EVSE equipment installed in SDG&E's service area since 2011 and pricing trends observed in the marketplace, SDG&E believes that EVSE pricing will remain stable over time, while equipment innovations are also expected. For example, Clipper Creek, Inc. provided historical pricing for several models of EVSE charging equipment offered for sale between years 2011 and 2014. Prices during this period were either trending downward slightly or remained constant. Based on this information, SDG&E assumed no changes in the pricing of EVSE charging equipment cost over time for the VGI project.

Answer to 11b:

Clipper Creek, Inc. is a leading manufacturer of EVSE charging equipment and has been in business since the previous generation of electric vehicles in the 1990's. Clipper Creek, Inc. is an established supplier of EVSE charging equipment, with over 18 years of EV charging expertise.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

12. SDG&E Supplemental Testimony, page ST-6, lines 7-9 states, "Many recognize that the deployment of electric vehicle charging equipment is falling well behind the pace necessary to meet the Governor's goal [from Governor's Executive Order (B-16-2012) of deploying the infrastructure necessary to support up to 1 million electric vehicles by 2020]."
    a. Please provide references for the contention that "many recognize that the deployment of electric vehicle charging equipment is falling well behind the pace necessary to meet the Governor's goal… ."
    b. Please provide the exact reference to the cited goal of "up to 1 million electric vehicles by 2020." TURN is unable to find such language in the executive order.

SDG&E Response:
Answer to 12a:

In the supplemental testimony, please see page ST-41, footnote 73, and the supportive language found on pages ST-40 to ST-42, chapter 3, Section I. Figure 1 on these pages was provided to provide a visual illustration of straight line trajectories of what the various ratios of EV to EVSE would look like.

Answer to 12b:

"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…"[9] Since this executive order is directed toward zero emission vehicles (ZEV) and plug-in electric vehicles are the dominant ZEV production vehicle in California today, and growing.

Please note that B-16-2012 also orders that "Electric vehicle charging will be integrated into the electricity grid." SDG&E made reference to this goal in testimony to focus on plug-in electric vehicles. This goal is also reiterated in the ZEV Action Plan published by the Governor's Office in February 2013 where specific action items were assigned to state agencies.[10] The CPUC was assigned one relevant action item found in the third paragraph on page 13 directing the Commission to "pilot infrastructure system that avoid or minimize demand impacts on the grid from PEV charging…". SDG&E's Vehicle-Grid Integration filing is responsive to this specific action item.

[9] Executive Order B-16-2012 (3-23-2012), **http://gov.ca.gov/news.php?id=17472**
[10] 2013 ZEV Action Plan, http://opr.ca.gov/docs/Governor%27s_Office_ZEV_Action_Plan_%2802-13%29.pdf

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

13. SDG&E Supplemental Testimony, page ST-44, lines 11-23 lists the following as issues with using an existing power panel to power EVSE:
    1) "Existing panels are usually close to being fully subscribed; therefore many otherwise excellent locations for installing charging stations are discarded due to power not being readily available in the existing panel.
    2) Even if power is available in the existing panel, in many cases only a small number of EVSE can be fed (which limits future expansion)."
        a. Please explain the basis of these statements. Also, please provide any studies, reports or other information SDG&E relied on in order to reach these conclusions.

SDG&E Response:

Answer to 13a.

These statements are the observations from SDG&E witness Randy Schimka based on his field experience since 2011 in working with and assisting electric vehicle service providers install EVSE in the region

Of the approximately 200 sites in San Diego that have EVSE installed, Randy Schimka has worked with approximately 100 of the sites and provided utility infrastructure information and other guidance. These sites include local universities, community colleges, workplace locations, city-owned public parks, county properties, park and ride locations, shopping centers, restaurants, strip malls, and a small number of MuD sites.

The balance of the remaining 100 EVSE locations ultimately connected to customer panels and didn't need or request utility involvement.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

14. SDG&E Supplemental Testimony, page ST-46, lines 11-23 "for the pilot to achieve robust results, the number of VGI facilities considered in the VGI Pilot needs to be sufficiently large enough to ensure a reasonably strong statistical representation of SDG&E circuits in the pilot. Although no two circuits are alike, there are some relevant parameters that help to characterize the population of circuits. The relevant parameters include; type of distribution circuit (e.g., Residential, Commercial, or mixed), solar penetration on the circuit, load factor of the circuit, and peak demand hours of the circuit. These circuit characteristics are expected to impact the calculation of the VGI Rate's hourly prices (specifically the VGI D-CPP Hourly Adder), across more than 1,000 distribution circuits within SDG&E's service territory."
    a. Please provide any studies, reports or other information SDG&E relied on in making these determinations. Please include, but do not limit your response to, the statistical analysis that SDG&E relied upon.
    b. Who undertook the statistical analysis and what are their qualifications?

SDG&E Response:

Answer to 14a:

SDG&E relied on internal personnel in its Electric System Planning group and Electric Distribution Engineering group to identify the relevant parameters that help to characterize the population of distribution circuits. The statistical analysis relied upon is contained in Supplemental Testimony, Appendix A.

Answer to 14b:

The statistical analysis in Supplemental Testimony Appendix A was undertaken by JC Martin in collaboration with SDG&E's Electric Load Analysis group. JC Martin's qualifications are provided in Chapter 6 testimony at JCM-38. SDG&E's Electric Load Analysis personnel's qualifications and background cover a broad range of disciplines (e.g., econometrics, statistics, and sampling design) necessary for conducting electric load research studies to meet the needs of SDG&E.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

15. Are customers required to have a SDG&E account to use the charging stations installed as part of the VGI Pilot Program?

SDG&E Response:

Answer to 15:

Yes – the EV driver. There may be special cases where the host site requires host sponsored EV charging, the host will need to be an SDG&E customer as well.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

16. How will the charging stations installed at MuDs be administered? Will all tenants be permitted to charge their EVs at the charging stations? Or will specific charging stations be "assigned" to specific resident(s)? If so, how many residents will share a designated charging station and how will their charging be coordinated?

SDG&E Response:

Answer to 16:

The parking configuration, location, parking usage requirements, and other host-specific needs will be determined by the decision-maker at each host site. MuDs especially are a diversity of complex housing and facility configurations, each with unique property management characteristics, and SDG&E will remain flexible in addressing their needs.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

17. Please provide a copy of all workpapers supporting and related to SDG&E's testimony. Please provide both PDF and native Excel with working cells versions.

SDG&E Response:

Answer to 17:

SDG&E has posted a link giving access to discovery responses at:
http://www.sdge.com/regulatory-filing/10676/sdge-electric-vehicle-grid-integration-pilot-program

Please review this site to determine whether further detail is needed.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

18. Please provide all data requests and responses submitted to date by other parties.

SDG&E Response:

Answer to 18:

Please see response to question 17.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

19. When does SDG&E expect it will have actionable data to help inform further development of VGI?

SDG&E Response:

Answer for 19:

Data will be available on a per VGI facility basis. However, data suitable for the evaluation of the Pilot Program from a large number of VGI facilities (for statistical representation at the circuit level), and over a time frame of one year per VGI facility (to evaluate persistence) is necessary.

Please see Chapter 6 testimony, "Data collection will begin the first year of the pilot (2015), load impact analysis and reporting will begin after two years of implementation (2017), and a cost-effectiveness analysis 18 months after the final VGI facility is installed (2019)." (page JCM-35)

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

20. How has SDG&E collaborated with Southern California Edison (SCE) to devise a pilot that will not duplicate the work that SCE proposes in A.14-10-014? Please provide a detailed explanation.

SDG&E Response:

Answer for 20:

SDG&E's VGI Pilot Program and SCE's proposal (A.14-10-014) are not duplicative and have unique differences that meet the needs of their respective service areas. SDG&E's proposal is focused on demonstrating the value of grid-integrated charging to all ratepayers, and includes a pilot day-ahead rate that reflects the changing costs of energy, and system and circuit level grid conditions each day.

Since SDG&E's proposal was filed in April 2014, and SCE's proposal was filed in late October 2014, SCE did not collaborate with SDG&E in preparing their filing. However, during discussion about the VGI Pilot Program filing after it was filed, during workshops, discovery, and other forums, all parties had the benefit of exploring details about SDG&E's application. From SDG&E's assessment, SCE's proposal is not duplicative with SDG&E's proposal. Summary of key differences are: EVSE ownership and maintenance responsibilities, the introduction of an innovative day-ahead rate designed to minimize electric vehicle charging impacts to SDG&E's system and local distribution capacity, and an objective to demonstrate benefits to all ratepayers.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

21. Please provide all studies showing that the promotion of EVs is the most cost-effective way to achieve the goals and objectives in the ZEV Action Plan.

SDG&E Response:

Answer for 21:

EVs deployed in the market today are currently growing each year in the number of makes and models, number of auto manufacturers, as well as adoption rates, while other forms of ZEVs (such as hydrogen fuel cell vehicles) are not. Hence the focus of this the VGI Pilot Program proposal is on EVs. The approach proposed will demonstrate the cost-effectiveness of grid-integrated charging.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

22. Regarding the National Renewable Energy Laboratory (NREL):
    a. Please provide copies of documents, memoranda, presentations, meeting or telephone notes and other memoranda, emails with information related to NREL, or its partners, programs and research that SDG&E has brought to bear in the development of its VGI Pilot program. If SDG&E cannot cite any specific information from NREL programs and research that it has brought to bear in the development of its program, please identify and explain each reason it has not done so.
    b. Please provide a narrative description of the way(s) in which SDG&E used NREL-produced research and material in the design of its program, if applicable.

SDG&E Response:

Answer for 22a:

SDG&E did not bring to bear any NREL program or research in the development of its VGI Pilot program. NREL's web page (www.nrel.gov/transportation/) indicates that their research supports U.S. Department of Energy (DOE) offices and services including the DOE's Alternative Fuels Data Center. SDG&E use the DOE's Alternative Fuels Data Center service as a general education and outreach tool for Customers interested in EV transportation.

SDG&E's Supplemental Testimony, Chapter 2, by Barry Pulliam, served after developing SDG&E's VGI Pilot program, cites an NREL publication "California Statewide Plug-In Electric Vehicle Infrastructure Assessment" available on the California Energy Commission's web site.[11] This NREL publication is one of the citations used to bound the assumption of one non-single family residential EVSE installation for every five PEVs, to illustrate that SDG&E's proposal is limited in scope.[12]

Answer to question 22.b.

SDG&E did not use NREL produced research and materials in the design of its program. The NREL publication described in the answer to question 22.a was published in May 2014. SDG&E filed its VGI Pilot Program application in April 2014.

[11] California Statewide Plug-In Electric Vehicle Infrastructure Assessment. California Energy Commission. Publication Number: CEC-600-2014-003. Retrieved from: http://www.energy.ca.gov/2014publications/CEC-600-2014-003/CEC-600-2014-003.pdf

[12] See Supplemental Testimony page ST-30.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

23. Is SDG&E aware of any other organization that has tested or is or plans to test improved system efficiency by encouraging customers through price signals to charge vehicles when market prices are low, thereby avoiding charging times of system demand peaks? If so, please identify the organization and provide a brief description of the nature of its work on this or related topics.

SDG&E Response:

Answer for 23:

Other than SDG&E's own work in this area (as referenced in question 26 below, and discussed in question and answer 7 above), SDG&E is not aware of any other industry studies or pilot programs that are using hourly pricing.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

24. Is SDG&E aware of any other organization that has tested or is or plans to test and/or develop data concerning technology that efficiently integrates EV charging with the grid and/or explores EV energy storage capabilities. If so, please identify the organization and provide a brief description of the nature of its work on this or related topics.

SDG&E Response:

Answer for 24:

SDG&E is not aware of any plans or tests underway at this time.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

25. Is SDG&E aware of any other organization that has tested or is or plans to test customer response to grid-integrated EV charging? If so, please identify the organization and provide a brief description of the nature of its work on this or related topics.

SDG&E Response:

Answer for 25:

Other than the work of this nature that SDG&E is testing with its employees and workplace grid-integrated charging, SDG&E is not aware of any such plans to test customer response to grid-integrated EV charging.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

26. To SDG&E's knowledge, are there any other organizations that have used or are using or plan to use the data SDG&E produced in SDG&E's PEV Pricing and Technology study as a starting point for investigations of their own? If so, please identify the organization, identify the name of the investigation, and provide a brief description of the nature of the investigation.

SDG&E Response:

Answer for 26:

SDG&E is not aware of any organization that has applied the findings of the PEV Pricing and Technology Study, published in April 2014. SDG&E has responded to a number of inquiries and given a number of presentations in order to share the results of this study.

TURN DATA REQUEST
TURN-SDG&E-DR-04
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: JANUARY 28, 2015
DATE RESPONDED: FEBRUARY 11, 2015

27. Will SDG&E attempt to address any questions about the appropriateness and/or desirability of Level 1 vs. Level 2 vs. fast charging in its proposed pilot?
    a. If so, what are the specific questions SDG&E would address and how does it propose to address them? If not, why not?
    b. Would SDG&E consider the impact of residential charging availability/unavailability for potential EV drivers on the workplace results? Why or why not? Please provide a detailed explanation.

SDG&E Response:

Answer for 27.a:

Yes, it is SDG&E's expectation that the volume and blend of Level 1 and Level 2 EVSE installed in each VGI facility will be aligned with the needs of each site host and the EV drivers of that site. SDG&E is not proposing to include DC fast charging equipment in its VGI Pilot Program[13] since SDG&E does not view the "trip continuation" sites as viable vehicle-grid integration locations (i.e., locations that feature frequently used, long duration parking).

Answer to 27.b:

Yes. Please see Chapter 6, Section V "Research Plan – Data Collection and Analysis". The Research Plan's data collection and analysis includes "Where available, EV related kWh usage at home will be reviewed with VGI kWh usage at workplace VGI facilities…" (JCM-36). Home charging and workplace charging are integral, and where both conditions exist, the impacts will be identified.

[13] Please see Supplemental testimony Chapter III, Section H "Trip-Continuation Locations" for a discussion on DC fast charging (Page ST-50).