

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**Question 1. SDG&E-01, Chapter 1, Testimony of Cynthia Fang.**

**1.1** Pg. CF-16, line 17. Please provide tariff definitions of summer on peak and winter on peak periods since 1980. If they remain constant, only changes in period definitions need to be provided, along with the year that the period changes occurred.

**SDG&E Response:**

|                       | <b>Pre-1980</b>         | <b>1984<br/>(Current)</b> |
|-----------------------|-------------------------|---------------------------|
| <b>Summer On Peak</b> | 10 a.m.-5 p.m. weekdays | 11 a.m.-6 p.m. weekdays   |
| <b>Winter On Peak</b> | 5-9 p.m. weekdays       | 5-8 p.m. weekdays         |

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**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
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**1.2** Pg. CF-16, lines 19-20. *"That need is based no longer solely on loads, but on "net load," loads less solar and wind resources in the local reliability area ... ."* Does SDG&E have contracts for central station renewables that are outside of the local reliability area? Does SDG&E have distributed generation and other renewables besides solar and wind in the local reliability area?

**SDG&E Response:**

Yes, SDG&E has contracts for renewables located outside the local reliability area. Yes, SDG&E has a small amount of biomass and biogas within the local reliability area.

**WATER DISTRICT DATA REQUEST  
WATER DISTRICT-SDG&E-DR- #1  
SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012  
SDG&E RESPONSE  
DATE RECEIVED: JUNE 3, 2016  
DATE RESPONDED: JUNE 16, 2016**

**1.3.** Pg. CF-19, lines 19-21. "*SDG&E continues to propose the same TOU periods for all customers and all rate schedules and now proposes the same TOU periods for summer and winter, though with different rates for summer and winter.*" Does SDG&E currently have different TOU periods for electric vehicles (EV-TOU and EV-TOU-2) than for many of the other tariffs? Is SDG&E proposing the same TOU period for EV as for other customers?

**SDG&E Response:**

SDG&E’s electric vehicle tariffs do have TOU periods that were developed much later than the standard TOU period and so were a combination of newly developing system needs and historical TOU periods, as presented in the table below. Going forward, SDG&E is proposing the same TOU periods for EV as for other customers.

|               | <b>TOU Period</b> | <b>Current Standard TOU</b>          | <b>EV-TOU</b>      | <b>EV-TOU-2</b>    | <b>2016 GRC P2 Proposal</b>                          |
|---------------|-------------------|--------------------------------------|--------------------|--------------------|--|
| <b>Summer</b> | On-Peak           | 11 a.m.-6 p.m. weekdays              | 12-8 p.m. everyday | 12-6 p.m. everyday | 4-9 p.m. everyday                                    |
|               | Semi-Peak         | 6-11 a.m. and 6-10 p.m. weekdays     | -                  | -                  | -  |
|               | Off-Peak          | All other hours                      | All other hours    | All other hours    | All other hours                                      |
|               | Super Off-Peak    | -                                    | 12-5 a.m. everyday | 12-5a.m. everyday  | 12 a.m.-2 p.m. weekends/holidays, 12-6 a.m. weekdays |
| <b>Winter</b> | On-Peak           | 5-8 p.m. weekdays                    | 12-8 p.m. everyday | 12-6 p.m. everyday | 4-9 p.m. everyday                                    |
|               | Semi-Peak         | 6 a.m.-5 p.m. and 8-10 p.m. weekdays | -                  | -                  | -  |
|               | Off-Peak          | All other hours                      | All other hours    | All other hours    | All other hours                                      |
|               | Super Off-Peak    | -                                    | 12-5 a.m. everyday | 12-5 a.m. everyday | 12 a.m.-2 p.m. weekends/holidays, 12-6 a.m. weekdays |
|               | CPP Period        | 11 a.m.-6 p.m. year round            | -                  | -                  | 2-6 p.m. year round                                  |

**WATER DISTRICT DATA REQUEST**  
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**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**1.4** Pg. CF-20, Table 2. Do the "2016 GRC P2 Proposal" periods apply only to the commodity portion of SDG&E tariffs or does it also apply to other tariff components, such as demand charges?

**SDG&E Response:**

SDG&E's GRC P2 TOU Period Proposal would apply to all tariff components that require TOU periods. This includes both commodity energy charges, and on-peak and TOU demand charges.

**WATER DISTRICT DATA REQUEST  
WATER DISTRICT-SDG&E-DR- #1  
SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012  
SDG&E RESPONSE  
DATE RECEIVED: JUNE 3, 2016  
DATE RESPONDED: JUNE 16, 2016**

**Question 2. SDG&E-02, Chapter 2, Testimony of Christopher Swartz.**

**2.0** Pg. CS-9/10, Tables CS-2 and CS-3. Is Table CS-2 consistent with Table CS-3 - *"revenue allocations by customer class based upon proposed TOU periods"*?

**SDG&E Response:**

Yes, however changes to TOU periods will not have an impact on the distribution costs and the proposed distribution revenue allocation 3-year transition proposal presented in CS-2. Table CS-2 presents “a 3-year transition to reach cost-based allocation levels for distribution”<sup>1</sup> based upon the proposed distribution revenue allocation update presented in Table CS-1, which “presents the distribution marginal cost allocation factors by customer class, and the allocation of distribution revenues to each customer class based on the distribution marginal cost allocations factors.”<sup>2</sup>

Table CS-4 presents “a 3-year transition to reach cost-based allocation levels for commodity”<sup>3</sup> based upon the proposed commodity revenue allocation update presented in Table CS-3, which “presents the commodity marginal cost allocation factors by customer class. Table CS-3 also presents the proposed allocation of commodity revenues to each customer class based on the marginal commodity cost allocations factors.”<sup>4</sup>

The TOU components associated with SDG&E’s rates are (1) the commodity rates for all TOU rates schedules and (2) the commodity demand charges associated with M/L C&I rates and Agricultural customers on Schedule PAT-1. SDG&E’s TOU proposal will only impact these two components; the commodity rates and the commodity demand charges associated with M/L C&I rates and Agricultural customers on Schedule PAT-1.

**Question 3. SDG&E-03. Chapter 3. Testimony of Robert Anderson.**

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<sup>1</sup> See, Direct Testimony of Christopher Swartz, pg. CS-9

<sup>2</sup> See, Direct Testimony of Christopher Swartz, pg. CS-9

<sup>3</sup> See, Direct Testimony of Christopher Swartz, pg. CS-11

<sup>4</sup> See, Direct Testimony of Christopher Swartz, pg. CS-10

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

- 3.1** Pg. RBA-1, lines 11-14. Please provide all analysis and supporting documentation (including references) for the statement: *"The proposed changes to the TOU periods will help manage the integration of renewables by increasing demand in midday when solar is producing at its maximum and reducing demand later in the day when solar has reduced output or no output at all."*

**SDG&E Response:**

The statement was based on economic theory, empirical data, and past studies of TOU rates that found customers do respond to some extent to TOU prices. Economic theory states that customers respond to prices and more will be consumed in lower price periods, less in higher priced periods. Empirical data presented in the testimony of Robert Anderson shows that solar generation has lowered prices in the middle of the day when solar is producing and increased prices later in the day as solar generation drops off.

There are numerous studies indicating TOU pricing will have an effect on consumption dating back to the 1980s when TOU pricing was introduced into California. Some studies include the following:

Aigner, D. and Hirschberg, J. (1985). "Commercial/Industrial Customer Response to Time-of-use Electricity Prices: Some Experimental Results," RAND Journal of Economics, 16(3): 341-355.  
Borenstein, S. (2005). "Time-Varying Retail Electricity Prices: Theory and Practice," in Griffin and Puller, eds., Electricity Deregulation: Choices and Challenges, Chicago: University of Chicago Press

Some studies specific to California include:

Charles River Associates' Impact Evaluation of the California Stateside Pricing Pilot, and SMUD's SmartPricing Options Final Evaluation

A recent paper by Simon Baker, California Public Utilities Commission, Sylvia Bender, California Energy Commission, and Tom Doughty, California Independent System Operator, *Joint Agency Staff Paper on Time-of-Use Load Impacts*, December, 2015, CEC-200-2015-009-SP, show significant load reductions in on-peak periods and a "potential to increase load during periods of plentiful renewable generation and low load during spring."

And recently, Lawrence Berkeley National Laboratory (LBNL) completed the 2015 California Demand Response Potential Study, Phase 1 Study (DR Potential Study): <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=10632>. LBNL analyzed the 4 pm – 9 pm TOU daily on-peak period and found significant impacts of TOU rates compared to other demand response activities for the SDG&E region.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

- 3.2** Pg. RBA-2, lines 12-14. Please provide an estimate of the magnitude of the demand shift due to the proposed changes in TOU periods: *"When implemented, the new TOU periods will create incentives for customers to shift demand from the early evening hours to mid-day."* Please provide this estimate by customer class.

**SDG&E Response:**

SDG&E is not testifying to any specific shift in this case. However, the DR Potential Study mentioned in response to question 3.1 results indicate the shift out of the on-peak period of 4 pm – 9 pm daily. At a capacity price of \$150/kW-year, under the business-as-usual scenario, the amount of load shifted out of the on-peak period is 79.3 MWs for commercial customers, 10.9 MWs for industrial customers and 37.8 MW for residential customers in 2020.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**3.3** Pg. RBA-2, lines 14-15. *"The analysis includes both historical and expected loads in the San Diego area net of expected solar and wind production in the San Diego Greater Reliability area."*

**3.3.1** Please provide a copy of the analysis referenced in 3.3 above.

**SDG&E Response:**

Please see the workpapers of Robert Anderson, specifically "RBA WP 1 – Net Load -2013-2021 (Public Redacted Version).xls"



**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**3.3.2** Do the "*expected loads in the San Diego Area*" referenced in 3.3 above include the impact of changes in rate design, such as advocated in this testimony? If yes, please provide estimate of the impact on the SDG&E hourly net load.

**SDG&E Response:**

No, the impacts of changes in rate design are proposals still pending before the Commission in this proceeding and were not considered when the forecast was developed. Expected loads for San Diego are based on the California Energy Commission's (CEC) adopted sales forecasts. CEC assumptions can be found in the direct testimony of Kenneth E. Schiermeyer and are also provided in the links below.

CED 2014, California Energy Demand Updated Forecast, 2015-2025, Volume 2: Electricity Demand by Utility Planning Area, Publication Number CEC-200-2014-009-CMF, and Publication Date: Adopted January 14, 2015. See "SDGE Form 1.1-Mid (Electricity Consumption by Sector)" available at

[http://www.energy.ca.gov/2014\\_energypolicy/documents/demand\\_forecast\\_cmf/Mid\\_Case/](http://www.energy.ca.gov/2014_energypolicy/documents/demand_forecast_cmf/Mid_Case/) (Included in the file named "SDG&E\_Mid.xls").

And at [http://www.energy.ca.gov/2015\\_energypolicy/documents/2015-07-07\\_preliminary\\_forecast\\_forms.html](http://www.energy.ca.gov/2015_energypolicy/documents/2015-07-07_preliminary_forecast_forms.html) (see "Mid Case Final Baseline Demand Forecast" located in the file "SDGE\_Mid\_Demand\_Case.xlsx" in the tab labeled "Form 1.2-Mid").

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

- 3.3.3** Do the "*expected loads in the San Diego Area*" referenced in 3.3 above include the 165 MW of energy storage mentioned in Fang's testimony (Chapter 1, pg. CF-9, line 16)? If yes, please provide estimate of the impact on the SDG&E hourly net load.

**SDG&E Response:**

No, the vast majority of this storage is expected to be supply side resources and is not included in the demand forecast. Also, the impact of any behind the meter energy storage will depend on the applicable rate design.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**3.3.4** Do the "*expected loads in the San Diego Area*" referenced in 3.3 above include the electric Vehicle Grid Integration Pilot impacts mentioned in Fang's testimony (Chapter 1, pg. CF-9, lines 10-13)? If yes, please provide an estimate of the impact on the SDG&E hourly net load.

**SDG&E Response:**

No, the VGI Pilot was still pending before the Commission and the impacts were not considered when the forecast was developed. Please see response to Q 3.3.2 for additional information regarding assumptions for SDG&E's forecast based on the CEC forecast.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**3.3.5** Do the "*expected loads in the San Diego Area*" referenced in 3.3 above include the impact of the California ISO regional energy market integration impacts (SB350 analysis) ? If yes, please provide an estimate of the impact on the SDG&E hourly net load.

**SDG&E Response:**

The loads in the San Diego are not expected to change with a California ISO expansion.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**3.3.6** Do the "*expected loads in the San Diego Area*" referenced in 3.3 above include the impact of the microgrids in the SDG&E area? If yes, please provide an estimate of the impact on the SDG&E hourly net load.

**SDG&E Response:**

The expected behind the meter loads, served in microgrids, in the SDG&E area are included in the demand forecast but not specifically identified. Please see response to Q 3.3.2 for additional information regarding assumptions for SDG&E's forecast based on the CEC forecast.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

- 3.3.7.** Lines 14-15 states :"*The analysis includes both historical and expected loads in the San Diego area net of expected solar and wind production in the San Diego Greater Reliability area*". but the figures (RBA-1, RBA-2) state they are "SDG&E local area net of distributed generation and central station renewables." Please explain the discrepancy - where are other renewables and distributed generation besides solar and wind accounted for in the analysis?

**SDG&E Response:**

Solar and wind generation are the only resources identified because of their dominance among renewables, their non-dispatchable nature, and the variability and timing of their generation profiles. Other forms of renewable generation in the SDG&E portfolio in the reliability area, such as biomass and biogas, are small and typically baseload, whereas solar and wind generation are dependent on the natural occurrence of sun and wind.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

- 3.4** In charts RBA-1 and RBA-2, please provide an explanation for the substantial reduction in net load between 2013 and 2014 during the hours 0700 and 1800.

**SDG&E Response:**

The reduction is primarily due to the increase in wind and solar (both distributed and central station) generation.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

- 3.5** Pg. RBA-4, lines 18-19 and footnote 4. Please provide a copy of the 2021 forecast used. Is it consistent with the California Energy Commission CEC forecast for SDG&E in the 2015 Integrated Energy Policy Report?

**SDG&E Response:**

Please see the workpapers of Robert Anderson, specifically “RBA WP 1 – Net Load -2013-2021.xls (Public Redacted Version).” The forecast as tied to the CEC 2013 Integrated Energy Policy Report. The CEC does not produce hourly values.



**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

- 3.6** Pg. RBA-8, lines 5-9. *"The CAISO performed its own analysis of net loads to determine when surplus and limited supplies might occur and to suggest appropriate TOU periods."*

**SDDG&E Response:**

The CAISO filed its report with all of its assumptions in CAISO time-of-use periods analysis, January 22, 2016 in the TOU OIR (R.15-12-012).

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**3.6.1** Does the CAIOS analysis include the impact of changes in rate design, such as advocated in this testimony?

**SDG&E Response:**

No, the analysis is designed to show when TOU period rates would be useful to shift load to reduce ramping needs, but the CAISO analysis does not consider rates or the impact of rates on loads.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**3.6.2** Does the CAIOS analysis include a projection of the impact of future energy storage?

**SDG&E Response:**

Only to the extent the load forecast included behind the meter storage. The impact of the added storage on the net load shape would depend on the TOU periods assumed since behind the meter storage usage does depend on rates.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

**3.6.3** Does the CAIOS analysis include a projection of the impact of 1 million electric vehicles by 2020, and 1.5 million electric vehicles by 2025?

**SDG&E Response:**

No, electric vehicle loads are only considered to the extent they are included in the 2014 LTPP, which is less than 1 million vehicles in 2020. The impact of the added vehicles on the net load shape would depend on the TOU periods assumed since vehicle charging does depend on rates.

**WATER DISTRICT DATA REQUEST  
WATER DISTRICT-SDG&E-DR- #1  
SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012  
SDG&E RESPONSE  
DATE RECEIVED: JUNE 3, 2016  
DATE RESPONDED: JUNE 16, 2016**

**3.6.4** Does the CAIOS analysis include the impact of the ISO regional energy market integration (SB350 analysis)?

**SDG&E Response:**

No, the CAISO analysis is of California loads and California renewables only.

**WATER DISTRICT DATA REQUEST  
WATER DISTRICT-SDG&E-DR- #1  
SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012  
SDG&E RESPONSE  
DATE RECEIVED: JUNE 3, 2016  
DATE RESPONDED: JUNE 16, 2016**

**3.6.5** Does the CAIOS analysis include a projection of the impact of microgrids?

**SDG&E Response:**

SDG&E does not understand the question in that microgrids are not resources by themselves, but usually a system that coordinates the operation of other resources in a specific area.

**WATER DISTRICT DATA REQUEST**  
**WATER DISTRICT-SDG&E-DR- #1**  
**SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012**  
**SDG&E RESPONSE**  
**DATE RECEIVED: JUNE 3, 2016**  
**DATE RESPONDED: JUNE 16, 2016**

- 3.7** Pg. RBA-8 through RBA-11. Pg. RBA-9, line 9 states "*The proposed TOU periods would capture the hours with the highest electricity prices as shown by the shift that began occurring in 2014.*" Do many of SDG&E's time-of-use tariffs include On-Peak Demand Charges in addition to energy charges? Does the proposed change in TOU periods apply only to energy charges in the tariffs as reflected in commodity prices or would it also include on peak demand charges?

**SDG&E Response:**

SDG&E's schedules AL-TOU, AY-TOU, A6-TOU, and PA-T-1 include on-peak demand charges and PAT1 additionally includes a TOU demand charge. As mentioned in SDG&E's response to Question 1.4, the proposed change in TOU periods would apply to both commodity energy charges, and on-peak and TOU demand charges.