

SEIA DATA REQUEST
SEIA-SDG&E-DR-01
SDG&E SECOND AMENDED GRC Phase 2 APPLICATION – A.15-04-012
SDG&E RESPONSE
DATE RECEIVED: JUNE 1, 2016
DATE RESPONDED: JUNE 15, 2016

1. Please provide all discovery requests that SDG&E has received in this proceeding from other parties. SEIA will then indicate which responses it would like to obtain. Alternatively, if SDG&E has established a data repository for data requests & responses for this case, please provide SEIA with information on how to access that data base.

SDG&E Response:

All data request questions and publically available responses in SDG&E's GRC Phase 2 proceeding can be found on SDG&E's website at: <http://www.sdge.com/sdge-2016-GRC-Phase-2>. Responses to data request questions that include confidential, sensitive, trade secret and/or privilege documents or information can be provided at request of SEIA pursuant to the terms of the active Non-Disclosure Agreement between SDG&E and SEIA in this proceeding.

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2. Please provide a complete copy of SDG&E's workpapers for its application and supporting testimony. All formulas in all spreadsheets should be intact, and any spreadsheets should be provided in Excel format rather than as an Adobe Acrobat (i.e. as a ".pdf" format") file.

SDG&E Response: On June 15, 2016, SDG&E mailed to SEIA (via overnight delivery) a CD-R containing all public and confidential workpapers supporting its GRC Phase 2 application and testimony.

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3. Please provide a full year, preferably 2014 or 2015, of data on the hourly demands (8,760 hours) at each of SDG&E's 133 primary and secondary substations for which such data is available (see Baranowski Testimony, at p. JB-2). Generic (e.g. numbered) substation labels may be used if SDG&E prefers, for security reasons or to preserve customer confidentiality. Please identify each substation by overall region (i.e. coastal, inland, mountain, or desert).

SDG&E Response:

Please see the file labelled "SEIA-DR01_Q3.xlsx" for data on the 2015 hourly demands for SDG&E's substations where data is available.

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4. Please respond to the following questions regarding Schedule DG-R:
- a. Please confirm that SDG&E is not proposing any changes in the Schedule DG-R rate design in this application. (See SDG&E witness Chris Swartz at page CS-41, which says that SDG&E does not propose any changes to the current “structure” of Schedule DG-R.)
 - b. Please explain how SDG&E has designed the DG-R rate in this application.
 - c. Please explain whether SDG&E’s proposal for a 4 to 9 p.m. weekday on-peak period, as indicated in Table 2 of Cynthia Fang’s direct testimony (pages CF-20 to CF-21), will impact the design of Schedule DG-R. Will the only impacts on DG-R customers as a result of the change in TOU periods be the change in commodity rates applicable to Schedule DG-R?
 - d. Would SDG&E continue to recover a portion of distribution costs using an energy rate for Schedule DG-R, rather than through demand charges?
 - e. If TOU periods are updated, how would that affect the rate component for distribution costs recovered through an energy rate for Schedule DG-R?

SDG&E Response:

- a. Schedule DG-R is currently based upon Schedule AL-TOU, with the following modifications as described below¹:
 - (1) No commodity or distribution on-peak demand charges. Generation capacity costs are recovered through TOU energy rates. Distribution demand costs are recovered through a non-coincident demand charge (NCD) and energy rates.
 - (2) Total maximum demand, which includes distribution and FERC (Transmission and RS), is set equal to 50% of the total NCD of Schedule AL-TOU, such that the 50% constraint is met through reductions in the distribution demand charge.
 - (3) Distribution costs generally recovered through the distribution demand charge for other M/L C&I rates schedules are partially recovered through an energy rate

Although, SDG&E is not proposing to change these specific items for Schedule DG-R, SDG&E is proposing changes to Schedule AL-TOU. As Schedule DG-R will continue to

¹ See, Direct Testimony of Christopher Swartz, pgs. CS-40 and 41

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be based upon Schedule AL-TOU, the following changes being proposed for Schedule AL-TOU will impact Schedule DG-R²:

- (1) Moving MSF towards cost-based levels by increasing 20% each year beginning Year 1
 - (2) Moving the recovery of distribution demand charges towards 100% NCD by increasing the recovery of distribution costs through NCD 10% each year and reducing the recovery through on-peak demand charges beginning Year 2
- b. Please see response to Q4a.
- c. As presented in the Direct Testimony of Cynthia Fang, SDG&E's Time-Of-Use period proposal is:
- On-Peak time period of 4pm-9pm daily
 - Super-Off Peak time period of 12am-6am weekdays and 12am-2pm weekends/holidays
 - Off Peak time period of all other hours

The proposed times are the same for both the summer and winter. Also, as stated in the Direct Testimony of Cynthia Fang, "since the definition of TOU periods are intended to provide customers with accurate information regarding the high cost periods for commodity services and the low cost periods for commodity services, TOU period definitions should be the same for all customers".³ This would include those on Schedule DG-R.

The TOU components within Schedule DG-R are the commodity rates and the transmission on-peak demand charges. As such, the TOU period change will impact the commodity rates and the transmission on-peak demand charges with the new time periods. Proposed illustrative commodity rates and transmission on-peak demand charges for Schedule DG-R are presented in Attachments D (Year 1 rates, pgs. 143, 144), F (Year 2 rates, pgs. 263, 264) and H (Year 3 rates, pgs. 341, 342) of the Direct Testimony of Christopher Swartz.

- d. As referenced in the Direct Testimony of Christopher Swartz, "SDG&E does not propose any changes to the current structure of Schedule DG-R as described above in this proceeding".⁴ As such, SDG&E would continue to recover a portion of distribution costs using an energy rate rather than through demand charges.

² See, Direct Testimony of Christopher Swartz, pg. CS-38

³ See, Direct Testimony of Cynthia Fang, pg. CF-22

⁴ See, Direct Testimony of Christopher Swartz, pg. CS-41

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- e. The TOU components within Schedule DG-R are the commodity rates and the transmission on-peak demand charges. As such, SDG&E's TOU proposal will only impact the commodity rates and transmission on-peak demand charges applicable to Schedule DG-R. Changes to TOU periods will not have an impact on the distribution costs recovered through an energy rate.

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5. Please provide the following information on the number of commercial and industrial (C&I) solar customers that are on Schedule DG-R, and the total installed capacity:
- a. The number of C&I customers that have installed or have pending applications for solar PV systems and that have elected Schedule DG-R rates, since DG-R rates became available in May 2008.
 - b. The number of C&I customers that have installed or have pending applications for solar PV systems or other renewable DG systems, and that have qualified for but have not elected DG-R rates, since DG-R rates became available in May 2008. SDG&E can derive this from the total number of C&I customers that have installed or have pending applications for solar PV systems or other renewable DG systems since DG-R rates became available in May 2008, less the number in the response to part (a) of this question.
 - c. The total nameplate capacity (in kW or MW) of the solar PV systems installed or applied for by C&I customers who have elected DG-R rates, since DG-R rates became available in May 2008.
 - d. The total nameplate capacity (in kW or MW) of the solar PV systems installed or applied for by C&I customers who have qualified for but have not elected the DG-R rate, since the DG-R rate became available in May 2008. SDG&E can derive this number from the total nameplate capacity (in kW or MW) of the solar PV systems installed or applied for by C&I customers since DG-R rates became available in May 2008, less the number provided in response to part (c) of this question.

SDG&E Response:

- a. 316 C&I customers.
- b. 1,296 C&I customers
- c. 45.22 MW
- d. 65.85 MW

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6. Please explain why SDG&E's proposed 4 to 9 p.m. on peak period does not encompass the proposed hours of Critical Peak Pricing (CPP) from 2 to 6 p.m. year round? Should not all hours eligible to be CPP hours be on-peak hours, and not semi-peak or off-peak hours? Are not CPP hours, on the top 18 days of the year when capacity is most needed, high cost hours that should be considered on-peak hours?

SDG&E Response:

SDG&E's proposed 4 to 9 pm peak period encompasses some but not all of the proposed hours for CPP (2 to 6 pm). This is due, in part, because CPP is designed to help mitigate loss of load in the San Diego Subarea. Chart RBA-11 in the prepared direct testimony of Robert Anderson provides a comparison of relative LOLE results for local capacity in the San Diego Greater Reliability area and for local capacity in the San Diego subarea. The results show a relative need for capacity between 2 p.m. and 9 p.m. when considering both the Greater Reliability area and the San Diego subarea.

The San Diego Greater Reliability area shows the highest risk hours are 8pm and 9pm. However, when considering the San Diego Subarea alone, highest Loss of Load is at hours 3, 4, 5 and 6 (hours included in the CPP hours). When SDG&E's system is constrained and there is a loss of a transmission line from Imperial Valley, SDG&E needs to be able to call on its Demand Response rates to help mitigate the Sub Area loss of load. As this is an infrequent event, it is better addressed by dynamic pricing with a fewer number of on-peak hours for customers to respond to on typical days.

SDG&E is providing the top 18 system load days for the years 2012-2015 in the file labeled "SEIA DR1 q6 Top 18 System Peak Days_peakhr.xlsx". Included are the date, the hour of system peak in local time and the peak kW. Please note that SDG&E's CPP determinants used in rate design utilize the top 9 system peak day information (highlighted in blue). When reviewing the top 9 system peak day information, please note that in 30 of the 36 peak days, the hour of system peak fell within SDG&E's proposed on peak period.

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7. Does SDG&E agree that designing a distribution system using non-coincident peak demand increases the distribution system's cost, as well as increasing its safety and reliability? (See Baranowski Testimony, at page JB-1).

SDG&E Response:

SDG&E believes designing the distribution system to accommodate non-coincident peak demand is in line with industry practices for distribution planning. In some cases, this may result in distribution upgrade projects on some circuits that may not be triggered by a coincident planning method. Traditionally, "coincident demand" refers to the system peak, not the individual circuit or substation peak. Planning for a system peak would result in lower reliability for circuits that do not peak at the same time as the system.

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8. If a substation transformer, distribution transformer, or circuit is designed to meet the peak demand at its specific location (see Baranowski Testimony, at page JB-1), does that mean that it is designed to meet the coincident peak demand of all customers served at that specific location, or does SDG&E design it to meet the sum of the non-coincident peak demands for all of the individual loads served at that specific location regardless of when those noncoincident peak demands may occur?

SDG&E Response:

SDG&E designs the distribution system to meet the coincident peak demand of all customers served at a specific location, i.e., a distribution circuit is designed to meet the coincident peak demand of the customers on that circuit. This may be close in time or at a completely different time as the system peak. Traditionally, “coincident demand” refers to the system peak, not the individual circuit or substation peak.

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9. Please discuss the extent to which Mr. Baranowski believes there is load diversity at the following locations on the SDG&E distribution system:
- a. The final line transformer.
 - b. The 1,032 SDG&E distribution circuits.
 - c. The 133 SDG&E distribution substations.

SDG&E Response:

SDG&E's design criteria includes calculation methods for diversifying customer demand on the distribution system. These diversity factors are not typically applied at the circuit and substation level. Rather, SCADA and other recorded data are used to forecast demand, which represents actual load data that is already diversified.

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10. Please provide the data for Figure 1 of John Baranowski's testimony. Also provide comparable data for SDG&E's peak days in 2013 and 2015.

SDG&E Response:

Response: Please see the file labelled "SEIA-DR01_Q10.xlsx" for the requested data.

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11. Please provide the data supporting Figure 2 in the testimony of John Baranowski.

SDG&E Response:

Please see the file labelled “SEIA-DR01_Q11.xlsx” for the data supporting Figure 2 in the testimony of John Baranowski.

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12. Does the substation and circuit load data in Figures 3 and 4 in the testimony of John Baranowski represent (a) the coincident peak demand of all customers served from each substation or circuit or (b) the sum of the non-coincident, individual peak demands for all of the individual loads served from that substation or circuit whenever those noncoincident demands may occur?

SDG&E Response:

Per the answer to question 8 above, the substation and circuit load data in figures 3 and 4 represent the coincident peak demand of all customers served from each substation or circuit.

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13. Regarding the testimony of witness Robert B. Anderson:
- a. Please provide the data supporting Charts RBA-1 to RBA-4.
 - b. Please explain if net load in Charts RBA-1 and RBA-2 is based on SDG&E load on the CAISO system, less SDG&E renewables. What types of “distributed generation and central station renewables” were removed to determine net load (i.e. did SDG&E look only at wind and solar on its system that is not behind the meter?). What were the sources of the data used to derive net load?
 - c. Please provide the data for the renewable generation removed from SDG&E load data to produce the net loads in Charts RBA-1 and RBA-2.
 - d. Please provide any analysis SDG&E has done to show a correlation between net load on its system and the CAISO day-ahead market price at the SDG&E DLAP.
 - e. Please provide the 2010-2015 SDG&E DLAP prices used to develop Charts RBA-5 and RBA-6.
 - f. Please provide the hourly LOLE data supporting Chart RBA-11, for both the San Diego Subarea and the San Diego Greater Reliability Area.

SDG&E Response:

- a. Please see workpaper “RBA workpaper 1-Net Load 2013-2021.xlsx”.
- b. Net load is SDG&E system load (the load of all customers on SDG&E’s system reduced for behind the meter generation) minus the supply generation of central solar and wind resources located in SDG&E’s Greater Reliability Area and Local Sub-Areas. The 2013 and 2014 load data was historical. The loads for 2015, 2016, and 2021 use forecasted loads. Central wind and solar used historical data through October, 2015 and forecasted expected energy deliveries of these same resources from November, 2015-2021. The forecasted deliveries are based on average historical deliveries for each resource.
- c. Please see the workpaper “RBA workpaper 1- Net Load-2013-2021.xlsx”. Tab “Net Load Calc” columns H and I show the wind and solar generation, respectively, that was removed from SDG&E load to produce the net loads in Charts RBA-1 and RBA-2.
- d. The correlation is shown in the graphs provided in SDG&E’s testimony.
- e. Please see the workpaper “RBA workpaper 2- 2010-2015 SDGE DLAP Prices.xlsx”.

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- f. Please see the workpaper “RBA workpaper 4- 2016 LOLE Summary.xlsx”.

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14. These questions relate to the Testimony of William G. Saxe.
- a. Please provide the workpapers supporting the NERA regressions that resulted in the \$77.97 per kW-year marginal distribution costs and \$22.05 per kW-year marginal substation costs shown in Attachment A to Mr. Saxe's testimony.
 - b. Please specify and provide the source(s) for the historical and forecast data on annual distribution system peak loads used in these regressions.
 - c. How does SDG&E forecast the annual distribution system peak loads used in these regressions?
 - d. Do the annual distribution system peak loads used in these regressions measure (a) the coincident peak demand of all customers served from the SDG&E distribution system or (b) the sum of the noncoincident peak demands of all customers served from the SDG&E distribution system, or (c) some other peak demand? If the answer is (c), please explain exactly what peak demand is used.

SDG&E Response:

- a. The Chapter 6 workpaper labeled "Chap 6 Marg Dist Demand Costs.xlsx" file provides the support for the proposed marginal distribution demand costs shown in Attachment A of Mr. Saxe's testimony.
- b. The attached source file labeled "SEIA DR-01, Q14b" provides the historical and forecasted annual system distribution peak loads used in the regressions in the workpaper provided in response to 14a. The history and forecast of annual distribution peak loads used were developed by combining data from three sources: (1) Weather normalized actuals for years 2002 through 2013, developed in-house by SDG&E; (2) Estimates of transmission level loads for forecast years 2014 through 2016, developed in-house by SDG&E; and (3) System level annual peak forecast values for the SDG&E planning area for years 2014 to 2016 came from the California Energy Commission's (CEC) 2013 IEPR Base Case Demand Forecast, adopted December 11, 2013, and supplemented with the CEC's Mid-Case Additional Achievable Energy Efficiency (AAEE) impacts, posted to the CEC's website on April 15, 2014.
- c. The annual distribution level peak values used in the regression were developed by combining data from the three sources mentioned above. For years 2002 through 2013, SDG&E weather normalized values were used. For forecast years 2014 through 2016, the CEC's system level forecast values were used as the basis and adjusted by subtracting SDG&E's estimate of transmission level load, to arrive at forecasted distribution level

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peak load values.

- d. The annual distribution level peak load values developed using the above mentioned inputs and process represent distribution level peak loads at SDG&E's system level coincident peak time.

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15. If not already provided, please provide SDG&E's Marginal Energy Cost (MEC) workpapers, including the 2016 hourly price profile that was based on net demand on the SP-15 market and on-peak / off-peak SP-15 market price projections. (See p. JJS-3 of the Testimony of Jeffrey J. Shaughnessy).

SDG&E Response:

This information is provided in workpaper "*Chapter 7 WP MEC (C).xlsx*".

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16. Please provide the 2014 and 2015 DLAP prices that support Charts JJS-1 and JJS-2.

SDG&E Response:

This information is provided in workpaper "*Chapter 7 WP Price Shape Comp.xlsx*".

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17. Please explain why in Table JJS-3 SDG&E assumes that RPS purchases are “incremental” and affect the shape of MECs. Does SDG&E assert that one MW of incremental supply requires, in the short run, a purchase equal to 0.75 MW from SP-15 and 0.25 MW (i.e. a 25% RPS %) of renewable energy? Also, why does not SDG&E shape RPS premiums by TOU period?

SDG&E Response:

In 2016 SDG&E is required to procure 0.25 MWh of renewable energy for every 0.75 MWh of non-renewable energy, on an annual basis. The RPS adder reflects this annual requirement. The RPS adder is a single value for all hours of the year, as the RPS requirement is yearly (i.e. it's a % of yearly energy sales) and does not depend on when the renewable energy is consumed.

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18. If not already provided, please provide a copy of SDG&E's Marginal Generation Capacity Cost (MGCC) workpapers. MGCCs are presented in Section IV of the testimony of William Saxe. Please include the workpapers and calculations of (a) all costs of a new CT that were assumed, (b) the assumed hourly energy market and ancillary service rents that are deducted from CT costs, (c) RECC factors, (d) O&M and other loaders, and (e) escalation to 2016 dollars.

SDG&E Response:

This information is provided in workpaper "*Chapter 7 WP MGCC.xlsx*".

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19. Please comment on whether and how the 2011-2014 energy market and ancillary service market earnings in Table JJS-4 for MGCC determination are consistent with SDG&E's MEC forecast for 2016. What would these earnings become assuming the 2016 forecast, rather than the CAISO's June 2015 annual report?

SDG&E Response:

SDG&E's 2016 MECs are based on projected SP-15 forward prices. The energy market and ancillary service market earnings used in the MGCC calculation are based on historically observed SP-15 data and so are consistent in that respect. For simplicity and transparency purposes, SDG&E assumed both 2016 combustion turbine costs and market earnings would be similar to that historically observed for new combustion turbines.

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20. These questions concern the Ventyx Planning and Risk model discussed in the testimony of witness Robert B. Anderson.
- a. Was 2016 the assumed year for the LOLE determination? If not, what year was assumed, and provide LOLE results for 2016 if available.
 - b. Did the Ventyx Planning and Risk model simulate economic dispatch of generation in each hour of 2016?
 - c. How did SDG&E/Ventyx model the stochastic output of variable wind & solar renewable resources? Did this modeling assume any correlation between load and renewable output? For example, is there any assumed correlation between solar output and high load days, i.e. does the model consider that it is usually sunny when it is hot in California?
 - d. What years were used for the historical data employed in the stochastic process for determining load and renewable production? (See p. RBA-15).

SDG&E Response:

- a. Yes. Please see the workpaper “RBA workpaper 4- 2016 LOLE Summary.xlsx” for the expected 2016 LOLE results.
- b. Yes
- b. A regression analysis was performed by the Ventyx model using historical load, wind and solar data. The regression analysis produced stochastic variables (correlation, short term mean reversion rate, and short term volatility rate) which are used to stochastically vary the expected values for each of the forecasted load, solar and wind generation. Therefore, one can assume that historical correlation between high load and sunny days that exist in the historical data would be reflected in the stochastic output.
- c. The single year of 2014 was used as this was the first complete year of operation for the central solar resources in SDG&E’s territory.

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21. Which set of LOLEs were used to form a top 100 hour allocation for MGCC, San Diego Subarea or San Diego Greater Reliability Area, or a combination of the two? (See Chart RBA-11). Also, please describe if possible why the two areas have such different LOLE hourly shapes.

SDG&E Response:

A combination of the two LOLE calculations is used to allocate MGCC. SDG&E weighted each hour's % LOLE equally for both the results of the San Diego Greater Reliability Area and the San Diego sub-area, and then determined the top 100 hours of LOLE. This is shown in workpaper "*Chapter 7 WP 2016 LOLE Sum.xlsx*" The combined results are used for generation capacity allocation to reflect capacity considerations in both the San Diego Greater Reliability Area and the San Diego sub-area. This was done because SDG&E is unique in that local capacity considers both the San Diego Greater Reliability area and separately the San Diego sub-area (excluding generation from Imperial Valley).

The LOLE shapes are different between San Diego Subarea and San Diego Greater Reliability Area because of the amount of Solar PV and Wind generation resources located in the San Diego Greater Reliability Area and outside the San Diego Subarea.

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22. Does SDG&E serve all electric loads in the San Diego Subarea? Does SDG&E serve all electric loads in the San Diego Greater Reliability Area? If not, what other utilities serve each of these areas? Please explain the overlap between SDG&E's certificated electric service territory and these two reliability areas.

SDG&E Response:

SDG&E provides transmission and distribution services to all the load in the San Diego Subarea and the San Diego Greater Reliability Area. The load is the same in these two areas. SDG&E only provides commodity service to a portion of this load. The remainder is served by other Load Serving Entities. No other utilities serve load in these areas.