

ORA DATA REQUEST
ORA-SDG&E-DR-03
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: May 29, 2014
DATE RESPONDED: JUNE 12, 2014

1. Please provide the workpapers and any supporting documents that SDG&E relied upon to select the number of (5,500) charging stations for the proposed VGI pilot program.

SDG&E Response:

There are no workpapers or supporting documents that SDG&E relied upon to select the number of charging stations for the proposed VGI Pilot Program. The following describes how SDG&E selected the number of charging stations for its proposed VGI program.

The VGI rate proposed in the VGI Pilot Program offers hourly pricing based on a day-ahead projection reflecting the changing costs of energy throughout the day, as well as overall system and circuit conditions. SDG&E has about 1,100 distribution circuits in its system, and is proposing to install approximately half of that number of VGI facilities at host sites spread across those circuits. 550 VGI facilities of 10 charging stations each at host sites may not provide a statistically valid sample of all the circuits, because some circuits may have more than one VGI facility installation and other circuits may not have any. But it is expected that this volume of VGI sites (550) installed across system circuits will allow SDG&E to gather enough data from enough circuits to create a sufficient representation of circuit-specific performance, as well as customer charging behavior by circuit. In addition, the VGI proposal will create cost transparency for the installation of grid-integrated charging facilities. Targeting 550 VGI sites will allow sufficient economies of scale to develop a realistic understanding of these costs. Developing these costs through a robust pilot will help further inform the CPUC and other interested parties.

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2. Please provide the E3 model runs/studies as well as any other studies conducted to support SDG&E's cost-effectiveness conclusions included in the Chapter 6 testimony of Mr. J.C. Martin.

SDG&E Response:

Links to the relevant workpapers, assumptions, and E3 modeling, as found in the Chapter 6 testimony of Mr. J.C. Martin are found below, and includes the link for access to the modified Distributed Energy Resources Avoided Cost NEM Model created by E3 and used to estimate the dynamic rates from the REFLEX day-type pricing analysis.

Model of Cost Effectiveness Results Spreadsheet
<https://e3.sharefile.com/d/scb98351af6a4008a>

Modified NEM Model for VGI dynamic prices (19 MB)
<https://e3.sharefile.com/d/s3261b337bdf469ba>

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3. Please provide any sensitivity model runs considering different scale pilot programs than the 5,500 charging stations selected for the proposed VGI pilot program. If different number of chargers were not considered, please explain why not.

SDG&E Response:

SDG&E did not perform any sensitivity modeling regarding the number of charging facilities. The documentation provided in the response to Question 2 above shows that the number of charging facilities was held constant. For an explanation of why this approach was taken, please see the answer to Question 1 above.

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4. Please confirm if the following figures stated on page JCM-22, of chapter 6, was used in the cost-effectiveness model runs, and whether it is correct or not:

“The BEV credit is \$7,500, the PHEV-10 credit is \$2,500, the PHEV-20 credit is \$1,500 and the PHEV-10 credit is \$1,500. This credit is reduced over time for future EV purchases.”

SDG&E Response:

Only one of the figures stated on page JCM-22 (lines 3-5) of chapter 6 were used in the cost-effectiveness model runs: \$7,500 per EV. This was applicable to about 70% of the EV types modeled. About 30% of the EV types modeled were PHEV-20 and PHEV-10, and should have the corresponding reduced federal tax credit values (corresponding to EV battery capacities). If these federal tax credit values were applied to the PHEV-20 and PHEV-10 vehicles, then the difference between the VGI Rate and Flat Rate scenarios are unchanged, as this modification affects both scenarios equally. It is estimated that the net benefits for the TRC and SCT tests for each scenario individually are reduced roughly 25% and 15% respectively, and are still cost-effective with a positive TRC ratio of ~1.17, and a SCT ratio of ~1.35.

The first sentence cited (page JCM-22, lines 3-5) contain typos (denoted in quotes) and should read as follows:

The BEV credit is \$7,500, the PHEV-"40" credit is "\$7,500", the PHEV-20 credit is "4,000" and the PHEV-10 credit is "\$2,500".

These federal tax credit values are correct as stated here. Please see the IRS Link for more information on the federal tax credits by vehicle make and model, updated 2/13/2014, [http://www.irs.gov/Businesses/Plug-In-Electric-Vehicle-Credit-\(IRC-30-and-IRC-30D\)](http://www.irs.gov/Businesses/Plug-In-Electric-Vehicle-Credit-(IRC-30-and-IRC-30D)). Federal tax incentives correspond to EV battery capacities, which correspond to the makes and models E3 has characterized in the modeling of BEV, PHEV-40, PHEV-20 and PHEV-10 vehicles, current available in today's EV market.

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5. On page JCM-38, of chapter 6, SDG&E stated the following:

“The illustrative results indicate that the SDG&E service territory EV market with the VGI Pilot Program is beneficial to SDG&E ratepayers, EV customers, and the SDG&E service¹⁹ territory region in general”

Please explain why the “illustrative results” would lead SDG&E to conclude that the proposed VGI pilot program is cost-effective without actual assumptions input in the model.

SDG&E Response:

There are a wide range of plausible assumptions regarding electric vehicle adoption, costs and performance. Assumptions used in estimating the illustrative results are summarized in Chapter 6. Key drivers of cost-effectiveness and ratepayer impacts include vehicle adoption, vehicle and charger technology costs, charger utilization, electric vehicle miles traveled, driving patterns and charging patterns.

To help the Commission evaluate the effectiveness of SDG&E’s proposal and other VGI solutions, SDG&E’s application introduced a cost-effectiveness methodology for Commission consideration in this and related proceedings. Therefore, since VGI performance data do not yet exist, SDG&E, in working with E3, created assumptions to demonstrate the cost-effectiveness model proposed, as well as the cost-effectiveness of the VGI Pilot Program proposal as filed. These assumptions hypothesize the performance of the VGI Pilot, and under these assumptions the VGI Pilot Program is demonstrated to be cost-effective, using the modeling methodology proposed. Over the course of the pilot SDG&E proposes to replace these assumptions with actual customer performance and cost data which will be applied using the proposed cost-effectiveness model. This follows the common practice applied to the proposal and evaluation process used with energy program cost-effectiveness modeling (e.g., as with energy efficiency programs).

The finding that increasing electric vehicle adoption and associated charging load provides net ratepayer benefits is robust across all scenarios studied and with the range of input assumptions described. For the specific pilot program proposed, the magnitude of ratepayer benefits is most sensitive to the cost of the charger installation and charger utilization. If the proposals from third parties in response to the VGI Pilot Program RFP are competitive, SDG&E is hopeful that total charger and installation costs can be at or below SDG&E’s estimates.