

NRDC DATA REQUEST
NRDC-SDG&E-DR-01
SDG&E SB 350 TRANSPORTATION ELECTRIFICATION PROPOSALS (A.17-01-020)
SDG&E RESPONSE
DATE RECEIVED: May 2, 2017
DATE RESPONDED: May 12, 2017

DATA REQUEST

1. Please provide confidential responses to the following:
 - a. ORA-02-Q1

SDG&E Response:

The attached file “ORA_SDGE_DR_02 – Q1 (Confidential)” contains Protected Material (as defined in the Non-Disclosure and Protective Agreement between SDG&E and NRDC [“NDA”]) and is being produced subject to the terms of such NDA.

- b. ORA-02-Q5

SDG&E Response:

The following attached files provided in response to ORA-02-Q5 contain Protected Material (as defined in the Non-Disclosure and Protective Agreement between SDG&E and NRDC [“NDA”]) and are being produced subject to the terms of such NDA.

- “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.

2. Refer to the response to ORA-02-Q6. Please provide the data used to generate the weighted peak load frequency figure.

SDG&E Response:

Please see the attached data found in the file titled, “NRDC DR01 – Q2 and Q18.xlsx” on the tab labeled Q2.

3. For each circuit, please provide the event trigger hours (i.e., the hours in which the D-CPP would be applied) for years 2014 – 2016.

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SDG&E Response:

SDG&E does not (and did not for the period of 2014-2016) have any active rates which incorporate an hourly D-CPP adder. As such, SDG&E does not have a record of which hours would have had the trigger applied for the period of 2014-2016.

4. For each circuit, please provide the number of customers served by that circuit. If data are available, please report the number of customers by class, and by EV rate.

SDG&E Response:

The attached file “NRDC DR01 – Q4 (Confidential).xlsx” contains Protected Material (as defined in the Non-Disclosure and Protective Agreement between SDG&E and NRDC [“NDA”]) and is being produced subject to the terms of such NDA.

5. For the system, please provide the event trigger hours (i.e., the hours in which the C-CPP would be applied) for years 2014 – 2016.

SDG&E Response:

SDG&E does not (and did not for the period of 2014-2016) have any active rates which incorporate an hourly C-CPP adder. As such, SDG&E does not have a record of which hours would have had the trigger applied for the period of 2014-2016.

6. Refer to the Direct Testimony of Cynthia Fang, page CF-17 at 7-11. If the “forecasted load exceeds an established threshold” for more than 150 hours in a given year, what is SDG&E’s proposed “true-up” process for ensuring that it does not over- or under-collect revenue from its Commodity CPP Adder?

SDG&E Response:

SDG&E does not propose a “true-up” process specific to its C-CPP adder. The adder will be applied to the number of hours in which load exceeds the established threshold. SDG&E intends to monitor the event hours and may adjust thresholds in the event changes warrant such changes.

7. Refer to the Direct Testimony of Cynthia Fang, page CF-22 at 10-15. If the forecasted load exceeds the relevant threshold for more than 200 hours in a given year, what is SDG&E’s

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proposed “true-up” process for ensuring that it does not over- or under-collect revenue from its D-CPP Adder?

SDG&E Response:

SDG&E does not propose a “true-up” process specific to its D-CPP adder. The adder will be applied to the number of hours in which load exceeds the established threshold. SDG&E intends to monitor the event hours and may adjust thresholds in the event changes warrant such changes.

8. Refer to the Direct Testimony of Cynthia Fang, page CF-26 at 1-2.
- a. Confirm that the Company proposes to determine Grid Integration Charges for each customer using discrete demand bins, as shown in Diagram 5-5. If not confirmed, please describe the process the Company will use to calculate the Grid Integration Charge from maximum annual demand for customers in each rate class.

SDG&E Response:

SDG&E will utilize the demand bins indicated in Diagram 5-5, found on page CF-26 of the Direct Testimony of Cynthia Fang to determine participating customers’ Grid Integration Charge levels.

- b. Confirm that the Grid Integration kW bins shown in Diagram 5-5 are the demand bins that the Company proposes to use in setting residential Grid Integration Charges. If not confirmed, please identify the demand bins that the Company proposes to use.

SDG&E Response:

Please see response to part a.

- c. Please provide any analyses, reports, or other documents that justify the use of a fixed charge greater than \$29 per month for customers who do not consume any electricity.

SDG&E Response:

As noted in the Direct Testimony of Cynthia Fang, the Grid Integration Charge is intended to recover customer-related distribution costs and 80% of distribution demand-related costs. The development of the Grid Integration Charge can be found in the

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workpapers provided in response to Question 1a, in the file titled, “ORA_SDGE_DR_02 – Q1 (Confidential).xlsx.” The specific calculations can be found on the “Res GIC Calc” tab.

9. Separately for the EV-TOU and EV-TOU 2 rates, for each EV customer for which data are available, please provide the hourly 8760 load for each customer for 2016.

SDG&E Response:

Pursuant to paragraph 3 of the NDA, based on customer privacy concerns related to the risk of improper usage of customer demand data, SDG&E is unable to provide this data for individual customers. In lieu of such production, however, SDG&E has attached the aggregated customer hourly 8760 load for Schedules EV-TOU and EV-TOU 2.

Please find the attached data in “NRDC DR01 – Q9.xlsx”.

10. Separately for the EV-TOU and EV-TOU-2 rates, please provide the billing determinants, rates, and revenues for 2016.

SDG&E Response:

The current effective Billing Determinants, Rates, and calculated revenues associated with SDG&E’s EV-TOU and EV-TOU-2 rates, as presented in this proceeding and effective 1/1/17, can be found in the workpapers provided in response to Question 1a, in the file titled, “ORA_SDGE_DR_02 – Q1 (Confidential).xlsx.” The Billing Determinants can be found on the “Determinants” tab in rows 918-948. The Rates can be found on the “Total Proposed Rate” tab in rows 918-948. The calculated Revenues for each rate component can be found on each component’s respective tab, in Rows 918-948, Column S.

11. Refer to the Prepared Direct Testimony of Cynthia Fang, page CF-15. Please confirm that all SDG&E customers will face day-ahead hourly prices based on SDG&E’s Default Load Aggregation Point, rather than some other load aggregation point.

SDG&E Response:

CAISO Day-Ahead hourly prices presented to customers participating in any of the three GIRs will be those associated with the SDG&E D-LAP.

12. Refer to the Direct Testimony of Cynthia Fang on Behalf of San Diego Gas & Electric Company (“SDG&E”), page CF-7 at 3-8. Please provide the Cost of Service Study underlying the Company’s statement that “only a fraction (one-third) of the services

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recovered in electric utility rates are driven by the kilowatt-hour (kWh) energy usage of customers.”

SDG&E Response:

The utility cost to serve customers consists of commodity, distribution and transmission services, as well as other services provided pursuant to law and regulation. The Company’s statement that “only a fraction (one-third) of the services recovered in electric utility rates are driven by the kilowatt-hour (kWh) energy usage of customers” reflects the fact that the drivers behind these services are (i) planning and regulatory requirements for providing customers with safe and reliable utility services, and (ii) public policy mandates for achieving particular social objectives. As noted in the Direct Testimony of Cynthia Fang, page CF-6, “[u]nder SDG&E’s current effective rates [at the time of filing], commodity services represent 49% of total costs recovered, distribution represents 29%, transmission covers 13% and the remaining 9% represents the costs of State and Commission mandated programs.”

These costs fall into the following cost categories:

- Customer Costs: These costs are required for each interconnected customer whether or not the customer uses electricity and therefore are independent of a customer’s energy use.
- Capacity-related Costs: These costs include Generation Capacity costs, Distribution Demand costs and Transmission costs.
 - Generation Capacity Costs – These costs are not incurred on the basis of energy usage, but rather on the basis of meeting net peak capacity needs of the system and therefore reflect demand at the time of net system peak when additional capacity may be required.
 - Distribution Demand Costs – These costs are incurred independent of a customer’s energy usage to reliably meet the local capacity needs of the combined maximum demand of customers served off of a given circuit and as such more appropriately reflect a customer’s maximum demand rather than customer demand at time of system peak.
 - Transmission Costs – These capacity costs are incurred to meet reliability requirements, which also include (1) the need to address contingency conditions (e.g., the forced outage of one or more transmission line that can occur at any time), (2) policy obligations (such as delivering and integrating renewable resources to meet Renewable Portfolio Standard (“RPS”) requirements), (3) economics (where the economic benefits to consumers from reducing Local Capacity Requirements (“LCRs”) or minimizing congestion-related costs offset the cost of the transmission upgrade) and (4) maintenance (such as aging infrastructure replacement and where new transmission is needed to allow other transmission

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facilities to be removed from service for maintenance without interruption of customer load).

- Costs of State and Commission Mandated Programs are generally driven by legislated and regulated requirements and criteria which determine funding requirements rather than a customer's energy usage.
- Energy Costs: These are the only costs that vary as a result of changes in customer usage, with these costs being dependent on the time of delivery.

Cost studies associated with Distribution and Commodity services are part of the scope of utility GRC Phase 2 proceedings. The links to those associated direct testimonies in SDG&E's pending 2016 GRC Phase 2 (A.15-04-012) are provided below.

[https://www.sdge.com/sites/default/files/regulatory/Saxe%20Clean%20w_Attachments.p
df](https://www.sdge.com/sites/default/files/regulatory/Saxe%20Clean%20w_Attachments.pdf)

[https://www.sdge.com/sites/default/files/regulatory/Shaugnessy%20Clean%20w_Attach
ments.pdf](https://www.sdge.com/sites/default/files/regulatory/Shaugnessy%20Clean%20w_Attachments.pdf)

13. Is it the Company's position that cost causation as determined through a Cost of Service Study is the sole appropriate basis for rate design? If so, please explain why. If not, describe the other factors that the Company considers to be appropriate grounds for rate design?

SDG&E Response:

As noted in the Direct Testimony of Cynthia Fang, rate design involves the balancing of multiple objectives. As stated on page CF-3, SDG&E supports the application of Rate Design Principles developed in Rulemaking ("R.") 12-06-013, which consist of principles related to cost of service, affordable electricity, conservation, and customer acceptance. These principles should guide the rate design for all customers. In addition, SDG&E seeks rate design that promotes the following policy goals:

- **Accurate price signals:** Providing customers with accurate price signals means that utilities charge for the services they provide and rates are designed to cover costs on the same basis as they are incurred. By sending customers clear price signals regarding the cost of electricity and the cost of using the electric grid for the services they receive, SDG&E aims to give customers the best possible opportunity to make wise decisions about their energy use and to mitigate cost shifts between customers. Cost-shifting is exacerbated with incentives that are buried in rates and not transparently identified.
- **Transparent incentives:** Incentives or subsidies that have been deemed necessary to further public policy objectives are separately and transparently identified. Building upon the foundation of accurate price signals, subsidies that advance state policy

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goals should be transparently identified in utility bills, separate from the charges for services provided to or from the customer.

- **Customer options:** SDG&E believes that a critical aspect of SDG&E's policy framework is to balance the needs of customers while still providing a cost-based rate structure. SDG&E recognizes the importance of continuing to offer customers new cost-based rate options that best meet their needs.
- **Transition paths to minimize impacts and inform customers:** SDG&E is committed to providing customers with clear and timely information to help customers prepare for rate changes, including those presented in this Application. SDG&E believes that implementing rate design changes in transitional phases: (i) helps to minimize customer impacts; and (ii) provides the best opportunity for customers to progressively become more engaged and informed about the choices that are available to them.

14. Please describe the Company's cost allocation methodology related to distribution costs, and how the demand allocators are developed for each class.

SDG&E Response:

As noted in response to Q12 above, cost studies associated with distribution services are part of the scope of utility GRC Phase 2 proceedings, most recently in SDG&E's 2016 GRC Phase 2 proceeding (A.15-04-012), which is pending before the Commission with direct testimony provided in response to Q12. Distribution costs consist of: (1) customer-related distribution costs and (2) demand-related distribution costs, both of which are reflected in the Distribution cost study.

15. Please refer to the Prepared Direct Testimony of Cynthia Fang, page 18, line 8.

- a. Please discuss how transformers are sized.

SDG&E Response:

Transformers are purchased in set sizes and the sizes are given in kVA (kilo volt-amperes). These sizes in kVA are the transformer name plate load ratings as designed by the manufacturer. Transformers are capable, for short periods of time, of handling more load than the kVA name plate rating. SDG&E has a design manual which contains three tables listing transformers by size and their load rating ranges for the initial sizing of a newly installed transformer (Initial Transformer Design Loading). The load (kVA) on the transformer would consist of load generated by all customers for whom the transformer provides electricity. The load is estimated by using load information provided by the customers or for residential units under 3,000 square feet, SDG&E has

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established tables showing the usual load that can be expected and a diversified value based on the number of customers being served.

- b. Please provide a copy of the Company's standard approach for sizing transformers for residential customers.

SDG&E Response:

See the attached Design Manual pages attached to this response, titled "NRDC DR01 – Q15 – ED STDS 5300.pdf", "NRDC DR01 – Q15 – ED STDS 5322.pdf", and "NRDC DR01 – Q15 – ED STDS 5621.pdf".

16. Please refer to the Prepared Direct Testimony of Cynthia Fang, pages 17-19.

- a. For residential customers, please identify which distribution demand costs are driven by local (e.g., circuit) coincident peak demand and identify the portion of total distribution system costs that these represent.

SDG&E Response:

SDG&E does not have the breakout of the portion of distribution costs that is driven by local coincident peak demand and non-coincident peak demand since much of the distribution assets that make up the distribution system serve multiple needs. That is, they serve local coincident peak demand as well as service not driven by local peak demand as well as other reliability needs not driven by local peak and power quality. In addition, such drivers would vary by circuit and vary over time. SDG&E proposes 20% of distribution demand costs be allocated to the D-CPP adder to ensure customers still pay their fair share of the embedded costs of the distribution system as well as receive a price signal to incent moving load away from local circuit peak.

- b. For residential customers, please identify which distribution demand costs are driven by an individual's non-coincident annual peak demand, and identify the portion of total distribution system costs that these represent.

SDG&E Response:

Please see the response to part a.

17. Refer to the Prepared Direct Testimony of Cynthia Fang, chart 5-1.

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- a. Please provide a similar chart for each class, indicating both the percentage and dollar amount of each category.

SDG&E Response:

Please see the attached file titled, “NRDC DR01 – Q17.xlsx” for similar charts, by customer class.

- b. Please include the workpapers used to produce such charts.

SDG&E Response:

Please see the attached file titled, “NRDC DR01 – Q17.xlsx,” tab labeled “Data” for the workpapers used to produce the charts.

18. Refer to the Direct Testimony of Cynthia Fang, page CF-21 at 5-6. Please provide all workpapers and data underlying Chart 5-2.

SDG&E Response:

Please see the attached data found in the file titled, “NRDC DR01 – Q2 and Q18.xlsx” on the tab labeled Q18.

19. Regarding TOU time periods and the Grid Integration Rate (GIR):

- a. Would the only applicable TOU period be the super-off-peak period (defined as midnight to 6 a.m. on weekdays and midnight to 2 p.m. on weekends and holidays), as used to determine the GIC? If not, please provide a table showing the TOU time periods proposed, and what rate components of the GIR would be dependent upon such time periods.

SDG&E Response:

The only TOU period applicable to the proposed GIRs would be the Super Off-Peak period, which would be utilized in both the determination of the GIC for the Residential and Commercial GIRs, and for the Hourly Base rate for the Residential GIR.

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- b. Please discuss whether the TOU time periods proposed for the GIR would be the same as those proposed in the Company's February 2016 GRC Phase 2 filing (A. 15-04-012).

SDG&E Response:

As noted in Footnote 22, found on page CF-20, the Super Off-Peak period is defined as midnight to 6 a.m. on weekdays, and midnight to 2 p.m. on weekends and holidays. This definition of Super Off-Peak hours is consistent with the Super Off-Peak hours that SDG&E has proposed in its 2016 GRC Phase 2 A. 15-04-012.

- c. Please refer to the "Joint Motion of San Diego Gas & Electric Company (U 902 E), The Office of Ratepayer Advocates, The City of San Diego and the California City-County Street Light Association for Leave to Submit Joint Supplemental Testimony on Residential And Small Commercial Customer Issues" filed on November 16, 2016 in A. 15-04-012.

- i. Please provide a copy of the "Joint Supplemental Testimony on Residential and Small Commercial Customer Issues" or a link to such testimony.

SDG&E Response:

Please see the attached file "NRDC DR01 – Q19 – Joint Testimony.pdf".

- ii. Please discuss whether the TOU time periods proposed by SDG&E in the instant proceeding are consistent with the "Joint Supplemental Testimony on Residential and Small Commercial Customer Issues" filed on November 16, 2016 in A. 15-04-012. If they are not consistent, please explain why not.

SDG&E Response:

As noted in Footnote 22, found on page CF-20, the Super Off-Peak period is defined as midnight to 6 a.m. on weekdays, and midnight to 2 p.m. on weekends and holidays. This definition of Super Off-Peak hours is consistent with the Super Off-Peak hours that SDG&E has proposed in its 2016 GRC Phase 2 A. 15-04-012. This includes the standard TOU periods addressed in the "Joint Supplemental Testimony on Residential and Small Commercial Customer Issues," filed on November 16, 2016.

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20. Refer to Refer to the prepared testimony of Randy Schimka, Chapter 4, Figure 4-4: Annual fuel costs comparison of Electricity and Gasoline.

- a. Holding the other assumptions specified in footnote 24 constant, what would be the estimated annual fuel cost for an “unmanaged” and a “managed” customer, both taking service on the residential GIR?

SDG&E Response:

Using the residential GIR rate for both “managed” and “unmanaged” drivers increases the fuel price for the “unmanaged” drivers from \$286/annually to \$356/annually. This assumes that “unmanaged” drivers would plug in their vehicles right when they get home, which would add to the system peak.

- b. Please provide the data, assumptions, and workpapers used to generate this graph.

SDG&E Response:

Attached is the workpaper for figure 4.4 with the appropriate assumptions (filename: “Data Request_Workpaper_Figure 4.4.xls”).

21. Has the Company conducted a total annual bill impact analysis for residential EV customers that switch from a whole-house EV TOU rate to the residential GIR, under both “managed” and “unmanaged” charging scenarios? If so, please provide such analysis, including all workpapers.

SDG&E Response:

SDG&E has not conducted total annual bill impact analysis for Residential EV customers, as SDG&E’s GIRs have not yet been approved or implemented. Due to the nature of SDG&E’s proposed Hourly Dynamic Rate, bill impact analysis would require existing customer data.

22. Please describe and provide any analyses or studies the Company or its consultants has performed to determine the degree to which the proposed rates will encourage EV adoption. If no such analyses or studies have been performed, please explain why not.

SDG&E Response:

No studies of this nature have been performed to date. Using information from surveys completed by the Center for Sustainable Energy, one can see the characteristics of EV drivers and what motivates them to purchase an EV. Two motivating factors are: saving

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money on fuel costs and rebates. SDG&E's Residential Charging Program provides both of these factors. The residential grid integrated rate is designed to encourage charging at grid-friendly times and in turn provides lower fuel costs to the participants. Providing a Level 2 charging station with installation is a form of incentive that will not only help participants take more advantage of super off-peak pricing, it will also provide drivers with more flexibility in their charging (since the provided Level 2 charging station will be able to charge faster than the Level 1 cordsets now used by many drivers).

23. Refer to the prepared testimony of Randy Schimka, Chapter 4, page RS-18.

- a. Please describe the "enabling technology tool" that SDG&E is planning to provide to customers.

SDG&E Response:

The "enabling technology tool" referred to on page RS-18 will be a level 2 EVSE and the associated phone app and/or web page that will be accessible by Residential GIR customers. This tool will allow drivers to see day-ahead Residential GIR hourly prices, which can be used to make vehicle charging or other household load decisions for the next day. There could be additional enabling technology tools offered by EVSPs as part of the EVSE that will be qualified for the project. Those features will depend on what the various EVSPs offer during the RFP process.

- b. Please specify whether the tool will be made available to customers not enrolling in the GIR. If not, please explain why not.

SDG&E Response:

No, the tool will not be made available to customers not enrolling in the residential GIR. A phone app or website that shows day-ahead residential GIR pricing has limited value to other utility customers that are on tiered or traditional TOU rates.

However, as discussed in Cyndee Fang's Chapter 5 testimony on page CF-30, SDG&E recommends that the GIR be made optionally available to all customers. While SDG&E provides these rate proposals as part of this TE Application, SDG&E proposes not to limit the applicability of the proposed GIR to participants of SDG&E's TE proposals, and instead proposes that they be made available to all customers. If the residential GIR is approved, the phone app or web tool discussed above would then be made available to any customers who would like to sign up for the residential GIR.

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24. Refer to the prepared testimony of Randy Schimka, Chapter 4, page RS-19.

- a. Please describe the customer education and outreach that SDG&E has undertaken in order to encourage EV customers to enroll in an EV-TOU or EV-TOU2 rate.

SDG&E Response:

SDG&E's customer education and outreach around the EV-TOU and EV-TOU2 is made up of social media, direct email, events, dealership outreach and media relations efforts that work to inform EV drivers about the rate and drive them to SDG&E's website to sign up. EV-TOU sign ups increase when SDG&E hosts EV events and marketing efforts are increased surrounding these events. Examples include events like National Drive Electric Week: EV Day San Diego, the San Diego International Auto show, and our launch of the Electric Vehicle Climate Credit program.

- b. Please discuss the reasons why only 38% of EV customers have enrolled in an EV TOU rate.

SDG&E Response:

There could be several reasons why only 38% of eligible customers have enrolled in an applicable EV rate.

- Approximately 35% of our known EV drivers have a solar PV system. In addition, there are approximately 4,000 customers with solar that are on the time-of-use DR-SES rate that is aimed at solar owners. Some of those 4,000 solar customers on the DR-SES rate have EVs, which also helps to contribute to a lower EV rate percentage number as compared to total EV drivers.
- A customer could use less than the average of 500 kWh per month and charge their car away from home (thus, the DR tiered rate would be a better rate for them).
- A customer could use their Level 1 cordset at home and not think the EV rates would be advantageous (this has come up in several customer conversations at EV events).
- A customer could have family members at home during the summer on-peak time and think that the EV TOU rates are not advantageous (this has come up in several customer conversations at EV events).
- A customer may not know about the availability of the EV rates (this has come up in several customer conversations at EV events).

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- c. Please provide all studies, survey results, or other supporting materials regarding the reasons that more customers have not enrolled in the current EV-TOU and EV-TOU2 rates.

SDG&E Response:

Other than the reasons mentioned in Question 24b above, SDG&E doesn't have any supporting materials regarding additional reasons why more customers have not enrolled in current EV rates.

25. Regarding the proposed residential GIR structure featuring a Grid Integration Charge (GIC) that varies based on customer size or demand:

- a. Please indicate whether the Company or its consultants have conducted any studies (including but not limited to surveys, focus groups, or similar) regarding customers' understanding, acceptance, or preferences regarding a rate based on a customer's maximum demand. If so, please provide the results of such studies.

SDG&E Response:

SDG&E or its consultants have not conducted studies or surveys on this topic with respect to the Residential GIR rate.

- b. Please identify and describe the currently available enabling technologies or services that SDG&E is aware of that enable residential customers to monitor their total household hourly kW demand in real time.

SDG&E Response:

There are several Home Area Network (HAN) products available that communicate with customer smart meters to provide household demand in real time. Some examples of these devices that are approved to interface with SDG&E's Smart Meters are: Rainforest Automation EMU-1 in-home display, Rainforest Automation EMU-2 in-home display, Rainforest Automation RAVen in-home display, and the Ceiva Homeview in-home display.

- c. Please identify and describe the currently available enabling technologies or services that SDG&E is aware of that enable residential customers to automatically control their energy use in real time, including, but not limited to, electric vehicle supply equipment controls.

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SDG&E Response:

There are several products available that allow customers to automatically control their energy use in real time, such as Ecobee, Nest, and Energate smart thermostats. Also, many EVs offer drivers a remote app to start and stop charging, as well as pre-cool and pre-heat the vehicles. There are also a few home charging stations that have features to control and monitor charging sessions.

26. Regarding the proposed residential GIR structure featuring a dynamic energy charge:

- a. Please indicate whether the Company or its consultants have conducted any studies (including but not limited to surveys, focus groups, or similar) regarding customers' understanding, acceptance, or preferences regarding a dynamic hourly energy charge. If so, please provide the results of such studies.

SDG&E Response:

SDG&E or its consultants have not conducted studies or surveys regarding customers' understanding, acceptance, or preferences regarding a dynamic hourly energy charge. However, SDG&E is currently piloting dynamic hourly prices with its employees for workplace charging, and has the following information to share:

- SDG&E workplace charging data was collected and analyzed in February 2016. This data shows how employees respond to the dynamic hourly pricing signals (see attached file, "SDGE Workplace Charging Data Feb 2016").
- b. Please identify and describe the currently available technologies or services that SDG&E is aware of that provide residential customers with day-ahead hourly energy rates.

SDG&E Response:

SDG&E is currently piloting dynamic hourly prices with our employees for workplace charging. The day-ahead price is available to employees via a phone app and a web page, and can be used to help determine charging strategies for the next day. This same type of hourly dynamic rate will be used soon by SDG&E's Power Your Drive program in workplaces and multi-unit dwellings as it rolls out later this year.

In addition to employee workplace charging, SDG&E is also conducting a rate study available to residential customers called Whenergy Hour X (<https://www.sdge.com/MyWhenergy3>). This rate is similar to SDG&E's VGI rate for the Power our Drive program, and does not require EV ownership to participate.

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Outside of the region, Excelon's ComEd in Illinois is currently running an hourly day-ahead residential pricing program available to all customers called the Hourly Pricing Plan (<https://hourlypricing.comed.com/>).

- c. Please identify and describe the currently available technologies or services that SDG&E is aware of that enable residential customers to monitor their total household hourly energy use in real time.

SDG&E Response:

Please see the response to question 25b. The technology is similar in both cases.

27. Regarding the proposed residential GIR structure featuring a circuit-specific dynamic adder:

- a. Please indicate whether the Company or its consultants have conducted any studies (including but not limited to surveys, focus groups, and pilot EV rates) regarding customers' understanding of circuit-specific charges. If so, please provide the results of such studies.

SDG&E Response:

SDG&E or its consultants have not to date conducted any studies about customer understanding of circuit specific charges. However, with the education and outreach efforts conducted for the Power Your Drive program (that includes circuit specific charges), SDG&E has been working extensively with many potential PYD customers to fully explain how the rate will work.

- b. Please describe how customers would be notified regarding the D-CPP hourly adder going into effect the next day.

SDG&E Response:

SDG&E will send information about the dynamic day-ahead hourly prices to customers, as well as any hourly adders, via a phone app and/or web site. In the Residential Charging program, if participating EVSPs have the technology to send pricing information to customers using their equipment, that could be another way to provide pricing information.

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- c. Please identify and describe the currently available technologies or services that SDG&E is aware of that provide residential customers with information regarding what circuit they are currently on, depending on their location (and updating if the customer changes location).

SDG&E Response:

For home charging, SDG&E prints the circuit number of each residential customer under the “Detail of Current Charges” section on their bill so the customer knows what circuit they are on at home. For non-home charging, SDG&E will make the day-ahead prices available on the phone app and/or web site that will be part of the respective project. In addition, locations with EVSE installed that have displays will show the prices for charging on those displays.

- d. Please identify and describe the currently available technologies or services that SDG&E is aware of that provide residential customers with information regarding whether the D-CPP adder will apply any time that day to the circuit that the customer is currently on (and updating if the customer changes location).

SDG&E Response:

Please see answer for Question 27c.

- e. Please identify and describe the currently available technologies or services that SDG&E is aware of that would enable a residential customer to see the hourly energy rates for the current day and following day (including the D-CPP adder) anywhere in SDG&E’s territory.

SDG&E Response:

Please see answer for Question 27c.

- f. Please indicate whether SDG&E is planning to provide any technologies or services described in response to (c), (d), and (e) to customers enrolling in the residential Grid Integration Rate. If not, please explain why not.

SDG&E Response:

SDG&E is planning on making applicable technology items discussed in Questions 27c, d, and e available to customers enrolling in the residential Grid Integrated Rate.

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- g. Please discuss whether SDG&E has sought input from third-party EVSE service providers to develop this rate structure, and if so, what input has been received.

SDG&E Response:

SDG&E has not sought input from third party EVSE service providers to develop Residential GIR rate structures.

28. Please discuss whether the commercial GIR structure was developed taking into account input from the EV community, such as input from manufacturers of EVSEs and EVSE service providers. If so, please describe the input received and how the GIR was developed to take such input into account.

SDG&E Response:

No input was sought from the EV community, such as manufacturers of EVSEs, and EVSE service providers regarding Commercial rate structure.

29. Please provide the following information regarding the Vehicle Grid Integration (VGI) pilot, being implemented as “Power Your Drive”:

- a. The number of customers who have expressed an intention to participate

SDG&E Response:

The response to this question through March 2017 can be found in the attached Power Your Drive semi-annual report on page 24 (filename: “Power-Your-Drive-Semi-Annual-Rpt-March-2017”).

- b. The number of customers that have expressed an intention to select the VGI Rate-to Driver billing option versus the VGI Rate-to-Host billing option to date

SDG&E Response:

The response to this question through March 2017 can be found in the attached Power Your Drive semi-annual report on page 25 (filename: “Power-Your-Drive-Semi-Annual-Rpt-March-2017”).

- c. Load management plans submitted to date

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SDG&E Response:

There haven't been any load management plans submitted to date that are approved and ready to share.

- d. All interim reports regarding the pilot implementation, evaluation, or informal findings.

SDG&E Response:

The attached March 2017 Power Your Drive semi-annual report contains current information about the pilot.

30. Regarding EV charging stations that are currently installed at commercial customers' premises that are not part of the VGI pilot:

- a. Please identify how many commercial customers (employers or property owners) have installed EV charging stations.

SDG&E Response:

SDG&E does not have a comprehensive list of commercial customers that have installed EV charging stations, but would suggest that the PlugShare website (www.plugshare.com) is a good resource to use to see this type of information in the region.

- b. Please identify what rate structures such customers are currently on, and provide the number of customers with EV chargers on each.

SDG&E Response:

Some commercial charging is installed directly on the customer's electric panel, and would be subject to their existing rate (such as AL-TOU in most cases). In addition, some commercial charging is installed on separate electric services and would either be on the A-TOU commercial rate if the maximum demand is less than 20 kW, or the AL-TOU rate if their maximum demand equals or exceeds 20 kW. SDG&E does not have information about the number of customers with EV charging on each applicable commercial rate.

- c. Please provide all informational materials (such as workplace charging seminar presentations, guidebooks, pamphlets, bill calculators, and websites) that the

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Company provides to commercial customers to help customers determine bill impacts, evaluate rate options, and choose EV supply equipment.

SDG&E Response:

- Typical workplace charging seminar presentation is attached (filename: “NRDC DR-01 Q30c Workplace Charging Presentation”).
 - Contains commercial rate billing impact concepts to educate customers.
 - SDG&E typically doesn’t evaluate rate options for customers.
 - SDG&E typically doesn’t recommend or choose EV supply equipment for customers.
- Pricing Plans for Businesses website (contains explanations about commercial rates for customers:
 - <https://www.sdge.com/business/PricingPlans>
- SDG&E website for workplace charging:
 - <https://www.sdge.com/clean-energy/business/employers-and-property-owners>
- SDG&E website for Power Your Drive (workplace charging):
 - <https://www.sdge.com/clean-energy/electric-vehicles/poweryourdrive>
- Plugin Electric Vehicle Collaborative website about workplace charging:
 - <http://pevcollaborative.org/workplace-charging>

31. Refer to the Prepared Direct Testimony of Cynthia Fang, page CF-22. Please provide:

- a. A description of the variables used in the model

SDG&E Response:

The variables used in the models include:

- 1) Historical Circuit Load:
 - a. kWh per circuit per hour.
- 2) Weather Information:
 - a. Temperature (in Fahrenheit degrees) and relative humidity.
 - b. Heating Degree Days (HDD) Based on a temperature of 60°F.
 - c. Cooling Degree Days (CDD) Based on a temperature of 60°F.
 - d. HDD*Weekend Interaction effect, which indicates if an interaction effect will be present in the model based on a binary weekend value.
 - e. CDD*Weekend Interaction effect, which indicates if an interaction effect will be present in the model based on a binary weekend value.
 - f. Hours of daylight, which is a calculation of when the sun rises until the sun sets.
- 3) Calendar Information:

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- a. Year
- b. Month of Year, which includes January, February, March, April, May, June, July, August, September, October, November, December.
- c. Day of Week, which includes Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.
- d. Weekend, which includes whether the Day of Week is a weekend or not and used for interaction effects.
- e. Holiday, which includes New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, Day After Thanksgiving, Christmas Day, and can include Observed Holidays.

Variables in models may adjust over time as new data becomes available that could be incorporated into models; one example would be the addition or subtraction of a major customer on a circuit.

- b. The forecast model specification and coefficient values

SDG&E Response:

Each circuit forecasted consists of 25 individual models for that circuit (1 for daily load and 24 models for each hour of the day). Each model includes the variables described in the response to Q31(a) above, resulting in over 625,000 coefficient values (i.e., 25 models and 25 coefficients for over 1,000 circuits).

Pursuant to paragraph 3 of the NDA, due to customer privacy concerns, SDG&E is unable to provide these models.

- c. Statistical significance of the overall model and each variable

SDG&E Response:

SDG&E uses MAPE (Mean Absolute Percentage Error) as a measure of predication accuracy for forecasting models, since MAPE is more appropriate for forecasting models.

- d. The data used to specify the model (i.e., the historical hourly load at the circuit level, local weather, and calendar-based variables)

SDG&E Response:

The data used to specify the models currently comes from the following locations:

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- 1) Historical Circuit Load (Confidential) which, pursuant to paragraph 3 of the NDA, due to customer privacy concerns, SDG&E is unable to provide.
 - 2) Weather Information, please see attached file, “NRDC DR01 Q31d – Weather_Data.csv”:
 - a. 5 weather stations (KCZZ, KNKX, KRNM, KSAN, KSEE) for hourly temperature, relative humidity.
 - b. HDD’s and CDD’s are calculated from the 5 SDG&E weather stations.
 - 3) Calendar Information:
 - a. Yearly Calendar information.
 - b. Forecasting Holidays (Holidays based on observed holidays modified to reflect expected changes in load that may result from changes due to whether people work on this day. For instance, if an observed holiday occurs on the weekend, then it is not considered a forecasting holiday.)
32. Please refer to the Prepared Direct Testimony of Cynthia Fang, page CF-28 regarding the public charging GIR.
- a. Do any public EV charging stations currently exist at similar locations as targeted by the public charging GIR (e.g., Caltrans Park-and-Ride locations)?

SDG&E Response:

There are two existing charging locations; the first is at the Caltrans Del Lago Park and Ride in northern San Diego near Interstate 15 at 3310 Del Lago Blvd, Escondido, CA 92029. The second location is at the Oceanside Transit Center, near Interstate 5 at 235 S. Tremont St, Oceanside CA 92054.

- b. If the response to (a) is yes, please identify the rate structures under which these charging stations currently operate.

SDG&E Response:

The charging stations installed at both the Del Lago Park and Ride location and the Oceanside Transit Center location are on a separate electric service billed to the EVSP, and they currently are both on the AL-TOU commercial rate.

- c. Please discuss whether SDG&E has sought input from third-party EVSE service providers to develop this rate structure, and if so, what input has been received.

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SDG&E Response:

SDG&E has not sought input from third-party EVSE service providers to develop this rate structure. AL-TOU is a standard rate structure for most of SDG&E's commercial customers.

33. Please refer to the response to SDAP-02-Q45. Please confirm that a residential customer would be billed on the basis of 15 kW demand if their highest demand were 15 kW over 30 minutes but 0 kW for the rest of the hour. In other words, if residential demand is based on the customer's maximum hourly demand, would it not average 15 kW and 0 kW demand over the 60 minute interval?

SDG&E Response:

As stated in SDG&E's response to SDAP-02-Q45, the use of a 15 kW charger would result in a demand of 15 kW. Customer demand is not averaged for purposes for calculating maximum hourly demand.