

Cal PA DATA REQUEST
Cal PA-SDG&E-DR-10
Application for Approval of Electric Vehicle High Power Charging Rate
SDG&E RESPONSE
DATE RECEIVED: March 9, 2020
DATE RESPONDED: March 12, 2020

SUBJECT: EQUAL PERCENT OF MARGINAL COST (EPMC) SCALING AND RECOVERY OF SDG&E'S COST OF SERVICE

Question 1

Is there any existing electric vehicle (EV) load of commercial EV fleets or direct current fast charger (DCFC) stations in SDG&E's territory? If so, approximately how many existing commercial EV customers are there? Approximately how much annual load?

SDG&E Response

SDG&E objects to the extent that the request seeks information that has not been disclosed publicly and that is information in the possession of a third party and/or contains highly market-sensitive confidential, proprietary, privacy, or trade secretion information by reference to statutory protection. SDG&E also objects to the extent that the question calls for speculation. Notwithstanding and without waiving those objections, SDG&E answers that there is currently existing commercial EV fleet and DCFC load in SDG&E service territory. As of March 10, 2020 there are approximately 72 DCFC sites with 247 total concurrently usable ports in SDG&E's territory. SDG&E is unable to share the annual load of these customers due to CPUC customer privacy regulations, as the low number of DCFC operators and high proportion of total DCFC load dispensed at individual sites makes it impossible to anonymize DCFC load data.

SDG&E does not track the total number of commercial EV fleets in its service territory, but believes the current number is relatively small.

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Question 2

In SDG&E's opening testimony p. 2 lines 10-11 SDG&E states "the subscription charge recovers the non-coincident distribution demand costs allocated to Schedule AL-TOU based on current schedule AL-TOU non-coincident demand charges." Is it correct that part of the purpose of SDG&E's proposed subscription charge is to recover certain costs on SDG&E's distribution system that are related to demand (kW) and not volumetric throughput (kWh)?

SDG&E Response

Yes. SDG&E's distribution costs reflect costs associated with customer demand (kW) and the number of customers. No SDG&E distribution costs are associated with a customer's actual energy usage (kWh). The proposed EV-HP subscription charge is based on the recovery of non-coincident distribution demand costs, which are costs based on the customer's kW demand.

Cal PA DATA REQUEST
Cal PA-SDG&E-DR-10
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SDG&E RESPONSE
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Question 3

In addition to recovering distribution demand-related costs, is it correct that another purpose of the subscription charge is to send a price signal that reflects cost causation—that is, so that customers can see that their demand has cost impacts on the distribution system?

SDG&E Response

Yes. Because the proposed subscription charge is based on the recovery of non-coincident distribution demand costs, this charge should correctly send a price signal to customers on distribution cost causation so that customers can see that their demand has an impact on the cost of SDG&E's distribution system. For this reason, the subscription charge complies with the Commission's Rate Design Principle 3, which states that rates should be based on cost-causation, and Rate Design Principle 5, which states that rates should encourage reductions in non-coincident distribution demand.

Cal PA DATA REQUEST
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SDG&E RESPONSE
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Question 4

Please see attached SDG&E's Rule 15 for line extension allowances, section C.2 (also see below)

C. DISTRIBUTION LINE EXTENSION ALLOWANCES

1. General: Utility will complete a Distribution Line Extension without charge provided utility's total estimated installed cost does not exceed the allowances from permanent, bona-fide loads to be served by the Distribution Line Extension within a reasonable time, as determined by utility. The allowance will first be applied to the Service Extension (including the metering), in accordance with Rule 16. Any excess allowance will be applied to the Distribution Line Extension to which the Service Extension is connected.
2. Basis of Allowances: Allowances shall be granted to an Applicant for Permanent Service, or to an Applicant for a subdivision or development under the following conditions:
 - a. Utility is provided evidence that construction will proceed promptly and financing is adequate, and,
 - b. Applicant has submitted evidence of building permit(s) or fully-executed home purchase contract(s) or lease agreement(s), or,
 - c. Where there is equivalent evidence of occupancy or electric usage satisfactory to utility.

The allowances in Sections C.3. and C.4. are based on a revenue-supported methodology using the following formula:

$$\text{ALLOWANCE} = \frac{\text{NET REVENUE}}{\text{COST OF SERVICE FACTOR}}$$

3. Residential Allowances: The allowance for Distribution Line Extensions, Service Extensions, or a combination thereof, for Permanent Residential Service is \$3,241 per meter or residential dwelling unit.
4. Non-Residential Allowances: The allowance for Distribution Line Extensions, Service Extensions, or a combination thereof, for Permanent Non-Residential Service is determined by utility using the formula in Section C.2. The utility, at its election, may apply a Non-Residential Allowance Net Revenue Multiplier as defined in Section J.

Where the Distribution Line Extension will serve a combination of residential and non-residential meters, residential allowances will be added to non-residential allowances.

- a. Please confirm that the line extension allowance is the portion of distribution infrastructure upgrade costs that general SDG&E ratepayers (that is, all SD&E ratepayers) are responsible for paying.
- b. Please confirm that the individual customer who triggered the distribution infrastructure upgrade is only responsible for paying the portion of costs that are in excess of the allowance.
- c. Is it correct that under a hypothetical scenario in which a customer connects a public direct current fast charging (DCFC) station to SDG&E's grid and the customer's demand triggers the need for a new service line drop, all SDG&E's ratepayers would pay the costs up to the Allowance as defined in Section C.2?

Cal PA DATA REQUEST
Cal PA-SDG&E-DR-10
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SDG&E RESPONSE
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- d. Is it correct that under Section E.5 (Refunds), if new permanent load materializes during the ten years after SDG&E upgrades the service line, the customer could be entitled to further reimbursement beyond the initial allowance through a series refund?

SDG&E Response

- a. Yes. Under Rule 15 all customers receive a line extension allowance to cover the cost of the final line transformer, service drop, and meter (TSM) needed to serve the customer based on the load profile of that customer. This allowance for TSM costs to serve a customer is paid for by all customers through electric rates.
- b. Yes. If the TSM hookup costs for the customer exceed the allowance, the customer is only required to pay for the portion of the TSM costs in excess of the TSM cost allowance directly upfront. Based on historical SDG&E data, on-average 19% of customer specific TSM hookup costs of non-residential customers are paid directly by the customer before receiving electric service.
- c. Yes. As stated in response to Question 4 b, under a hypothetical scenario in which a customer connects a public direct current fast charging (DCFC) station to SDG&E's grid and the customer's demand triggers the need for a new service line drop, all SDG&E customers would pay the costs up to the Rule 15 line extension allowance to serve the customer, as defined in Section C.2.
- d. Yes. As stated in Sections E3 and E5 of SDG&E's Rule 15, a customer being hooked up to SDG&E distribution system could be entitled to a refund of a portion of line extension upgrade costs they paid upfront if additional kW load is added during the first ten years.

Cal PA DATA REQUEST
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SDG&E RESPONSE
DATE RECEIVED: March 9, 2020
DATE RESPONDED: March 12, 2020

Question 5

Electrify America’s opening testimony, p. 14 lines 17-19 states, “For example, as previously mentioned, Electrify America is in the process of commissioning a six-charger location with four 150 kW and two 350 kW chargers in SDG&E’s service area, for a total interconnected load of 1.3 MW.”

- a. Does a public charging station with 1.3 MW of demand reflect the higher end of usage for SDG&E’s commercial customers?
- b. Is it correct that SDG&E’s marginal distribution demand costs at the circuit feeder and substation level are driven by peak demand (MW) on those assets?
- c. Is it likely that a 1.3 MW commercial customers’ maximum non-coincident demand would have a significant effect on the peak demand of the feeder and substation upstream of the costs covered by line extension allowances?
- d. Please see the table below, which is taken from an SDG&E response to the Public Advocates Office in A.19-03-002 and which shows how SDG&E’s average commercial customer density per circuit feeder and substation varies with customer demand.

Table 7-3. Customers and Loads by Customer Size¹

Size	Number of Customers in Size Grouping	Total Load in Size Grouping	Average Number of Customers on Each Feeder	Average Number of Customers on Each Substation
20 – 99 kW	12,328	598,501.42	16.8	118.5
100 – 199 kW	2,810	394,552.37	4.4	28.4
200 – 499 kW	1,800	544,747.88	3.0	19.1
500 – 999 kW	517	352,901.88	1.7	6.2
1.0 1.0 – 5.9 MW	208	453,160.04	1.2	2.7
6 – 9.9 MW	10	74,911.68	1	1.3
10 MW and above	9	251,144.00	1	1.3

Does SDG&E agree that, on average, commercial customers with demands of 1.3 MW (as described in Electrify America’s testimony) exhibit low density on its circuit feeders—that is, close to one customer per feeder?

¹ A.19-03-002, Public Advocates Office opening testimony, Chapter 7 “Demand Charges” (Chris Danforth) p. 11.

Cal PA DATA REQUEST
Cal PA-SDG&E-DR-10
Application for Approval of Electric Vehicle High Power Charging Rate
SDG&E RESPONSE
DATE RECEIVED: March 9, 2020
DATE RESPONDED: March 12, 2020

- e. Therefore, is it likely that a customer with 1.3 MW of demand would exhibit a very high coincidence (in timing and magnitude) with the circuit feeder's peak demand?
- f. Is it possible if there is growth of EV-HP customers with demands of 1.3 MW on SDG&E's distribution system, some of them could trigger circuit feeder upgrades?
- g. The fifth column ("Average Number of Customers on Each Substation") shows that for a customer with demand of 1.3 MW (falling under the bucket 1.0-5.9 MW), the average number of customers being served by a single substation is 2.7. Is it correct that at that level of customer density (between 2 and 3 customers per substation), if the customers on a single substation all have similar load profiles and identical maximum demand, each of them is likely to represent 1/3 to 1/2 of the substation's maximum demand?
- h. Would SDG&E notify such a commercial customer with 1.3 MW of demand if triggered or contributed to a circuit feeder or substation upgrade?
- i. Is it correct that the only way for SDG&E to make such a customer aware of those potential upgrades costs is through rate signals?
- j. What is the best type of rate (e.g. demand-based, volumetric, fixed) to signal to such a customer the costs they are potentially posing on SDG&E's distribution system?

SDG&E Response

- a. Yes. Based on the historical billing data for Schedule AL-TOU, the standard SDG&E commercial rate, approximately 72.5% of Schedule AL-TOU commercial customers have demand ≤ 100 kW and approximately 96.2% have demand ≤ 500 kW. Only approximately 0.8% of Schedule AL-TOU customers have demand 1.3 MW or greater.
- b. Yes, marginal distribution demand costs reflect the cost of providing facilities from the substation to the customer access point in order to meet the customer's individual maximum or peak demand. The marginal distribution demand facility costs reflect the costs of substations and circuits and thus, the cost of substation and circuits are driven by the maximum or peak demand of customers.

Cal PA DATA REQUEST
Cal PA-SDG&E-DR-10
Application for Approval of Electric Vehicle High Power Charging Rate
SDG&E RESPONSE

DATE RECEIVED: March 9, 2020
DATE RESPONDED: March 12, 2020

- c. SDG&E objects to the extent that this question calls for speculation. Notwithstanding and without waiving that objection, yes, a customer's non-coincident demand likely has a significant effect on the peak demand of substations and circuits, and thus has a significant effect on the cost of those facilities. As shown in Cells F72 and F80 of the "Distrib System Determinants" tab of the attached SDG&E's 2019 GRC Phase 2 Chapter 5 revised workpaper ("Ch_5_WP#1_Marg Dist Rev Alloc Revised") file, the Effective Demand Factor ("EDF") for the Medium/Large Commercial & Industrial ("M/L C&I") customer class is 68.21% for Substation and 73.37% for Circuits. The EDF shows the customer class' contribution to peak demand at the substation and circuit levels based on the maximum or non-coincident demand of customers in the customer class. The EDFs for the M/L C&I customer class shows that the non-coincident demand of customers contributes significantly to the peak demand of substations and circuits serving those customers. As mentioned in response to Question 4a, line extension allowances cover the costs of final line transformers, service drops, and meters (marginal distribution customers costs), not the cost of substation and circuits. The cost of substations and circuits reflect marginal distribution demand costs, which are costs recovered from M/L C&I customers through distribution demand charges.



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- d. Yes. As the table in Question 5d shows, customers with demand of 1.3 MW or greater will typically be served on a circuit serving close to one customer.
- e. Yes. If a circuit is only serving one customer or close to one customer, that customer's peak demand will reflect a peak demand highly coincident (close to 100%) with the peak demand of the circuit serving the customer.
- f. SDG&E objects to the extent that this question calls for speculation. Notwithstanding and without waiving that objection, yes, any large customer including EV-HP customers with high maximum demand such as 1.3 MW could trigger the need for upgrades to the circuit serving them.
- g. Yes. As the table in Question 5d shows, based on historical data very few large customers are served on a substation. This table shows that 6.2 customers with demand of 500 – 999 kW and 2.7 customers with demand of 1 – 5.9 MW are served on a signal substation. For this reason, a customer with maximum demand of 1.3 MW will contribute significantly to the substation's peak demand.
- h. SDG&E objects to the extent that this question calls for speculation. Notwithstanding and without waiving this objection, all customers taking service on a circuit and/or substation being upgraded will be notified by SDG&E of the upgrade occurring so they

Cal PA DATA REQUEST
Cal PA-SDG&E-DR-10
Application for Approval of Electric Vehicle High Power Charging Rate
SDG&E RESPONSE
DATE RECEIVED: March 9, 2020
DATE RESPONDED: March 12, 2020

can plan for it. However, the only way a customer will be aware of any circuit or substation upgrade costs needed is if the substation serves only one customer and the substation serving that customer requires upgrades, as described in Section D(1)(g)(3) of Rule 16.

- i. As described in response to Question 5h, if the substation serves only one customer that one customer will be notified of substation and circuit upgrade costs required, pursuant to Section D(1)(g)(3) of Rule 16. If the substation serves more than one customer, any substation and circuit upgrades required will be paid for by all customers, including M/L C&I customers, through their distribution demand charges.
- j. SDG&E objects to the extent that this question calls for speculation. Notwithstanding and without waiving this objection, substation and circuit costs, including the cost of upgrades to substations and circuits needed, reflect distribution demand-related costs that result from the maximum or peak demand of the customers taking electric service. For this reason, generally speaking, the most accurate electric rate to signal to customers their contribution to substation and circuit distribution costs are demand charges that bill customers based on their kW demand on the SDG&E distribution system. The cost of SDG&E's distribution system does not vary with a customer's actual energy (kWh) usage and thus, recovering distribution demand-related costs through kWh energy charges does not send customer's the correct price signal on distribution costs.

Cal PA DATA REQUEST
Cal PA-SDG&E-DR-10
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Question 6

In your rebuttal testimony, p. WS-1, lines 18-20, you state:

“The rates to serve all load, including new load, should be based on recovery of SDG&E’s total authorized revenue requirements, handled by applying Equal Percent Marginal Cost (“EPMC”) factor to rates.”

Correct?

- a. Please provide SDG&E’s distribution EPMC scalar based on last GRC 2.

- b. What is the EPMC number proposed by SDG&E for its current GRC2 based on SDG&E’s marginal cost analysis (A.19-03-002)?

SDG&E Response

- a. As stated in Attachment B.3 of SDG&E’s 2016 GRC Phase 2 (A.15-04-012) Chapter 5 Rebuttal Testimony (SDG&E Exhibit-15), the distribution EPMC was 163.90%. Current SDG&E rates, including Schedule AL-TOU rates, are based on the distribution EPMC of 163.90%

- b. As stated in Attachment B.3 of SDG&E’s 2019 GRC Phase 2 (A.19-03-002) Chapter 5 Second Revised Direct Testimony, the distribution EPMC is 220.34%.

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Cal PA-SDG&E-DR-10
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SDG&E RESPONSE
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Question 7

Under a 1.6 EPMC scalar scenario, does this mean that if the revenue requirement is \$100, the marginal cost revenue is \$62.5?

SDG&E Response

Yes. A distribution EPMC of 1.6 shows that a rate based on the recovery of \$62.5 in marginal distribution costs would need to be increased by 160% (or multiplied by an EPMC factor of 1.6) to collect \$100 in total distribution costs.

Cal PA DATA REQUEST
Cal PA-SDG&E-DR-10
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SDG&E RESPONSE
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Question 8

If all of SDG&E's customers pay only marginal costs, would SDG&E shave a distribution revenue shortfall of roughly 37%?

SDG&E Response

SDG&E objects to the extent that the question is vague or ambiguous. Notwithstanding and without waiving these objections, generally speaking yes for customers with existing load. Based on a distribution EPMC factor of 1.6, if all existing customers paid distribution rates to recover only marginal costs, SDG&E would have a distribution revenue shortfall of roughly 37%. This is the reason that SDG&E's electric distribution rates are generally designed to recover EPMC – and not marginal costs – to ensure recovery of SDG&E's Commission authorized distribution revenue requirement. This type of distribution revenue shortfall would not necessarily exist, however, for new or incremental load that was not previously accounted for in a prior SDG&E general rate case.

Cal PA DATA REQUEST
Cal PA-SDG&E-DR-10
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SDG&E RESPONSE
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Question 9

Could SDG&E continue to provide service and stay in business if customers paid only marginal costs for several years, such as 5 years?

SDG&E Response

SDG&E objects to the extent that the question is vague and/or calls for speculation. Notwithstanding and without waiving these objections, SDG&E is authorized to recover a specific amount of distribution revenues from customers in order to provide customers with safe and reliable electric service. For this reason, generally speaking, if one SDG&E existing customer pays rates based on the recovery of only marginal costs, a distribution revenue under-collection would likely occur that needs to be paid by other SDG&E existing customers. If all SDG&E customers pay distribution rates based on the recovery of marginal distribution costs and not the recovery of total distribution costs, a distribution revenue under-collection would likely exist that needs to be recovered somehow to ensure SDG&E is allowed to recover the authorized distribution costs needed to provide safe and reliable electric service. This is generally not the case, however, when new or incremental load is added to the system that has not been accounted for in a prior SDG&E general rate case. In that situation, the new or incremental load is additive to the authorized amount of distribution revenues collected. That new or incremental load could only pay marginal costs without causing an under collection, at least until it is recognized as existing load.

END OF RESPONSES