

NDC DATA REQUEST
NDC-SDG&E-DR-01
SDG&E SB 350 TRANSPORTATION ELECTRIFICATION PROPOSALS (A.17-01-020)
SDG&E RESPONSE
DATE RECEIVED: May 12, 2017
DATE RESPONDED: June 13, 2017

Please send through email all responses that can be transmitted electronically. If any response or part of a response cannot be sent electronically, please notify Tadashi Gondai (tgondai@naac.org) to make alternative arrangements.

DATA REQUEST

Questions 1-7 pertain to all Priority Review Projects:

1. What definition of “disadvantaged communities” (DACs) will SDGE use for the priority review projects?

SDG&E Response:

The definition is provided in Linda Brown’s testimony, Chapter 2 LB-17:17 -LB-18:1.

2. Do any new proposed rates for any of the priority projects integrate recovery for project costs? If so, please explain how much of project costs will be recovered. If not, please explain why not.

SDG&E Response:

The GIR rates presented in this application do not reflect the inclusion of the incremental costs of SDG&E’s SB350 proposals. The proposed rates presented in SDG&E’s application are revenue neutral, with respect to SDG&E’s current effective rates at the time of filing, rates effective January 1, 2017. SDG&E’s proposal, as seen on page CF-29 of the Direct Testimony of Cynthia Fang, is to recover implementation costs from all customers, including the participants of SDG&E’s Transportation Electrification projects. As such, once the implementation of an SB350 solution begins, the proposed GIR rates, consistent with SDG&E’s other rates, will include recovery of SB350 project costs.

3. Is SDGE aware of any studies or research that estimate how long before L2 charging equipment will become obsolete? If so, please indicate how long SDGE believes this time period to be, and provide the underlying data.

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SDG&E Response:

SDG&E is not aware of any studies or research that estimate L2 charging equipment obsolescence. L2 charging capability is currently built in to each OEM EV being built and sold today, and the plug and communications protocols for Level 2 charging were designed by the Society of Automotive Engineers to last for many years.

4. What kW level of charging will the DCFC equipment used by SDGE in the priority projects support? (For example, DCFC equipment can support charging at levels such as 50kW, 150kW, or 350kW.) If different levels will be used in different projects, please breakdown responses for each project.

SDG&E Response:

SDG&E is proposing 50 kW DC Fast Charging equipment. 150 kW and 350 kW DC fast charging equipment (and cars) are not currently being sold.

5. Is SDGE aware of any studies or research that estimate how long before the chosen charging level for DCFC in priority projects will become obsolete? If so, please indicate how long SDGE believes this time period to be, and provide the underlying data.

SDG&E Response:

SDG&E is not aware of any studies or research that estimate DCFC charging equipment obsolescence. In the future, there will undoubtedly be faster methods of charging electric vehicles. Faster methods don't necessarily contribute to obsolescence of current equipment, which can still be used by current cars. Faster charging methods (higher power) will most likely require a different connector on the car (new car), so currently owned cars will charge at the rates they were designed for with existing equipment.

6. What plug connection types does SDGE intent to use for DCFC equipment in the priority projects? (For example, CHAdeMo or CCS). If different types will be used in different projects, please breakdown responses for each project.

SDG&E Response:

The Taxi and Electrify Local Highways projects will feature DC FC stations with both Chademo and CCS cables. The Fleet Delivery stations for UPS will be specified to work with the specific EVs they purchase.

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7. Is SDGE aware of any studies or research that estimate how long before the chosen DCFC plug types for priority projects will become obsolete? If so, please indicate how long SDGE believes this time period to be, and provide the underlying data.

SDG&E Response:

Please see response for question 5.

Questions 8-21 pertain to the Airport Ground Support Equipment (GSE) Project:

8. Please clarify how the Airport GSE project will include “integration and utilization of SDIA’s 5.5 Megawatt photovoltaic solar system to the fullest extent possible” (SDGE-3, RS-4). Additionally, specify how much of the energy produced by the SDIA PV system is currently utilized on a daily basis. If energy usage on a daily basis is not a reasonable metric, explain why, and provide a more reasonable metric by which to evaluate current utilization of the PV system.

SDG&E Response:

SDG&E and SDIA will continue to collaborate to ensure that EV infrastructure, rates and load management plans take into account that SDIA has onsite solar (non-NEM). This will be an ongoing process to support use of the onsite generation and take into consideration the specifics of the airport.

SDG&E is not privy to SDIA’s onsite solar PV system generation statistics and how much of that energy is consumed by SDIA.

9. Explain the basis for the statement regarding the electric GSE fleet at SDIA, that “total growth has not increased at the rate that could be expected” (SDGE-3, RS-4). Also, clarify what SDGE expected the growth rate be, and how such an expectation was derived.

SDG&E Response:

The technical maturity and operational capabilities of electric GSE on the market allows for higher penetration than has been implemented at SDIA. In discussions with SDIA and airlines, it appears that greater access to charging stations will create greater EV adoption. While SDG&E does not have a particular growth rate in mind regarding the historical GSE growth and electric GSE percentage, the technical limitations should not have inhibited growth of electric GSE.

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Additional charging infrastructure is expected to reduce barriers and allow for greater electric GSE penetration.

10. How many electric GSE charging ports are currently installed at SDIA?

SDG&E Response:

As of October 2016, there were approximately 50 existing electric vehicle charging ports at SDIA for GSE.

11. Describe any collaboration or involvement SDGE had in the development of SDIA's 2009 Air Quality Management Plan?

SDG&E Response:

SDG&E had no involvement in development of SDIA's 2009 Air Quality Management Plan.

12. Describe any efforts SDGE made to develop transportation electrification (TE) projects that would have been appropriate to include in this application with airports other than SDIA. If any such efforts led to the development of TE projects with airports other than SDIA, please provide details, and explain why those proposals were not included in the current TE application. If SDGE did not seek to develop TE projects with other airports, explain why not.

SDG&E Response:

SDG&E did not work with any other airports besides SDIA, due to the fact that there are no other major airports in SDG&E's territory. However, San Diego County Regional Airport Authority oversees SDIA and other regional airports. Therefore, knowledge transfer can occur.

13. Explain how SDG&E will attempt to "conduct a measured roll-out of charging ports and infrastructure based upon electric GSE procurement commitments while balancing cost reductions from economies of scale" (SDGE-3 RS-9)? Also, please specify how SDGE will determine the number of electric GSE that a project participant must commit to procuring before charger installations can be done with economies of scale.

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SDG&E Response:

A number of factors will be taken into consideration in determining the measured roll-out. This will include the number of electric GSE that airlines commit to operating, the location of the airline at the airport, the types of vehicles that will be electric and their operating characteristics. Based on these factors SDG&E will deploy charging infrastructure to support the incremental electric GSE in a way that encourages greater electrification immediately and in the future. Determination of the number of electric GSE and deployed chargers will likewise depend on the vehicle types and operational needs.

14. Under the parameters of the Airport GSE project, is it possible that GSE charging stations could be installed for a partner organization, but the partner organization does not add any additional electric GSE to their fleet? If so, explain under what circumstances this could happen. If not, specify what program requirements prevent such a situation.

SDG&E Response:

No, charging equipment will not be installed unless new electric GSE is purchased that requires it.

15. Regarding data that has been analyzed from SDIA charging equipment to inform the current project, how consistently or periodically has the data been collected?

SDG&E Response:

The manufacturer of the charging stations must send a technician to the site to retrieve data from the charging equipment. SDG&E's understanding is that SDIA has requested data from the charging stations twice.

16. Regarding data that has been analyzed from SDIA charging equipment to inform the current project, what granularity is lacking that is necessary to create a reasonable load management plan?

SDG&E Response:

Items that can help develop a reasonable load management plan include the following:

- A full year of consumption data in 15 minute increments for all chargers
- Utilization data for non-electric ground support equipment
- Utilization data for electric ground support equipment

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17. Regarding data that has been analyzed from SDIA charging equipment to inform the current project, how much more consistently or periodically would data need to be collected in order to provide enough granularity to develop a reasonable load management plan? What would be required to collect data as consistently or periodically as necessary to provide enough granularity to develop a reasonable load management plan?

SDG&E Response:

Ideally, at least one year of 15-minute load data based on charger consumption and one year of vehicle operations data provided by vehicle data loggers.

To develop a reasonable load management plan, SDG&E would like to see daily, weekly, and seasonal data collected through an automated process.

18. If more consistent or periodic collection of data from SDIA charging equipment would still provide insufficient data to develop a reasonable load management plan, what additional data would still be required?

SDG&E Response:

In addition to charging data, a reasonable load management plan would require operations data collected through vehicle data loggers.

19. What are some specific ways that a load management plan could address the known issues identified in preliminary data collected from SDIA charging equipment, such as “many of the batteries were being run too low and not being sufficiently charged” and “more charging could have occurred during off-peak periods” (SDGE-3 RS-14)?

SDG&E Response:

A load management plan could provide solutions towards:

- When to have eGSE connected to chargers for maximum solar consumption.
- When to have eGSE connected to chargers for least demand and cost on energy bill.
- Ensuring eGSE are adequately charged to preserve battery health and therefore reduce cost of operations and maintenance by tenants further encouraging them to rely on eGSE more.

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- Ensuring eGSE are adequately charged so that they are perceived by operators to always be available.
- Adequate charging through a load management plan will create positive word of mouth amongst eGSE operators regarding operational costs and reliability making faster and further transportation electrification at SDIA possible.

20. Provide detailed calculations for the estimated GHG reductions for the Airport GSE project. Include calculations for estimated annual and lifetime GHG reduction. Provide a separate breakdown of the estimated GHG reductions by vehicle type/class (for example the reductions for a Class-3 truck vs a Class-8 truck).

SDG&E Response:

The E3 PEV Grid Impacts Model used to calculate the GHG (CO₂) emissions is E3's proprietary model. SDG&E does not have access to E3's proprietary models and detailed calculations; however E3 has provided the "Fleet Delivery Emissions Impact Estimation" spreadsheet (See attached spreadsheet "NDC-DR-01-Q20.xlsx") to demonstrate the assumptions and calculations used to estimate GHG emission impacts; this spreadsheet presents the emission reduction calculations for the Fleet Delivery priority review project which correspond to the values in Table 8-1A and Table 8-1B in Chapter 8 of SDG&E's testimony. Additional methodological information is available in Chapter 8, Appendix A - Technical Appendix For E3 Analysis Documentation, please see section 2.1.2 PEV Charging Optimization and section 3.2 Fuel Usage, and section 3.4 CO₂ Emission and Air Quality Impacts. Annual and total lifetime GHG impacts (avoided Carbon from Fuel and incremental Carbon from Electricity) for each project are available in the attached work papers ("Priority Projects Results (Final).xlsx"), in worksheet "Additional Information." Specific vehicle type emission factors are available in Chapter 8, Appendix A - Technical Appendix For E3 Analysis Documentation, Table 9: ICE Emission Factors by Vehicle Type.

21. Provide detailed calculations for the estimated costs of the Airport GSE project. Please also provide calculations and itemization for the data in SDGE-3 Appendix Table GSE-1. Provide a separate breakdown of the estimated costs by vehicle type/class (for example the costs for a Class-3 truck vs a Class-8 truck).

SDG&E Response:

Please see the attached cost estimate spreadsheet ("SDG&E Cost Estimates.xlsx").

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Questions 22-36 pertain to the Electrify Local Highways (ELH) Project:

22. Under the ELH project proposal, explain how drivers who park for long periods at L2 chargers might be able to respond to the grid-integrated rate and modify their charging usage?

SDG&E Response:

Drivers who park for long periods at Park and Ride locations will be able to make their charging and pricing choices to take advantage of the grid integrated rate from the day-ahead pricing information sent out or displayed at the charging stations (e.g., set to only charge when the hourly rate is less than \$0.17/hour). Higher hourly prices that drivers will want to avoid occur in less than 5% of the hours in a year, and can usually be avoided in the early morning and late afternoon. However, even if a driver must charge during a higher priced hour to reach their destination, those few charging sessions should not contribute substantially to their annual fuel bill.

23. Under the ELH project proposal, explain how drivers who want to quickly recharge at DCFC chargers might be able to respond to the grid-integrated rate and modify their charging usage?

SDG&E Response:

SDG&E's grid-integrated rate is available to drivers in a day-ahead manner. DC Fast charging customers have less opportunity to wait until prices are cheaper, and will probably charge when arriving at the DC Fast charging station. This charging behavior will be studied as part of the project.

Higher hourly prices that drivers will want to avoid occur in less than 5% of the hours in a year, and can usually be avoided in the early morning and late afternoon. However, even if a driver must charge during a higher priced hour to reach their destination (which won't happen very often), those few charging sessions should not contribute substantially to their annual fuel bill.

24. Under the ELH project system where drivers set a maximum price they want to pay per kWh and the charging stations deliver the charge as inexpensively as possible (SDGE-3 RS-27), will vehicles simply stop recharging when prices rise above the stated maximum amount?

SDG&E Response:

Yes, that is the way that the system would work. Therefore, the driver's responsibility is to set

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their maximum price to get the required energy they need to get to their destination.

25. Describe any collaboration or involvement SDGE had in the development of CalTrans' 2016 Sustainability Implementation Action Plan.

SDG&E Response:

SDG&E was not involved in the development of Caltrans' 2016 Sustainability Implementation Action Plan.

26. At the Del Lago Park-and-Ride in Escondido, how long ago was the charging equipment procured and installed? How was the cost of the equipment and installation funded? (For example, are installation and equipment costs recovered through charger usage fees?)

SDG&E Response:

The charging stations at the Del Lago site were procured in 2013 and installed in 2014. The cost of the equipment was funded by the ECotality DOE grant. ECotality went bankrupt in late 2013 and their assets were purchased by Car Charging Group. SDG&E is not privy to what equipment and installation costs are covered by the per kWh fees charged by the current operator (Car Charging Group).

27. At the Del Lago Park-and-Ride in Escondido, how is maintenance of the charging equipment currently funded? (For example, are maintenance costs covered through charger usage fees?) If arrangements to generate funding for maintenance other than the current arrangement have been attempted in the past, please provide details.

SDG&E Response:

The current operator of the charging stations at the Caltrans Del Lago site is the Car Charging Group, and they are responsible for the maintenance. To SDG&E's knowledge, no other arrangements to generate funding for maintenance have been attempted.

28. At the Del Lago Park-and-Ride in Escondido, who currently owns and is responsible for maintenance of the charging equipment? If arrangements for ownership and/or maintenance responsibilities other than the current arrangement have been attempted in the past, please provide details.

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SDG&E Response:

Please see the answer to question #27.

29. Please clarify the statement that “SDG&E has included all the construction costs in the project budget, with Caltrans agreeing to provide the land, easement and expertise to streamline design, installation and permitting efforts” (SDGE-3 RS-26). Specify what costs are included in the project budget. Please also explain to what degree estimated project costs reflect reductions due to planned and ongoing construction to expand and renovate the proposed sites.

SDG&E Response:

For projects costs, please see the attached cost estimate spreadsheet (“SDG&E Cost Estimates.xlsx”). The cost estimates were drafted by SDG&E in a stand-alone fashion (in other words, without trying to estimate any potential reductions that may or may not be able to take place from Caltrans’ construction activities).

30. What characteristics of the four Caltrans locations proposed for this project make it likely that charging equipment will be better utilized there than other locations?

SDG&E Response:

These locations were Caltrans’ preference because they are slotted next for construction and/or renovation. Other locations may receive charging in the future, however these were the next desirable locations due to their proximity to freeways and location in disadvantaged communities.

31. What characteristics of the four Caltrans locations proposed for this project make it likely that the presence of charging equipment will encourage more EV adoption than they would at other locations?

SDG&E Response:

In most of these locations, there are not a lot of nearby public charging stations, however, per Caltrans, they are heavily used. When drivers see they have access to charging, they are more likely to adopt electric vehicles.

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32. How many L2 and DCFC chargers is the existing electrical infrastructure able to support at each of the four proposed Caltrans sites?

SDG&E Response:

The cost estimate for this project includes costs for the required electrical infrastructure that the charging stations will require. The existing infrastructure at the sites presently is not adequate to install charging stations.

33. How will SDGE determine whether and how much the ELH project increased the amount of EV's adopted and/or used?

SDG&E Response:

SDG&E will be able to measure charging behavior, such as charging energy consumed, the time that the charging was done, and the price paid for the charging. In addition, SDG&E can survey drivers who use the stations to ascertain more information about their cars and charging habits.

34. Explain the basis for Caltrans' 30 month timeframe to install EV charging stations at 30 locations statewide (SDGE-3 RS-30)?

SDG&E Response:

The Governor's 2016 ZEV Action Plan states on pg. 27 that by 2018, Caltrans must "install public DC fast chargers at a minimum of 30 locations, including highway rest stops and other strategically located Caltrans properties. Utilize the CEC DC fast charger corridor gaps analysis related to the West Coast Electric Highway to inform decisions." Caltrans launched this effort 30 months prior to 2018 to accomplish this goal. See, https://www.gov.ca.gov/docs/2016_ZEV_Action_Plan.pdf

35. Provide detailed calculations for the estimated GHG reductions for the ELH project. Include calculations for estimated annual and lifetime GHG reduction. Provide a separate breakdown of the estimated GHG reductions resulting from L2 and DCFC installations.

SDG&E Response:

The E3 PEV Grid Impacts Model used to calculate the GHG (CO₂) emissions is E3's proprietary model. SDG&E does not have access to E3's proprietary models and detailed calculations;

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however E3 has provided the “Fleet Delivery Emissions Impact Estimation” spreadsheet (See attached spreadsheet “NDC-DR-01-Q20.xlsx”) to demonstrate the assumptions and calculations used to estimate GHG emission impacts, this spreadsheet presents the emission reduction calculations for the Fleet Delivery priority review project which correspond to the values in Table 8-1A and Table 8-1B in Chapter 8 of SDG&E’s testimony. Additional methodological information is available in Chapter 8, Appendix A - Technical Appendix For E3 Analysis Documentation, please see section 2.1.2 PEV Charging Optimization and section 3.2 Fuel Usage, and section 3.4 CO₂ Emission and Air Quality Impacts. Annual and total lifetime GHG impacts (avoided Carbon from Fuel and incremental Carbon from Electricity) for each project are available in the attached work papers (“Priority Projects Results (Final).xlsx”), in worksheet “Additional Information”. Specific vehicle type emission factors are available in Chapter 8, Appendix A - Technical Appendix For E3 Analysis Documentation, Table 9: ICE Emission Factors by Vehicle Type.

36. Provide detailed calculations for the estimated costs of the ELH project. Please also provide calculations and itemization for the data in SDGE-3 Appendix Table ELH-1. Provide a separate breakdown of the estimated costs for L2 and DCFC installations.

SDG&E Response:

Please see the included cost estimate spreadsheet for the ELH project (“SDG&E Cost Estimates.xlsx”).