ATTACHMENT 1

SDG&E Response to Energy Division Data Request ED-DR-01

Energy Division DATA REQUEST
ED-SDG&E-DR-01
SDG&E SB 350 TRANSPORTATION ELECTRIFICATION PROPOSALS (A.17-01-020)
SDG&E RESPONSE
DATE RECEIVED: March 27, 2017
DATE RESPONDED: April 10, 2017

Data Request to San Diego Gas & Electric Company Regarding its Proposals Filed in A.17-01-020

From: Amy Mesrobian
CPUC Energy Division
amy.mesrobian@cpuc.ca.gov
(415) 703-3175

Carrie Sisto
CPUC Energy Division
Carolyn.sisto@cpuc.ca.gov
(415) 703-2872

SDG&E should provide answers to the following questions and data to support the answers where applicable. These questions relate to SDG&E's overall proposal and to the "priority review" proposals. In light of the Prehearing Conference held on March 16, 2017, the Administrative Law Judge may instruct Applicants to formally file their Data Responses.

Overall Application

1. For SDG&E's Chart 1-2 (p. MMS-17), what are the sources of data for SDG&E's "emissions goals" and "forecasted emissions under current controls?"

   SDG&E Response:

   The 2020, 2030, and 2050 emissions goals shown in Chart 1-2 represent the SDG&E service territory's allocation of 1990 statewide GHG emission levels calculated by CARB. Tab 1 of the attached file "ED-DR-01-Q1" shows how the emission goals were calculated.

   The "forecasted emissions under current controls" scenario is estimated based on CARB's Vision model baseline scenario. On-road data was collected from the Passenger and Heavy Duty Vision 2.1 modules while off-road data was estimated from the statewide data provided in the Vision 2.0 off-road module. Regional off-road emissions were estimated by applying the San Diego Air Basin allocation factor from the CARB OFFROAD model to the statewide emissions levels found in the Vision Off-road module. Tab 2 of the attached file "ED-DR-01-Q1" contains a flow chart that illustrates how this scenario was calculated.

2. Provide workpapers in Excel format showing the cost assumptions SDG&E used to develop the proposed program budgets. This should include details about capital costs and expenses for each proposed program.

   SDG&E Response:

   See attached cost estimate spreadsheet provided in "ED-DR-01-Q2."

3. Provide the model, including associated spreadsheets with formulas, used to calculate the CO_2, NO_x and VOC emissions reductions associated with SDG&E's proposed programs, as identified in Chapter 8 of SDG&E's testimony.

   SDG&E Response:

   The E3 PEV Grid Impacts Model used to calculate the CO2, NOx, and VOC emissions is E3's proprietary model. SDG&E does not have access to E3's proprietary models, however E3 has provided the "Fleet Delivery Emissions Impact Estimation" spreadsheet (See Spreadsheet "ER-DR-01-Q3.xlsx") to demonstrate the assumptions and calculations used to estimate the emission impacts. This spreadsheet presents the emission reduction calculations for the Fleet Delivery priority review project. These estimates correspond to the values in Table 8-1A and Table 8-1B in Chapter 8 of SDG&E's testimony.

   While preparing for this data response, E3 discovered a coding error which led to an underestimate of the VOC emission reductions reported in Chapter 8's Tables 8-1A and 8-1B. Updated VOC values for Tables 8-1A and 8-1B are provided below.

Table 8-1A

Air Quality Improvements - Impact Estimates
Life Time Impacts (VOC Update 4/3/2017)

SB 350 Projects	GGE[1] Avoided CO2 (MT)	Electricity Fuel CO2 (MT)	Net Emission Reductions CO2[2] (MT)	NOx (MT)	VOC (MT)
Priority Review Projects:					
Airport GSE					79.79
Electrify Local Highways					0.54
Dealership Incentives [3]					
Fleet Delivery					1.80
MD/HD and Forklift					9.06
Green Taxi/Shuttle/Rideshare					2.92
Total Priority Review Projects					94.11
Residential Charging Program:					
Program Case					579.60
Reference Case					176.32
Net Residential Program Impacts					403.28
Grand Total					497.38

No change to CO2 and NOx Emission Reductions from January 20, 2017 Prepared Testimony of J.C. Martin (Chapter 8)

[1] Gallons of Gasoline Equivalent (GGE).
[2] Net Reductions is GGE Avoided minus Electric Fuel.
[3] Dealership Incentives impacts are not listed due to likely overlap with other projects and program.

Table 8-1B

Air Quality Improvements - Impact Estimates
2025 Annual Impacts (VOC Update 4/3/2017)

SB 350 Projects	GGE[1] Avoided CO2 (MT)	Electricity Fuel CO2 (MT)	Net Emission Reductions CO2[2] (MT)	NOx (MT)	VOC (MT)
Priority Review Projects:					
Airport GSE					3.73
Electrify Local Highways					0.03
Dealership Incentives [3]					
Fleet Delivery					0.11
MD/HD and Forklift					0.50
Green Taxi/Shuttle/Rideshare					0.17
Total Priority Review Projects					4.55
Residential Charging Program:					
Program Case					53.01
Reference Case					16.29
Net Residential Program Impacts					36.72
Grand Total					41.26

No change to CO2 and NOx Emission Reductions from January 20, 2017 Prepared Testimony of J.C. Martin (Chapter 8)

[1] Gallons of Gasoline Equivalent (GGE).
[2] Net Reductions is GGE Avoided minus Electric Fuel.
[3] Dealership Incentives impacts are not listed due to likely overlap with other projects and program.

4. In Figures 8-8, and 8-9, SDG&E shows the impacts of unmanaged and managed charging on load. Further clarify SDG&E's assumptions (footnote 26) regarding EV load and availability of renewables under the managed and unmanaged scenarios.

SDG&E Response:

Figures 8-8 and 8-9 illustrate managed and unmanaged electric vehicle load scenarios for the residential charging program. The illustrations assume that EVs are available for residential charging when they are parked at home (generally before and after work commutes between 5pm to 5am). The impact of renewable resources, especially solar, on the net load shape in SDG&E's service are shown in Figures 8-6 and 8-7, with peak net load shifting from afternoon to the evening hours.

5. Are the emissions factors included in the modeling SDG&E-specific? If not, why not?

SDG&E Response:

Two sets of emission factors are used in the emission impact estimates, one set for avoided vehicle fuel emissions and another set for incremental electricity emissions. The avoided vehicle emission factors are not SDG&E-specific since they are from ICA Analysis and EMFAC 2014 sources. The incremental electricity emissions are not SDG&E-specific since they are estimated per mmBTU and combined with hourly 40% RPS Marginal Heat Rate (BTU/kWh) estimated by E3's REFLEX model in order to reflect a future renewable resource portfolio and to be more consistent with cost-effectiveness methods and assumptions used in other CPUC proceedings.

6. Please detail assumptions on cost-effectiveness analyses and provide accompanying spreadsheets including:
    a. Infrastructure analysis lifetime, projected utilization rate of the charging equipment, vehicle mileage by vehicle age, and load factor impacts.
    b. Any utility specific cost characteristics for electricity generation.

SDG&E Response:

a) Infrastructure lifetime assumptions are included in Chapters 3 & 4; utilization rate of charging equipment is included in the attached workpapers "E3 SB350 TE GIR Inputs(Final).xlsx" in worksheet "Vehicle Information" - see vehicles per charger in column "G"; load factor impacts are not calculated.
b) No SDG&E utility specific cost characteristics for electric generation are used.

7. What research or literature review did SDG&E complete prior to developing its portfolio of proposals? Include details of studies and results from previous pilot projects that were considered.

SDG&E Response:

To inform portfolio designs, SDG&E relied on its knowledge in administering programs and providing a positive customer experience, as well as, professional experience interacting with customers considering EV purchases, employees charging their EVs with dynamic rates, and EV customers charging at home on TOU rates. In addition, SDG&E had several discussions with potential partners about the proposed project ideas to help align their needs with the final project proposals.

Also, SDG&E has proven through a multi-year Plug-In EV Pricing and Technology Study that customers can be incentivized to charge their EVs during off-peak hours (12 – 5 a.m.), and daytime hours when there are abundant renewables on the grid. SDG&E is in the process of implementing Power Your Drive, a CPUC-approved pilot, which will send drivers an hourly, dynamic day ahead price signal that reflects circuit and system conditions. This rate is designed to encourage off peak charging and charging when renewables are plentiful on the grid. This not only maximizes GHG and air emission reductions, it gives control to the consumer, enabling them to reduce their own fuel costs.

8. Does SDG&E propose that its rates should go through the priority review process? If so, why?

SDG&E Response:

Yes, SDG&E is proposing Grid Integrated Rates (GIR) for 3 of the 6 priority review projects. The Fleet Delivery Services pilot uses the Commercial GIR, the Green Taxi/Rideshare/Shuttle pilot and Electrify Local Highways pilot use the Public GIR. These rate proposals incorporate the grid-integrated price signal which is fundamental to the success of these pilots.

9. How will SDG&E implement any priority review projects that are approved before the corresponding rates?

SDG&E Response:

As stated above, the rates are incorporated into 3 of the 6 priority review projects. The priority review projects contain the GIR and enabling technology. Similar to Power Your Drive (which leverages the VGI rate), the rate cannot be bifurcated from the pilot itself.

10. What alternatives to full utility ownership of the infrastructure and electric vehicle supply equipment did SDG&E consider?

SDG&E Response:

As outlined in Mr. Schneider's Chapter 1 testimony on page MMS-15, "SDG&E proposes to leverage the experience of the competitive marketplace to procure equipment, services, and skills from industry providers. This promotes innovation, efficiency and

market growth while ensuring critical customer and ratepayer protections under the Commission's oversight."

As outlined in Ms. Brown's Chapter 2 testimony on page LB-13, "SDG&E's ownership of assets ensures that they are well-maintained, used and useful."

As outlined in Mr. Schimka's Chapter 4 testimony on page RS-17, "SDG&E is proposing to own, install, maintain and operate the EVSEs in 90,000 SDG&E residences. By partnering with third-party electric vehicle service providers (EVSPs) and IBEW-affiliated installation contractors, SDG&E's residential charging program will help expand the ZEV market and opportunities for further private sector participation in the market." Further, on page RS-19, Mr. Schimka states "SDG&E wants to make sure that L2 EVSE's are reliable, used, and useful for their expected life."

In order to capture all of these benefits, SDG&E is proposing full utility ownership (or end-to-end utility ownership) of the infrastructure and EVSE. SDG&E only contemplated end-to-end utility ownership for its proposals in an effort meaningfully accelerate transportation electrification. SDG&E's success should lead to further private sector market participation, opportunity and growth.

11. SDG&E describes Electric Vehicle Infrastructure Training Program certification (p. MMS-16). Please provide more information about this certification, including which organization develops or certifies the program and how it contributes to safety.

SDG&E Response:

According to an EVITP press release[1], "EVITP is a not-for-profit, volunteer EV industry collaborative, designed to deliver a structured platform to facilitate training and certification for the installation of Electric Vehicle Supply Equipment (EVSE) across the residential, commercial, and public markets."

See the EVITP website[2] for program details, including the training course overview, and more information about the non-profit organization that develops and certifies the program.

[1] http://www.necanet.org/contractor-resources/hot-topics/topic/article-view/press-releases/2011/04/20/electric-vehicle-infrastructure-training-program-(evitp)-holds-master-train-the-trainer-event

[2] http://evitp.org

As described on their website, "The Electric Vehicle market continues to expand in North America and it is critical that EVSE equipment be properly installed to the highest standards to safety and quality. The EVITP program was designed to provide installers with the most comprehensive classroom and hands-on training available in the market today. All EVITP Certified Installers must pass a certification exam for proof of knowledge and skill. The EVITP Training Program has rigorous training standards and is taught by instructors who have well documented qualifications and considerable experience in their areas of expertise. High entry standards and a demanding exam ensure strong classroom performance and consistent training results. EVITP courses are available to electricians in compliance with the mandatory requirements of each state/municipal jurisdiction in the United States and Canada. Core training is supplemented with local requirements where applicable. Upon completing written and hands-on lab testing, participants passing the course will receive Certification through EVITP."

Fleet Delivery Services Program

1. In SDG&E's Fleet Delivery Services proposal, it is proposing to own all of the charging equipment. Will there be a participation payment? If so, how will it be calculated?

   SDG&E Response:

   SDG&E is not proposing a participation fee for this pilot. As discussed in the Leveraged Funding section beginning on RS-53 of Mr. Schimka's Chapter 3 testimony, electric vehicles in this market segment are more expensive than internal combustion engine equivalents. Participating customers will be required to procure and operate the electric vehicle as part of this pilot. Yes, SDG&E is proposing end-to-end ownership of utility infrastructure and charging equipment.

2. How long will SDG&E own and maintain the charging equipment associated with the Fleet Delivery Services program?

   SDG&E Response:

   Contracts with site hosts for the Fleet Delivery Services program are expected to be for a period of 10 years. SDG&E would be responsible for maintaining all components of the assets involved in the project per the FERC lifespans of the assets.

3. What class of vehicles are the UPS trucks associated with the Fleet Delivery Services proposal? Do they use standard L2 electric vehicle service equipment (EVSE)? Would the other project partners use standard, commercially available technology?

   SDG&E Response:

   SDG&E has not mandated a specific vehicle class for this pilot. Different fleet delivery service operators utilize different sized vehicles.

   SDG&E anticipates that UPS will utilize standard L2 EVSE for most of their charging needs. In addition, the installations at UPS will also have one DC Fast Charging station included at each of the three locations. This will provide a faster charging alternative for UPS when needed, and of course, their vehicles must be capable of charging at those higher speeds.

   At the other customer sites, standard commercially available L2 charging technology is anticipated. SDG&E will coordinate with customers to ensure the appropriate charging infrastructure is installed to support their electric delivery vehicles.

4. What information does the data logger involved in the Fleet Delivery Services project collect? Is it different than what could be collected by the EVSE? How will SDG&E use this information?

   SDG&E Response:

   The data logger in the Fleet Delivery Services project is installed on the vehicle, and it gathers performance data about the vehicle while on the road (miles driven, speed, energy consumed, etc.). It is different than the type of data that would normally be collected by an EVSE (that has metering capabilities). That type of EVSE would collect data related to frequency, duration, and consumption of charging. All of this information is important, so that SDG&E can study the vehicles, their charging behavior, their driving behavior, and their overall performance. This will be documented in a report at the end of the project.

San Diego International Airport (SDIA) Ground Support Equipment (GSE) Program

1. SDG&E states that it has worked with SDIA to review ground support equipment GSE growth and energy usage. What are the lessons learned? Please provide any relevant data associated with this review to support any conclusions or recommendations SDG&E has developed.

SDG&E Response:

Over the past ten years, the electric proportion of the SDIA Ground Support Equipment (GSE) fleet has grown approximately 1.8% annually. Transportation Electrification leaders such as Southwest Airlines represent the majority of eGSE ownership at SDIA, and prefer ratios of one charger per two vehicles. Some of the chargers have data logging capabilities, though they are limited in value due to a complicated mechanism of retrieving that data on a regular basis. Because of this primitive logging capability, SDG&E's initial recommendation is to install load research meters on all existing and future eGSE chargers to reliably capture the frequency, duration and consumption of eGSE charging so that a charging plan with recommendations can be created.

2. Why hasn't SDIA installed any charging ports since 2013?

SDG&E Response:

SDG&E does not know why there have not been any chargers installed on the air operations side of SDIA since 2013.

3. It appears that electric vehicles were purchased in 2006 through 2014. What is the reason additional vehicles have not been purchased since 2014?

SDG&E Response:

SDG&E does not know details about electric vehicle purchases at SDIA since 2014 because SDIA has not completed a GSE survey since 2014.

4. Does SDG&E intend to wait until funding is secured for new electric GSE before developing new charging equipment? Have GSE operators shown interest in and ability to procure electric GSE to participate in the project? Please provide estimated numbers of GSE necessary prior to SDG&E making initial investments.

SDG&E Response:

SDG&E will only install chargers once commitment from SDIA tenants is confirmed. SDIA tenants have expressed an interest in furthering their eGSE installations and are

planning on procuring eGSE equipment to participate in the project. SDG&E recommends installation of an eGSE charger for each 2-3 new vehicles that SDIA tenants commit to.

5. Will ownership of EVSE and associated infrastructure at SDIA require an easement for SDG&E? Is this feasible for SDIA? Are there any logistical concerns with SDG&E requiring access to a secure airport site?

   SDG&E Response:

   SDG&E and SDIA have discussed SDG&E's ownership of charging infrastructure at SDIA. SDG&E and SDIA are prepared to make appropriate property use and access arrangements upon CPUC approval of this project.

6. How will the load of electric GSE be managed and optimized with SDIA's on-site solar generation?

   SDG&E Response:

   The purpose of this priority review project is to expand the eGSE fleet and collect data on current and future eGSE, and then develop recommendations and methodology for load management at SDIA. Until the eGSE data is gathered and studied, SDG&E doesn't know exactly what the recommendations will be to manage and optimize the charging with the on-site solar generation.

7. What rate will the GSE at SDIA be on? Is SDIA a single SDG&E customer or is each GSE operator/vendor at the airport a separate customer?

   SDG&E Response:

   GSE charging will remain on the same rate schedule as the airport or the airport tenant. In most instances, this means that the GSE will charge on the rate schedule that SDIA is on. In other instances, this means that the GSE will charge on the rate schedule that the airport tenant is on. This varies by lease arrangement. One of the outcomes of the Airport GSE project will be to study and integrate GSE charging in order to incentivize charging during times that utilize the airport's onsite solar or during times of excess capacity on the grid. This information will be examined to determine if a new rate is appropriate for this market segment.

8. SDG&E proposes to install load research meters, EVSE, and data loggers for its SDIA infrastructure project. What is the function of the load research meter and data loggers that cannot be accomplished with the submeter in the EVSE?

   SDG&E Response:

   The EVSE for the SDIA project are for lead-acid batteries and are called "industrial chargers." They typically do not come from the manufacturer with built-in utility grade submeters. Many of the chargers for eGSE and forklifts, such as those currently at SDIA, do not have metering of any sort. Of the small number of chargers that have metering, the process to gather data from them is cumbersome and ineffective (and must be done frequently to avoid losing data). For that reason, the airport has not gathered any data from these chargers prior to January 2015, and has only gathered data once since that time. Hence the need for load research meters in the project.

   SDG&E also recommends that data loggers be installed on the vehicles to gather vehicle performance data as discussed above.

9. Will the participating customer pay any participation payment?

   SDG&E Response:

   SDG&E is not proposing a participation fee with this project.

10. Has SDG&E engaged any union or organized labor groups in pilot development?

    SDG&E Response:

    SDG&E met with union management to discuss the projects in SDGE's SB 350 application in general terms after the projects were developed, but before they were filed. Just before the projects were filed with the CPUC, the IBEW provided SDG&E with a letter of support for the projects (as submitted in Appendix A of SDG&E's SB 350 application).

~~Port of Long Beach~~ Port of San Diego Electrification Program

1. In its Port Electrification proposal, SDG&E states that EVSEs for electric forklifts and other electric port equipment are not developed to allow the equipment to respond to price signals. What automation technology needs to be developed and how does the pilot address this?

   SDG&E Response:

   Automation technology for medium and heavy duty vehicle charging that would manage load based on price signal or other inputs does not currently exist and would need to be developed. The reason it does not exist is because MD/HD charging is not yet standardized, and these advanced features haven't been needed in the past or asked for by customers.

   The technology that would need to be developed would take an input signal, such as an hourly price, and use that input to cause specific behavior by the charging equipment.

   SDG&E's MD/HD pilot is about gathering and studying data from the load research meters (charging behavior), and from the data loggers installed on the vehicles (vehicle performance).

   As more is understood about how the vehicles operate, and charging systems for MD/HD vehicles becomes more standardized, SDG&E can use this data to better understand port vehicle charging patterns, make recommendations about future technology solutions needed, and could also develop a grid-integrated rate for MD/HD equipment in the future.

2. How will the new electric load at the ~~Port of Long Beach~~ **Port of San Diego** be managed, especially if the EVSE does not allow for response to price signals?

   SDG&E Response:

   The electric load for this project will be managed manually by the Port of San Diego tenants that are participating. The main purpose of this project is to collect and study vehicle and charging data. Currently, there is minimal data available on electric medium and heavy trucks or forklift operations at the Port. Gathering and studying the data will provide a foundation that will lead to future load management recommendations, and future grid integrated rate recommendations.

3. Which rate will SDG&E apply to the new electric port equipment?

   SDG&E Response:

   As stated in Chapter 3, Mr. Schimka's testimony on page RS-39, Lines 5-6, "The new load will utilize the customer's existing accounts and rates."

4. SDG&E proposes to install load research meters, EVSE and data loggers for its port electrification project. What is the function of the load research meter and data loggers that cannot be accomplished with the submeter in the EVSE?

   SDG&E Response:

   Most charging equipment available for MD/HD vehicles does not have a built-in submeter that can be utilized. The load research meters recommended by SDG&E will measure electrical consumption data related to charging, and the data loggers will be installed on-board the vehicles to collect vehicle-specific data away from the charging stations. This load and vehicle data will be used to understand medium and heavy duty electric vehicle usage and charging characteristics and will be included in reports about the project. The data may also be used to develop future program proposals and rates that meet the needs of the customers while minimizing grid impacts.

5. Will the participating customer pay any participation payment?

   SDG&E Response:

   SDG&E did not propose a participation fee for this project.

6. Has SDG&E engaged any union or organized labor groups in pilot development?

   SDG&E Response:

   SDG&E met with union management to discuss the projects in SDG&E's SB 350 application in general terms after the projects were developed, but before they were filed. Just before the projects were filed with the CPUC, the IBEW provided SDG&E with a letter of support for the projects (as submitted in Appendix A of SDG&E's SB 350

application).

Electrify Local Highways Program

1. What research has SDG&E and/or Caltrans conducted to ensure the four sites selected for the Electrify Local Highways project have enough EV demand to fully utilize the proposed equipment installation?

   SDG&E Response:

   As part of Caltrans' 2016 Sustainability Implementation Action Plan[3], one of Caltrans' Sustainability Implementation Action Items provides that Caltrans must "develop plans to evaluate new and existing state-owned parking structures lots to install plug-in EV charging infrastructure where most cost-effective and appropriate." In conversations with Caltrans, the four sites selected were Caltrans' four highest priority locations, since these were the next sites to undergo upgrades or construction. In addition, these sites were selected due to their proximity to the transportation corridors and lack of charging stations in these areas. For example, in National City, the only public charging stations are located at dealerships. There are no public charging stations along Interstate 15 near Pala, and there is only one DC fast charger along Interstate 5 in Oceanside on the way up to Camp Pendleton and San Clemente. Finally, the Oceanside Transit Center is looking to replace the 10 Blink charging stations located there.

2. Why are direct current fast charging (DCFC) stations necessary for long dwell-time Caltrans park-and-ride lots?

   SDG&E Response:

   As outlined on page RS-19 of Mr. Schimka's Chapter 3 testimony on line 10, Caltrans said that that their DCFC station at their existing Del Lago Park-and-Ride in Escondido charges approximately five cars per day. For this reason, Caltrans believes their Park-and-Ride locations are good for not only long-duration parking and charging, but also as quick stops for DCFC use.

   This point is emphasized on page 2 of the attached "Caltrans Data" file. Approximately 85% of the energy dispensed charging vehicles at the Caltrans Del Lago site was for DC

[3] http://www.dot.ca.gov/sustainability/docs/2016_Sustainability_Implementation_Action_Plan_First_Ed_092016.pdf, *See* Page 28, row B2.

Fast charging, so it is clear there is value in offering both types of charging at the Park-and-Ride sites.

In addition, as outlined on page RS-22 of Mr. Shimka's Chapter 3 testimony on line 13, during SDG&E's collaboration with Caltrans, it was conveyed that additional research performed by Caltrans' Sustainability Technical Advisory Committee on ZEVs determined all charging stations at their Park-and-Ride locations must be: (1) public, due to their charter of serving both residents and visitors; (2) accessible by anyone with a credit card and operate under the Electric Vehicle Charging Stations Open Access Act; and (3) allow for drivers to park for long durations (for commuters) or for drivers to get a fast charge (for trip continuation).

3. Are the selected Caltrans park-and-ride lots open 24 hours per day?

SDG&E Response:

The four proposed Caltrans park-and-ride lot locations are open 24/7.

4. What information is available from the existing Caltrans site with EV charging? What information is available from other park-and-ride locations that offer EV charging? What lessons learned can be applied at the four sites in this project?

SDG&E Response:

The Del Lago Park-and-Ride in Escondido is the only existing Caltrans site with Blink Network Level 2 and DC Fast EV charging equipment. Current EV charging information about this location can be found on the Plugshare website, where there are numerous complaints about the Blink chargers at Del Lago:
https://www.plugshare.com/?location=47312#

One of the primary lessons learned at the Caltrans Del Lago site is that the charging equipment is frequently out of order (per the comments on the Plug Share site), and there needs to be an owner in place that will have the stations repaired and maintained when there are issues so they are an available resource to drivers.

5. How will SDG&E apply the grid-integrated rate at the Caltrans sites?
    a. What does a customer need to do to pay via their SDG&E bill?
    b. If the hourly pricing is not displayed on the EVSE, how can SDG&E encourage drivers to charge based on pricing if they do not use the app?

SDG&E Response:

A. In order for a customer to pay via their SDG&E bill, an existing SDG&E customer can visit the My Account section of sdge.com to add the account to their profile, or a new SDG&E customer can sign up for a new account on sdge.com.

B. As mentioned in Mr. Schimka's Chapter 3 testimony on page RS-30 on lines 10 and 11, "This project will also test the NIST standards set for public charging signage, rate display and general retail EV fuel dispensers, as outlined in NIST handbooks 30, 44, and 130." A driver may use an app to get pricing, but will not have to use an app. Pricing will be displayed on the EVSE, per NIST Handbook 44, Section 3.40, paragraph S.2.4.1 on page 3-151.[4]

6. SDG&E states that it included "all the construction costs" in its project budget. Does this include SDG&E paying for construction costs that are related to renovating the Caltrans sites, but not directly related to installing EVSE?

SDG&E Response:

As stated in Mr. Schimka's Chapter 3 testimony on page RS-26 at line 18, "SDG&E's construction costs are related to installing EVSE and not renovating the Caltrans sites."

7. Will parking spaces be reserved for EV drivers only? Is there any charge for parking when not charging?

SDG&E Response:

Parking spaces with charging stations will be reserved for EV drivers via signage. There is no charge to park at a Caltrans park-and-ride site, and there will be no additional charge for parking when not charging.

8. Since SDG&E has not yet assessed what electrical infrastructure would be necessary, if one project is much more expensive than anticipated, will SDG&E abandon this project?

[4] https://www.nist.gov/sites/default/files/documents/pml/wmd/pubs/2016/02/18/3-40-16-hb44-final.pdf

SDG&E Response:

SDG&E has budgeted for a new electric service to be installed at the four Caltrans park-and-ride sites to power the proposed charging stations. Assuming that the Electrify Local Highways program is approved with the four proposed sites, and one of the sites turns out to cost significantly more than originally budgeted due to an unforeseen circumstance (such as a longer trenching run to the power source), then SDG&E will further study the four proposed sites as a package to determine if all four sites can still be constructed within the approved budgetary framework (since some sites may cost more than the estimate and some may cost less than the estimate and the costs may average out). SDG&E might suggest relocating the over-budget site's electric service closer to the charging stations to reduce the costs for construction. However, if after review, it is determined that the costs for all four sites would put the project over-budget, then SDG&E will investigate alternatives, which may include building fewer sites if necessary.

9. Will these sites be reported to the US DOE's Alternative Fuels Data Center?[5]

SDG&E Response:

Yes.

Dealership Incentives Program

1. Describe SDG&E's current work with car dealerships on promoting EV sales.

SDG&E Response:

SDG&E has been working with local dealerships over the last five years encouraging them to provide their customers information on the utilities EV time-of-use rates either verbally or with brochures dropped off at the dealership locations. A few years ago, SDG&E teamed up with SANDAG, Clean Cities Coalition, and Center for Sustainability on a single brochure that listed each organization's benefits for EV drivers. The brochures were distributed to local dealerships.

In 2015, SDG&E began talking with Plug In America about a dealership education program. It was funded in early 2016, and details finalized in March 2017. The four-

[5] http://www.afdc.energy.gov/fuels/electricity_locations.html.

month program has a goal of educating 12 salespeople in SDG&E's territory to provide a positive customer experience to EV buyers and lessees.

2. Are there any other pilots or programs working with car dealerships that SDG&E can leverage, such as the CVRP? Can SDG&E leverage existing efforts, such as Plug-In America's dealer advisory council?[6]

SDG&E Response:

Yes, SDG&E will attempt to leverage all dealership pilots, programs and efforts it is aware of to help shape its Dealership Incentives Program.

3. Provide more information on the proposed education and outreach materials.
    a. Will they be offered to the broader public or dealers not participating in the program?
    b. Will dealers and salespeople be educating customers purchasing EVs about the benefits of a TOU rate?
    c. What existing dealership incentive programs are being used as examples in developing this program?

SDG&E Response:

A. The focus of the program's education and outreach materials will be for the dealers in the program. However, if there are funds available to provide them to dealers not in the program and to the public they will be made available.

B. SDG&E's education and outreach materials will educate customers on all relevant rate offerings (VGI rate if they are a Power Your Drive customer or new GIR for SB 350 projects once those are approved).

C. Dealership programs by Plug In America, Center for Sustainable Energy and the State of Connecticut.

4. If there are more than 200 salespeople interested in participating in the Dealership Incentives Program, how will SDG&E select participants? If there are fewer than 200

[6] https://pluginamerica.org/dealers/.

salespeople interested in participating in the Dealership Incentives Program, how will SDG&E encourage more participation?

SDG&E Response:

As outlined in Mr. Schimka's Chapter 3 testimony on page RS-84 at line 17, "Salespeople will be enrolled in the program on a first-come, first-served basis. If there are fewer than 200, we will continue to work with the New Car Dealers Association to communicate with their dealerships about the program, as well as reach out to the dealerships directly."

In addition, Mr. Schimka's Chapter 3 testimony on page RS-82 says that one of the six main goals of the program is to "emphasize EV sales in DACs."

5. How many dealerships in SDG&E territory are in the New Car Dealers Association or Auto Alliance and eligible to participate in the Dealership Incentive Program?
    a. How many total sales people work at the eligible dealerships?
    b. What are the dealerships' current annual EV sales rates?

SDG&E Response:
There are 115 dealerships in SDG&E's territory in the New Car Dealers Association. As for the Auto Alliance, there are 12 manufacturer members and our hope is that these manufacturers communicate to their own dealerships in our territory about the program.

a. This information is not publicly available.
b. This information is not publicly available by dealership, however SDG&E knows approximately how many EVs are sold in aggregate for our territory each month by data sources like Polk, CVRP, etc.

6. SDG&E states that sales people receive a low commission of $150-200 per EV. What is the average commission for selling internal combustion engine cars?

SDG&E Response:

While many dealerships have different commission structures, most are paid on a percentage of profit. This Motortrend article provides examples of how a car salesman is paid: http://www.motortrend.com/news/car-salesman-confidential-how-much-do-we-really-make/

Energy Division DATA REQUEST
ED-SDG&E-DR-01
SDG&E SB 350 TRANSPORTATION ELECTRIFICATION PROPOSALS (A.17-01-020)
SDG&E RESPONSE
DATE RECEIVED: March 27, 2017
DATE RESPONDED: April 10, 2017

Green Taxi/Rideshare Program

1. Will the charging stations SDG&E builds for its Green Taxi/Rideshare Program be open for use by non-participants and the general public? If not, why not?

   SDG&E Response:

   No, the charging stations will not be open for use by non-participants and the general public during the duration of the pilot. This is for two reasons: 1) the locations targeted for the charging facilities are under control by the site owner/manager, and 2) these locations may not be accessible to those beyond the targeted vehicles types (e.g., the taxi and TNC/Rideshare holding lots at the San Diego International Airport (SDIA) are only accessible by permitted taxis and TNC, respectively).

2. Why do all customers using the charging stations in the Green Taxi/Rideshare Program have to enroll in an SDG&E tariff? Since SDG&E intends to own the stations, couldn't it provide a rate directly to the driver so non-customers could use the facilities?

   SDG&E Response:

   As stated in Mr. Schimka's testimony on page RS-63, lines 3-5 and 7-10, the tariff is designed to encourage the drivers to maximize the volume of zero emission miles driven by providing an opportunity to select low priced, off-peak hours of the day for vehicle charging. The drivers participating in this project are required to enroll in the rate. For the duration of the pilot, for the reasons stated in answer 1 above, these project charging facilities are for exclusive use by those drivers enrolled in the project and tariff. SDG&E is proposing limiting usage of the installed charging station to program participants so wait time will be minimized.

3. Provide additional information about the 2010/2011 vehicle incentive program mentioned in the Green Taxi/Rideshare Program proposal.
   a. Who funded the incentives?
   b. Who was eligible to receive the incentives?
   c. What were the results of the program in terms of EV adoption rates?

   SDG&E Response:

   a. The 2010/2011 Airport Vehicle Rebate Program was funded through the Reformulated Gasoline Settlement Fund.

b. Taxi owners, shuttle owners, and livery vehicle owners with permits to operate at SDIA were eligible for the incentives.
c. Resultant learnings were that the taxi industry is very slow to utilize new technologies. The program did not sell any vehicles for the first 8 months despite 10 years of hybrid vehicles being available. To help the program, SDIA and Center for Sustainable Energy increased the rebate for the first five hybrids by 300% (from $2,500 to $7,500) and 200% for the next five hybrids. At that time, EVs were brand new and there was no L2 or DC Fast Charging to enable EV taxis at or nearby SDIA. There still isn't much charging infrastructure around SDIA, and EV Taxis still have the same charging challenges until appropriate charging is installed.

4. Given the state's Clean Vehicle Rebate Program and Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, why is a $10,000 vehicle incentive necessary?

SDG&E Response:

The CVRP is applicable to the taxi fleet EVs and no rebates have been claimed for taxis. Therefore, SDG&E concludes that since no taxi companies have acquired an EV for their fleet, a CVRP-style rebate is not sufficient to encourage adoption. This was confirmed anecdotally with discussions with taxi companies. Please also see the response to 3c above. Similarly, since only one shuttle company in the region (serving the SDIA) has adopted electric fleet vans, SDG&E concluded that the HVIP rebate in not sufficient to encourage EV adoption. Therefore, as a small pilot, an incentive that substantially approximates the incentive provided in a similar program (see footnote 77 and 82 in Chapter 3) during the 2010-2015 timeframe increases the likelihood of meeting the objective to introduce this technology to these fleet operators with the expectation that both the driving experience and the opportunity for low fueling costs (through off-peak charging) will jump-start fleet interests in EVs. As stated on page RS-62, 8-11, "Exposing taxi, shuttle and rideshare companies and drivers to electric vehicles ("EVs") at this time will increase confidence in the technology, and knowledge about the relevant economic benefits, which will help to accelerate the widespread adoption of EV in this market."

5. How does SDG&E intend to coordinate the charging schedules of the different vehicle and fleet types to ensure optimal charger utilization?

SDG&E Response:

SDG&E does not intend to coordinate charging schedules, because the rate and fueling incentives proposed (see page RS-69) will sufficiently encourage drivers to maximize the volume of zero emission miles driven, by creating an opportunity to reduce fueling costs by charging the EV during low-priced, off-peak hours of the day. Maximized volume of zero emission miles driven will yield high charging facility utilization rates. In addition, as noted on page RS-73, lines 5-20, high utilization rates are facilitated by: 1) charging facility site selection (accessible and convenient locations), 2) the rate of facility installation will keep pace with the rate of EV adoption (see footnote 91, page RS-73), and 3) project charging facilities will be shared by taxi, shuttle and rideshare EV fleet.

6. SDG&E is proposing to install L2 EVSE at TNC drivers' homes.
   a. Is SDG&E proposing to own and maintain this equipment?
   b. How does SDG&E intend to maintain the EVSE? Does this require an easement?
   c. What happens if the customer is no longer a TNC driver, if they no longer own an EV, or if they move? How does SDG&E monitor these conditions?

   SDG&E Response:

   a. Yes, in a manner similar to the proposed Residential Charging Program.

   b. As stated in answer 6a, in a manner similar to the proposed Residential Charging Program.

   c. Goals of this pilot are to generate increased exposure to EVs, increase EV adoption, encourage off-peak charging, and to maximize zero emission miles driven by high annual mileage transportation modes such as taxi, rideshare and shuttles. In light of these expected results, as long as the drivers continue to own or lease their EV and stay enrolled in the EV rate, then the L2 EVSE will remain in place. The EVSE will be removed if the driver is no longer driving an EV.

7. If the Green Taxi drivers receive an EV fueling credit of $4,000, essentially making charging "free," how can they be incentivized to charge at optimal times without a price signal?

   SDG&E Response:

   The total fueling cost for the first year depends on the hourly price the driver selects for fueling the taxi. As stated on page RS-66, lines 15 to 17, "…the incentive not only

encourages each driver to maximize the number of zero emission miles driven, as well as helping to make these fueling dollars go further by charging during lower-priced, off-peak hours." For example, consider these assumptions and conclusions:

- A taxi driver, on average selects those hours priced at $0.22 per kWh
- A taxi driver drives 4,500 miles per month (roughly 5 times greater than a conventional passenger vehicle)
- One kWh provides three miles of EV range, using 1,500 kWh per month
- This amounts to a fueling cost of $330 per month, or $3,960 over 12 months (rounded to $4,000)

Therefore, if a taxi driver selects those hours priced at more than $0.22 per kWh, then the fueling incentive will not cover 12 months of fueling, so drivers will be compelled to study the day-ahead prices to plan their fueling schedule for the next day to stretch the fueling incentives over more zero emission miles. It is important to note that the fueling incentive can only be used at project charging facilities, and if a driver does not use the entire $4,000 incentive over 12 months of operation, they do not keep the difference. As drivers enroll in the rate and project, SDG&E will provide educational materials to drivers to ensure that they make the most effective use of this incentive (i.e., stretching their fueling dollars).

8. Could the TNC portion of the pilot apply to TNC drivers that already own an EV, or does this only apply to drivers who purchase an EV as part of the pilot?

SDG&E Response:

Yes, the TNC portion of the pilot can apply to TNC drivers that already use the EV for providing rideshare services. The objective remains the same, which is to maximize the volume of zero emission miles driven with that EV by enrolling in the rate and project.

9. What current or past work with shuttles is SDG&E leveraging for this pilot?

SDG&E Response:

Anecdotal information gathered by working with the only electric shuttle company in the region has provided insights on not only the need for fast charging facilities, but also a rate design that works to encourage drivers to maximize the volume of zero emission miles driven, by creating an opportunity to reduce fueling costs by charging the EV during low-priced, off-peak hours of the day.

In addition, SDG&E also sponsored a University of Arizona MBA consulting project to better understand operational costs of commercial electric vehicles. This project focused on electric shuttle operations and charging.

10. Has SDG&E engaged any union or organized labor groups in pilot development?

SDG&E Response:

SDG&E met with union management to discuss the projects in SDGE's SB 350 application in general terms after the projects were developed, but before they were filed. Just before the projects were filed with the CPUC, the IBEW provided SDG&E with a letter of support for the projects (as submitted in Appendix A of SDG&E's SB 350 application).

ATTACHMENT 2

Transcriptions from May 17, 2017 Transportation Electrification Priority Review Projects Workshop

Transcriptions from May 17, 2017 Transportation Electrification Priority Review Projects Workshop

1. Section II.3.b

ANNE SMART (ChargePoint): "If Caltrans doesn't want to own the stations, then there are fleet operators that can own those stations, Chargepoint can own those stations, our competitors could own those stations and offer those same types of services."

(Timestamp 52 minutes).

2. Section II.3.b

UNIDENTIFIED SPEAKER (asking about SDG&E's request for proposals for priority review projects): "Were you planning on just selecting one vendor?"

LINDA BROWN (SDG&E): "Yes for these pilots, we'd have to."

(Timestamp 4:04:40).

3. Section II.6.a

RICK TSE (ORA): "Hi, my name is Rick Tse, I'm with the Office of Ratepayer Advocates, we advocate for ratepayers, on behalf of ratepayers for the lowest possible rates consistent with safe and reliable service. First of all, these non-light duty pilots are great innovative proposals that would drive EV adoption. I just want to raise the concern of cost. We did a high level exercise to kind of gauge the average cost per charger for these pilots. And we did that by taking the revenue request for these pilots and the number of charging stations that are being proposed, and we did the same exercise for the recently-authorized light-duty pilots. And we kind of compare the two, and a general finding is that the average cost per charger is significantly higher compared to the light-duty pilots. That kind of raises the concern of scalability, for PG&E, I think it's in a magnitude of 20 times, SCE is roughly 13, and SDG&E is more reasonable at about 3 times higher. So, I not sure if the utilities can kind of clarify that a little bit today. Specifically, why SDG&E is able to do it at 3 times higher the cost compared to the other two utilities. We understand that these are higher power level chargers and there's significant cost associated with that. But it seems to us that we could substantially lower the cost. I don't know what the reason for that big disparity is. Thank you!"

SCE REPRESENTATIVE: "I can provide a little bit of details to how we came to our cost estimate. I think it's a little bit difference with regards to our standard review program we have disparity in the cost estimate and I know that's not what we're discussing today. But it gets to your point because it's kind of like how are we estimating for our pilots at 4 million dollars for 4 sites essentially. We looked at information from a variety of sources including the Electric

Power Research Institute, including our Charge Ready Program, other lessons-learned. We also hired an engineering firm to help us assess the sites and to really dive in to what we think the costs are going to be. Given the unique characteristics of all the difference customers in this segment, and there's a potential for disparity depending on the location and the customer usage. So it will be very customer specific. The costs that we provided are our best estimate based on what we know today. I think we've done a good amount of diligence to support those costs. That's also why we're asking for the standard contingency based on where we're in the process. But we appreciate your comment and I know we responded to some of ORA's data requests and we're happy to look forward to discussing with you more in going thru some of those cost estimates."

RANDY SCHIMKA (SDG&E): "Good afternoon, I'm Randy Schimka from SDG&E. I did the cost estimate for the Power Your Drive stations that we're currently implementing as well as these stations for our fleet delivery projects. You probably realized when we got our decision for Power Your Drive, we didn't get all of the funding that we had asked for. We accepted the project and we're trying our very hardest to install the stations with the budget that we received. The money we've had asked for so we're trying our hardest to do that. When it came time to do the estimate for these fleet delivery vehicles, you know we're partnering with UPS on our project so we have 3 sites with 20 vehicles in each location and you can probably visualize how large a UPS vehicle is, the delivery vehicle, those are pretty large vehicles, right? So, putting in charging facilities for 20 of those vehicles is a fairly sizable installation. So the charging stations are a little bit larger, the power requirement are a little bit higher, and physically, it's a little bit more expensive to do because it's thru concrete and asphalt installation. So in the Power Your Drive Program, we actually are trying to find some installation that we might be able to do thru landscaping, thru soil, to try to mitigate that cost of trenching, for example. So in our particular case, that's where I would point to as far as additional cost. It's more difficult and expensive to do."

CAL SILCOX (PG&E): "Hi, this is Cal Silcox from PG&E. I think the other two utilities summarized some of the differences pretty well. I think the differences in the technology are pretty stark comparing Level 2 workplace charging with a transit agency installing a 100 kW charger for their fleet. It's just apples and oranges. So I think it's really hard to compare. The other thing that's really I think driving a lot of the difference for our program is that we intending to do a lot more here with these demonstration projects both the medium and heavy duty as well as idle reduction. We're looking at pairing the charging equipment with energy storage, which adds a significant amount to the cost of the installation to be able to manage their charging and shave some of the peak demand and hopefully manage their fuel cost."

SCE REPRESENTATIVE: "I just want to add one other point. It's not an apple-to-apple comparison to compare PG&E's and SCE's medium and heavy duty programs with SDG&E's. There's a difference in vehicle that we're looking at, so ours the pilot program is specific to

transit buses, so that's not the same type of vehicle that SDG&E is serving so that's why there's a difference in the cost."

(Timestamp 3:12:00 – 3:16:00)

ATTACHMENT 3

ORA Data Request ORA-PGE-03; PG&E Responses to ORA Data Request ORA-PGE-03

ORA

Office of Ratepayer Advocates
California Public Utilities Commission

505 Van Ness Avenue
San Francisco, CA 94102
Phone: (415) 703-2544
Fax: (415) 703-2057

http://ora.ca.gov

ORA DATA REQUEST

A.17-01-022: PG&E
SB 350 Transportation Electrification Application

Date: May 23, 2017

To: **Christopher J. Warner**
Attorney for
Pacific Gas and Electric Company
Phone: (415) 973-6695
Email: cjw5@pge.com

From: **Rick Tse, PE**
Senior Utilities Engineer
Phone: (415) 355-5581
Email: rkt@cpuc.ca.gov

Tovah Trimming
Attorney for ORA
Phone: (415) 703-3309
Email: tt1@cpuc.ca.gov

Re: Data Request No. ORA-A1701022-PGE-03
Responses Due: On or before June 7, 2017 or as soon as responses become available

INSTRUCTIONS

You are instructed to answer the following Data Requests in the above-captioned proceeding, with written, verified responses per Public Utilities Code §§ 309.5 and 314, and Rules 1.1 and 10.1 of the California Public Utilities Commission's Rules of Practice and Procedure. Restate the text of each request prior to providing the response. For any questions, email the ORA contact(s) above with a copy to the ORA attorney.

Each Data Request is continuing in nature. Provide your response as it becomes available, but no later than the due date noted above. If you are unable to provide a response by this date, notify ORA as soon as possible, with a written explanation as to why the response date cannot be met and a best estimate of when the information can be provided. If you acquire additional information after providing an answer to any request, you must supplement your response following the receipt of such additional information.

Identify the person providing the answer to each data request and his/her contact information. Responses should be provided both in the original electronic format, if available, and in hard copy. (If available in Word format, send the Word document and do not send the

information as a PDF file.) All electronic documents submitted in response to this data request should be in readable, downloadable, printable, and searchable formats, unless use of such formats is infeasible. Each page should be numbered. If any of your answers refer to or reflect calculations, provide a copy of the supporting electronic files that were used to derive such calculations, such as Excel-compatible spreadsheets or computer programs, with data and formulas intact and functioning. Documents produced in response to the data requests should be Bates-numbered, and indexed if voluminous. Responses to data requests that refer to or incorporate documents should identify the particular documents referenced by Bates-numbers or Bates-range.

If a request, definition, or an instruction, is unclear, notify ORA as soon as possible. In any event, answer the request to the fullest extent possible, specifying the reason for your inability to answer the remaining portion of the Data Request.

DATA REQUESTS

1. PG&E is requesting $3.35 million for its medium/heavy-duty fleet customer demonstration pilot. For this pilot, PG&E aims to partner with a customer to electrify 2 to 10 medium/heavy-duty vehicles. Assuming a full deployment of 10 vehicles, the cost-per-charger ratio amounts to $335,000. This figure is approximately 20 times that for PG&E's recently-approved light-duty EV Charge Network Pilot, whose cost-per-charger ratio is only $17,000. Please explain the large disparity in the cost-per-charger ratio between this pilot and that of PG&E's EV Charge Pilot.

2. This large disparity is also noted for PG&E's Electric School Bus Renewables Integration Pilot, whose cost-per-charger ratio is even higher at $670,000 (a 39-time order of magnitude compared to the EV Charge Pilot) and for the Idle-Reduction Technology Demonstration Pilot as well. Please explain the large disparity in the cost-per-charger ratio between this pilot and that of PG&E's EV Charge Pilot.

END OF REQUEST

PACIFIC GAS AND ELECTRIC COMPANY
Transportation Electrification SB 350
17-01-022
Data Response

PG&E Data Request No.:	ORA_003-Q001		
PG&E File Name:	Transportation Electrification SB 350 _DR_ORA_003-Q001		
Request Date:	05-23-2017	Requester DR No.:	ORA_003
Date Sent:	06-15-2017	Requesting Party:	Office of Ratepayer Advocates (ORA)
PG&E Witness:	Cal Silcox	Requester:	Rick Tse, Tovah Trimming

Question Q001

1. PG&E is requesting $3.35 million for its medium/heavy-duty fleet customer demonstration pilot. For this pilot, PG&E aims to partner with a customer to electrify 2 to 10 medium/heavy-duty vehicles. Assuming a full deployment of 10 vehicles, the cost-per-charger ratio amounts to $335,000. This figure is approximately 20 times that for PG&E's recently-approved light-duty EV Charge Network Pilot, whose cost-per-charger ratio is only $17,000. Please explain the large disparity in the cost-per-charger ratio between this pilot and that of PG&E's EV Charge Pilot.

Answer Q001

Through this demonstration project, PG&E aims not only to deploy charging infrastructure for MD/HD fleet vehicles (likely transit buses), but also implement dynamic charge management and energy storage technologies, working closely with the fleet manager and technology providers to minimize the total cost of ownership for vehicle operation. PG&E aims for this demonstration to develop learnings for the utility and customer regarding fleet deployments and serve as a case study for future fleet vehicle deployments, including those proposed under the standard review FleetReady program.

These added differences in power requirements, advanced charging management technologies, additional learning objectives and goals contribute to the cost differential between this demonstration and the approved EV Charge Network Program, which will

deploy make-ready and utility-owned level 2 charging infrastructure at workplaces and multi-unit dwellings. Additionally, the EV Charge Network Program will deploy hundreds of sites, allowing PG&E to leverage that scale to reduce costs, as well as average higher and lower individual site costs over many sites. The fleet demonstration projects involve just one site, thus PG&E does not have the flexibility that a larger program such as EV Charge Network or the proposed FleetReady program would in evaluating sites based on cost of infrastructure installation. As such the customer chosen for this demonstration may have site factors that contribute to higher costs; such as needed upgrades to existing distribution service capacity or longer trenching/cabling distances.

More broadly, just as the purchase cost of a light duty vehicle (tens of thousands of dollars) is much lower than that of a transit bus (hundreds of thousands of dollars), infrastructure costs for heavier duty vehicles tend to be higher as well. For example, the power capacity requirements to serve 10 heavy duty transit bus chargers is approximately 1,000 kW of three-phase power, 13x higher than the 75kW (single-phase) needed to serve 10 light duty workplace chargers, as in the EV Charge Network program. Similarly, trenching distances for a large fleet yard are expected to be significantly longer than a workplace parking lot, and fleet yards are typically concrete or asphalt, as opposed to landscaped workplaces.

PACIFIC GAS AND ELECTRIC COMPANY
Transportation Electrification SB 350
17-01-022
Data Response

PG&E Data Request No.:	ORA_003-Q002		
PG&E File Name:	Transportation Electrification SB 350 _DR_ORA_003-Q002		
Request Date:	05-23-2017	Requester DR No.:	ORA_003
Date Sent:	06-15-2017	Requesting Party:	Office of Ratepayer Advocates (ORA)
PG&E Witness:	Cal Silcox	Requester:	Rick Tse, Tovah Trimming

Question Q002

2. This large disparity is also noted for PG&E's Electric □chool □us □enewables □nteg-ration Pilot, whose cost-per-charger ratio is even higher at $□70,000 □a 3□-time order of magnitude compared to the EV Charge Pilot□and for the □dle-□eduction Technology □emonstration Pilot as well. Please explain the large disparity in the cost-per-charger ratio between this pilot and that of PG&E's EV Charge Pilot.

Answer Q002

Similar to PG&E's response to Question 1, the cost estimates for the electric school bus and idle reduction demonstration pilots are largely the same as those for the MD/HD fleet demonstration, which served as a template for the costs for all three projects. As such, the differences in fleet vehicle charging infrastructure, advanced charging technologies, and additional learning objectives contribute to differing costs between this and PG&E's EV Charge Network program. While the school bus renewable integration pilot does not intend to deploy energy storage (as the MD/HD fleet and idle-reduction projects do), this project aims to use charging management and provide incentives to the fleet the reflect charging in a manner consistent with grid conditions.

Should site or project costs for these demonstrations be significantly lower than projected, PG&E aims to add a second site (or more), within the overall proposed project budget if feasible, to increase applicable learnings from the demonstration. Similarly,

PG&E based its vehicle deployment goal for this project based on the size of existing deployments of electric schoolbuses. Should PG&E identify a larger fleet deployment than estimated in testimony, the utility would be interested in working with such a fleet. If it is not feasible to deploy additional sites or additional vehicles at an existing site, unused budget would be added to the potential funding proposed under the Open RFP detailed on pages 2-18 and 2-19 of PG&E's prepared testimony.

ATTACHMENT 4

SCE Response to ORA Data Request ORA-SCE-001

Southern California Edison
2017 TE Application A.17-01-021

DATA REQUEST SET A.17-01-021 ORA-SCE-001

To: ORA
Prepared by: Arnaud Duteil
Title: Consultant
Dated: 03/23/2017

Question 02.a:

2. The below questions pertain to SCE's Priority Review Projects.
    a. EV Driver Rideshare Reward Pilot
        i. Will the terms of the agreements with rideshare companies allow SCE access to the companies' data that would help determine changes in driving tendencies and vehicle use before, during, and after the reward program?
        ii. Will relevant rideshare company data be made available to the public? If so, will it be aggregated or disaggregated?
        iii. Because rideshare companies will benefit from this program, will they also be contributing funding for the rewards?

Response to Question 02.a:

i. SCE intends to collaborate with rideshare companies and seek to obtain electric vehicle (EV) data relevant to the proposed pilot, including historical data regarding EV adoption and EV miles traveled among rideshare drivers, inside and outside SCE's service territory. It should be noted that SCE has not secured any commitment from rideshare companies at this point.

ii. SCE intends to share insightful non-confidential data gathered through the proposed pilot as part of the close-out report. The report will include aggregated data, free of any personally identifiable information (e.g., data related to a specific individual or rideshare service).

iii. SCE does not plan to ask rideshare companies to contribute funding for the proposed pilot, but intends to require them to provide support for implementing this initiative, including promoting the pilot to rideshare drivers and providing data to verify eligibility of rideshare driver applicants.

ATTACHMENT 5

SDG&E Response to ORA Data Request ORA_SDGE_DR_02

ORA DATA REQUEST
ORA-SDG&E-DR-02
SDG&E SB 350 TRANSPORTATION ELECTRIFICATION PROPOSALS (A.17-01-020)
SDG&E RESPONSE
DATE RECEIVED: March 22, 2017
DATE RESPONDED: April 7, 2017

INSTRUCTIONS

You are instructed to answer the following Data Requests in the above-captioned proceeding, with written, verified responses per Public Utilities Code §§ 309.5 and 314, and Rules 1.1 and 10.1 of the California Public Utilities Commission's Rules of Practice and Procedure. Restate the text of each request prior to providing the response. For any questions, email the ORA contact(s) above with a copy to the ORA attorney.

Each Data Request is continuing in nature. Provide your response as it becomes available, but no later than the due date noted above. If you are unable to provide a response by this date, notify ORA as soon as possible, with a written explanation as to why the response date cannot be met and a best estimate of when the information can be provided. If you acquire additional information after providing an answer to any request, you must supplement your response following the receipt of such additional information.

Identify the person providing the answer to each data request and his/her contact information. Responses should be provided both in the original electronic format, if available, and in hard copy. (If available in Word format, send the Word document and do not send the information as a PDF file.) All electronic documents submitted in response to this data request should be in readable, downloadable, printable, and searchable formats, unless use of such formats is infeasible. Each page should be numbered. If any of your answers refer to or reflect calculations, provide a copy of the supporting electronic files that were used to derive such calculations, such as Excel-compatible spreadsheets or computer programs, with data and formulas intact and functioning. Documents produced in response to the data requests should be Bates-numbered, and indexed if voluminous. Responses to data requests that refer to or incorporate documents should identify the particular documents referenced by Bates-numbers or Bates-range.

If a request, definition, or an instruction, is unclear, notify ORA as soon as possible. In any event, answer the request to the fullest extent possible, specifying the reason for your inability to answer the remaining portion of the Data Request.

SDG&E General Objections:

Regarding the request for contact information, contact with SDG&E should be coordinated through SDG&E's case manager for this proceeding: Jennifer Wright (JWright@semprautilities.com/858-654-1891).

DATA REQUEST

ORA DATA REQUEST
ORA-SDG&E-DR-02
SDG&E SB 350 TRANSPORTATION ELECTRIFICATION PROPOSALS (A.17-01-020)
SDG&E RESPONSE
DATE RECEIVED: March 22, 2017
DATE RESPONDED: April 7, 2017

1. Please provide workpapers showing the derivation of SDG&E's proposed rates.

SDG&E Response (Provided by Cynthia Fang):
Pursuant to CPUC Decision D.06-06-066, the attached file "ORA_SDGE_DR_02 – Q1 (Confidential)" contains confidential information and is protected from disclosure.

2. For each of SDG&E's existing electric vehicle (EV) rates, please provide the number of customers on the rate and, if applicable, any caps on the total number of customers.

SDG&E Response (Provided by Randy Schimka):
As of March 1, 2017, there are 253 customers on rate EV-TOU, and 8,729 customers on rate EV-TOU2, for a total of 8,982 EV rate customers. There are no caps on these two rates.

a. If SDG&E is aware of any non-EV customers being on its EV rates, please break down these rates by the number of EV customers vs. non-EV customers.

SDG&E Response (Provided by Randy Schimka):
SDG&E is not aware of any non-EV customers being on EV rates.

b. If SDG&E is aware of any EV customers being on non-EV specific rates (e.g. ATOU), please also provide the number of EV customers on those rates.

SDG&E Response (Provided by Randy Schimka):
As of March 1, 2017, SDG&E is aware of 8,982 EV rate customers that are signed up for residential EV rates (EV-TOU or EV-TOU2). Since SDG&E estimates that there are 23,650 EVs in its service territory as of March 1, 2017, SDG&E estimates that there are currently 14,668 EVs in SDG&E's service territory that are not on an EV rate. Since the owner identities and addresses of those vehicles are unknown, SDG&E does not know what rate(s) the remaining 14,668 EVs are on.

However, as a second data point, SDG&E is currently soliciting signups for the EV Climate Credit that all EV drivers are eligible for. Some of the data collected in the signup process for that program are the driver's name, address, account number, and current rate. Signups will close in May, but the four weeks of EVCC signup data collected so far from 3,408 drivers indicates that 1,506 are on EV rates. The 28 customers that declared GR or GR-LI have to be clarified, since those are gas rates. Responses collected to date are as follows:

- Rate DM (5)
- Rate DR (1,555)
- Rate DR-LI (81)
- Rate DR-SES (111)
- Rate TOU-DR (6)
- Rate DR-TOD PSH (53)
- Rate DR-TOU (6)
- Rate EV-TOU (21) – Residential EV Rate
- Rate EV-TOU2 (1,485) – Residential EV Rate
- Rate GR (27)
- Rate GR-LI (1)
- Rate Multiple (1)
- Rate TOU-DR-E1 (7)
- Rate TOU-DR-E2 (26)
- Rate TOU-DR-E3 (23

Total: 3,408

3. How would SDG&E determine whether distribution upgrades at the primary, secondary, and customer levels are needed to enable commercial EV charging? How is clustering considered?

SDG&E Response (Provided by Randy Schimka):
Upon receiving a notice from the customer that they are adding load to their electric service, SDG&E would perform a voltage drop and flicker calculation to determine whether the transformer, secondary and service are adequately sized. SDG&E would also review the upstream distribution system to ensure that primary cables and fusing devices are properly sized.

a. What is the size of the allowance granted under Line Extension Rules 15 and 16 for distribution upgrades pertaining to incremental commercial EV load? Are there any demarcations associated with the size (i.e. costs associated with accommodating incremental EV load at various sizes)? How about residential EV load?

SDG&E Response (Provided by Randy Schimka):
Allowances for incremental commercial EV load are calculated specifically for each customer. Rule 15.C.2[1] supplies the formula for non-residential allowance calculation.

[1] Sheet 4 in SDG&E Rule 15: http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-RULES_ERULE15.pdf

Allowance = Net Revenue / Cost of Service Factor. The net revenue is calculated based on the incremental EV load added and the specific customer's energy rate. Therefore, in the commercial space, each customer's allowances will be specific to the EV load they add and the electric rate at which they are being billed. There is no general "size" that could be assumed for all customers. Residential allowances, however, are applied as a flat rate as filed under SDG&E Rule 15.C.3. The current Permanent Residential Service allowance is $2,841.00.

4. In its testimony, SDG&E proposes a Grid Integration Charge (GIC) that is "based on a customer's maximum annual demand" (p. CF-14). How will maximum annual demand be measured? Will it be measured for the full year prior to and including the current month, or on a calendar-year basis, or another basis? If it is another basis, please describe the process.

SDG&E Response (Provided by Cynthia Fang):
For SDG&E's proposed GICs, a customer's Maximum Annual Demand is defined as "the highest Maximum Monthly Demand for the current and prior eleven months" (Footnote 25 on page CF-24 of the Testimony of Cynthia Fang). Additionally, the GIC includes an exemption for demand that occurs during the super-off peak period. As noted in the Testimony of Cynthia Fang, "this exemption would result in demand that occurs during the super off-peak period from being excluded from the determination of maximum demand for the application of the GIC" (Page CF-20).

5. For each circuit providing service to commercial customers, please:

a. Provide the sum of all customers' maximum non-coincident demands for each circuit for each of the most recent 12 months. For each circuit, please also provide a chart displaying the how many customers peak in each hour for each of the most recent 12 months.
b. Provide the maximum demand registered on each respective circuit for each of the most recent 12 months. Please also indicate the timing of peak for each circuit.

SDG&E Response (Provided by Cynthia Fang):
Pursuant to CPUC Decision D.97-10-031, the attached files listed below contain confidential information and are protected from disclosure.

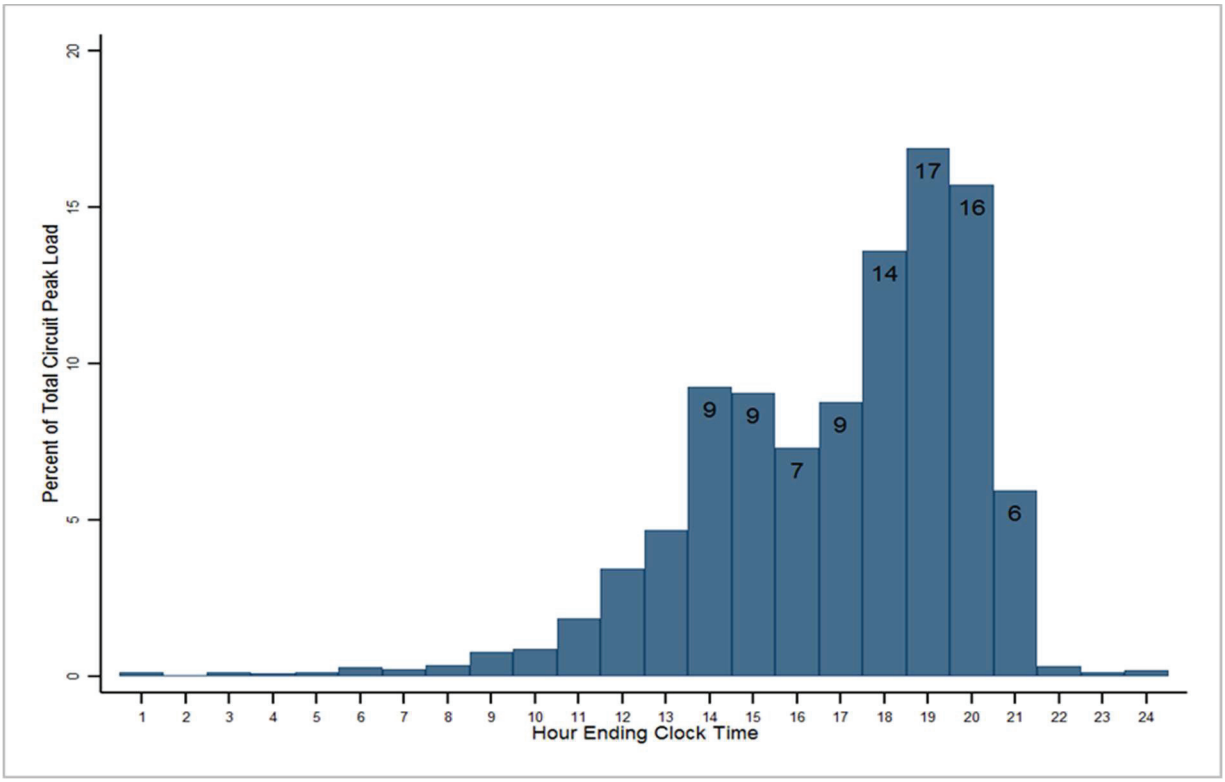
- "ORA_SDG&E_DR_02 – Q5A1 (Confidential)" - monthly sum of all customers' maximum non-coincident demands for each circuit (that provides service to commercial customers) for the most recent 12 months.

- "ORA_SDG&E_DR_02 – Q5A2 (Confidential)" - charts of each circuit (that provides service to commercial customers) displaying the number of customers' monthly peak by each hour for the most recent 12 months.
- "ORA_SDG&E_DR_02 – Q5B (Confidential)" - monthly maximum demand registered on each circuit (that provides service to commercial customers) for the most recent 12 months.

6. Please provide a graph similar to chart 5-2 in SDG&E's testimony, but where each circuit is weighted by its peak load (i.e. the y-axis should be Percent of Total Circuit Peak Load).

SDG&E Response (Provided by Cynthia Fang):
Please see the chart below for hourly distribution of 2014-2016 SDG&E circuit peaks weighted by its peak load.

The chart below presents the information previously provided in Chart 5-2 (page CF-21 of the Testimony of Cynthia Fang) modified to reflect weighting each circuit by its peak load. This results in circuits with greater peak demands being given more weight relative to the frequency approach of giving each circuit peak an equal weight provided in Chart 5-2 of Testimony of Cynthia Fang (Page CF-21).



7. In SDG&E's description of the C-CPP adder (p. CF-16), it says that "the CPP Adder is applied to the pre-defined 7-hour event period of 11 a.m. to 6 p.m., resulting in total annual CPP hours of 0 to 126 hours." Does SDG&E propose to use the same 11am to 6pm CPP period for its three GIR rates or the newer CPP period proposed in its 2016 General Rate Case Phase 2 (2-6pm)?

SDG&E Response (Provided by Cynthia Fang):
The CPP period of 11 a.m. to 6 p.m. referenced in the testimony of Cynthia Fang (Page CF-16) was regarding the current CPP program. Under SDG&E's proposed GIRs, the C-CPP Hourly Adder is applied on an hourly basis to "the top 150 system peak hours on a day ahead basis" (Page CF-17 of the Testimony of Cynthia Fang), and can occur at any hour of any day and is not based on TOU periods.

8. How many hours will the Distribution Critical Peak Pricing (D-CPP) period cover?

a. Will the D-CPP be determined based on the loads of each of SDG&E's circuits over all hours of 2016 or another method? If it will be based on another method, please provide a

list of the steps and a description of each method to determine each circuit's D-CPP period.

SDG&E Response (Provided by Cynthia Fang):
The D-CPP Hourly Adder is applied to the "top 200 circuit peak hours on a day-ahead basis" (Page CF-19 of the Testimony of Cynthia Fang) when the forecasted load exceeds a threshold level. For each individual circuit, the threshold level is based on the prior year's top 200 hours on that circuit. When the forecast identifies an hour exceeding the circuit's threshold level, the D-CPP Hourly Adder will be applied.

9. Please provide a Contribution to Margin study in which SDG&E compares the benefits (i.e. payments) of EV customers under its Residential and Commercial GIR rates to a "price floor" of the marginal cost of distribution, marginal cost of energy and the sum of non-by passable charges. The non-bypassable charges should include Transmission, Public Purpose Program, Nuclear Decommissioning, Competition Transition, New System Generation, Department of Water Resources Bond, and Power Cost Indifference Amount (PCIA) charges. The amount recovered from customers and the price floor should be expressed in $/kWh and should be calculated for the first five years (i.e. the entire period of the phase-in of the Grid Integration Charge).

SDG&E Response (Provided by Cynthia Fang):
SDG&E has not performed a Contribution to Margin Study to compare SDG&E's proposed Residential and Commercial GIR rates to a "price floor" of the marginal cost of distribution, marginal cost of energy and the sum of non-by passable charges. Such Contribution to Margin Study would require the GIR customer's load information, and given that these customers are new customers, SDG&E cannot provide a Contribution to Margin Study.

Based on the definition of "price floor" provided in the question above, customers enrolled in the GIR rates will pay:

- The class equivalent charges associated with the non-by passable charges, which include Transmission, Public Purpose Program, Nuclear Decommissioning, Competition Transition, New System Generation, and Department of Water Resources Bond listed above with the exclusion of PCIA.
- Commodity costs, which include CAISO Day Ahead Hourly Price, which is equivalent to the marginal energy cost and 50% of generation capacity costs.
- All distribution costs with distribution customer costs and 80% of distribution demand costs recovered though the GIC component. The remaining 20% of distribution demand costs are recovered through the D-CPP Adder.

As such we believe that the GIR rates will sufficiently cover the "price floor" mentioned above.

10. Are the three grid integration rates (GIRs) designed to be revenue neutral compared to customers' otherwise applicable tariffs (OATs)? If so, are they revenue neutral with respect to the entire customer class or just to EV customers? Please provide estimates of revenue shortfalls if 5%, 10%, 50% or 100% of current EV customers migrated to the new GIRs.

SDG&E Response (Provided by Cynthia Fang):
The three GIRs are designed to be revenue neutral by customer class. SDG&E expects that the EV customers are to be new customers and not current EV customers; therefore, estimates of revenue shortfalls cannot be performed.

END OF REQUEST