**DATA REQUEST**

1. Please provide workpapers created to calculate the RTP credit and C-CPP Credit for both residential and non-residential customers, as provided in JARP testimony Table 2 and Table 3.

**JARP and Enel NA Response:** Due to the size of the interval-meter datasets provided by SDG&E, all analysis performed by Joint Advanced Rate Parties and Enel North America to support their supplementary testimony made use of the free open-source statistical [programming language R](https://rstudio.com/products/rstudio/download/#download), rather than using spreadsheet software such as Microsoft Excel. All code and data are [available on GitHub](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers).

The calculations performed to create the Illustrative Residential RTP Rate shown in Table 2 are in [*SDG&E EV-TOU-5-RTP Tariff Creator.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Rates/SDG%26E%20EV-TOU-5-RTP/SDG%26E%20EV-TOU-5-RTP%20Tariff%20Creator.R). See lines 253-259 for the calculation of load-weighted SDG&E DLAP locational marginal prices for each TOU period, which are used as the RTP Credit values seen in Table 2. See lines 261-267 for the calculation of load-weighted C-CPP adders for each TOU period, which are used as the C-CPP Credit values seen in Table 2.

The calculations performed to create the Illustrative General Service RTP Rate shown in Table 3 are in [*SDG&E AL-TOU-RTP Tariff Creator.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Rates/SDG%26E%20AL-TOU-RTP/SDG%26E%20AL-TOU-RTP%20Tariff%20Creator.R). See lines 231-237 for the calculation of load-weighted SDG&E DLAP locational marginal prices for each TOU period, which are used as the RTP Credit values seen in Table 2. See lines 239-245 for the calculation of load-weighted C-CPP adders for each TOU period, which are used as the C-CPP Credit values seen in Table 2.

1. Please provide workpapers created to analyze the 2019 prices that produced the 57% of highest priced interval fall outside the on-peak timeframe (4:00-9:00) and 75% of the highest priced intervals were outside of TOU+ hours (2:00-6:00), as provided in JARP testimony pages 6-7.

**JARP and Enel NA Response:** 2019 CAISO locational marginal prices for the SDG&E DLAP were sourced from [CAISO OASIS](http://oasis.caiso.com/mrioasis/logon.do), and cleaned and converted to 15-minute data using [*SDGE DLAP RTP Cleaning.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Wholesale%20Price%20Data/Clean%20Wholesale%20Price%20Data/SDGE%20DLAP%20RTP%20Cleaning.R). The 600 fifteen-minute intervals from this dataset with the highest LMPs were identified in lines 127-128 of [*SDGE\_JARP\_Data\_Request\_Response\_2.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Data%20Request%20Response%202/SDGE_JARP_Data_Request_Response_2.R). The number of Top 600 intervals in each hour was summarized in lines 175-180 of this same script. This summary can be seen in [*Highest 600 LMPs 2019 Hours Summary.csv*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Wholesale%20Price%20Data/Clean%20Wholesale%20Price%20Data/Highest%20600%20LMPs%202019%20Hours%20Summary.csv).

1. Please provide workpapers created to calculate the residential savings ($71.96) and residential non-participant bill increase ($7.26), and non-residential savings ($1,988.26) and non-residential non-participant bill increase ($199.73), as provided in JARP testimony page 11.

**JARP and Enel NA Response:** Analysis of rate-switch savings for residential structural benefiters was performed using the 2019 residential interval meter data provided by SDG&E in [*RES500.csv*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Interval%20Meter%20Data/Raw%20Interval%20Meter%20Data/RES500.csv), which was cleaned up using [*SDG&E JARP Interval Meter Data Cleaning.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Interval%20Meter%20Data/Clean%20Interval%20Meter%20Data/SDG%26E%20JARP%20Interval%20Meter%20Data%20Cleaning.R). Energy costs for each 15-minute interval in 2019 on the current SDG&E EV-TOU-5 rate were calculated using [*SDG&E EV-TOU-5 Tariff Creator.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Rates/SDG%26E%20EV-TOU-5/SDG%26E%20EV-TOU-5%20Tariff%20Creator.R). Energy costs for each 15-minute interval in 2019 with the Illustrative Residential RTP Rate were calculated using [*SDG&E EV-TOU-5-RTP Tariff Creator.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Rates/SDG%26E%20EV-TOU-5-RTP/SDG%26E%20EV-TOU-5-RTP%20Tariff%20Creator.R). Annual revenue collected from each residential customer on both rates, selection of the top 10% structural benefiters, and rate impacts for participants and non-participants are calculated on lines 85 – 114 of [*SDGE\_JARP\_Data\_Request\_Response\_2.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Data%20Request%20Response%202/SDGE_JARP_Data_Request_Response_2.R).

Analysis of rate-switch savings for non-residential structural benefiters was performed using the 2019 large-general-service interval meter data provided by SDG&E in [*LRG500.csv*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Interval%20Meter%20Data/Raw%20Interval%20Meter%20Data/LRG500.csv), which was cleaned up using [*SDG&E JARP Interval Meter Data Cleaning.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Interval%20Meter%20Data/Clean%20Interval%20Meter%20Data/SDG%26E%20JARP%20Interval%20Meter%20Data%20Cleaning.R). Energy costs for each 15-minute interval in 2019 on the current SDG&E AL-TOU rate were calculated using [*SDG&E AL-TOU Tariff Creator.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Rates/SDG%26E%20AL-TOU/SDG%26E%20AL-TOU%20Tariff%20Creator.R). Energy costs for each 15-minute interval in 2019 with the Illustrative General Service RTP Rate were calculated using [*SDG&E AL-TOU-RTP Tariff Creator.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Rates/SDG%26E%20AL-TOU-RTP/SDG%26E%20AL-TOU-RTP%20Tariff%20Creator.R). Annual revenue collected from each non-residential customer on both rates, selection of the top 10% structural benefiters, and rate impacts for participants and non-participants are calculated on lines 419 - 447 of [*SDGE\_JARP\_Data\_Request\_Response\_2.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Data%20Request%20Response%202/SDGE_JARP_Data_Request_Response_2.R).

1. Please provide workpapers created to calculate the different scenarios and avoided generation costs, such as generation capacity (RA) and GHG reduction, as provided in JARP testimony pages 12-14 (Table 4 and Table 5).

**JARP and Enel NA Response:** All of the avoided-cost and bill-cost-savings values in Table 4 were calculated in [*SDGE\_JARP\_Data\_Request\_Response\_2.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Data%20Request%20Response%202/SDGE_JARP_Data_Request_Response_2.R), on the following lines:

**Table 4. Estimated Undercollection per Residential and General Service Customer**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Scenario** | **Wholesale Avoided Cost** | **Top 150 Hour Bill Savings** | **Average Peak Load Reduction, kW** | **Avoided Gen Capacity Cost** | **Under/Over-collection** |
| Res 25% Load Shift | 258 – 261 | 334 – 339 | 207 – 211 | 263 – 267 | 349 – 353 |
| Res 50% Load Shift | 269 – 272 | 341 – 346 | 218 – 222 | 274 – 278 | 355 – 359 |
| GS 25% Load Shift | 527 – 530 | 602 – 607 | 474 – 478 | 532 – 536 | 616 – 620 |
| GS 50% Load Shift | 539 – 543 | 609 – 614 | 485 – 489 | 545 – 549 | 622 – 626 |

5-minute resolution GHG emissions data were sourced from WattTime’s SGIP Signal API, which uses the same implied-heat-rate methodology used in the Avoided Cost Calculator to estimate marginal operational emissions rates using wholesale electricity and gas price data. This data was cleaned and converted to 15-minute resolution by [*SDGE DLAP MOER Data Cleaning.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Marginal%20Emissions%20Data/Clean%20Marginal%20Emissions%20Data/SDGE%20DLAP%20MOER%20Data%20Cleaning.R). GHG reductions for each load-shifting case were calculated in [*SDGE\_JARP\_Data\_Request\_Response\_2.R*](https://github.com/RyanCMann/SDGE_JARP_Supplementary_Testimony_Workpapers/blob/master/Data%20Request%20Response%202/SDGE_JARP_Data_Request_Response_2.R), on the following lines:

**Table 5. Estimated GHG Reduction per Residential and General Service Customer**

|  |  |  |
| --- | --- | --- |
| **Scenario** | **GHG Reduction (kg/year)** | **GHG Reduction (% of Annual Emissions)** |
| Res 25% Load Shift | 295 – 296 | 297 |
| Res 50% Load Shift | 301 – 302 | 303 |
| GS 25% Load Shift | 564 – 565 | 566 |
| GS 50% Load Shift | 570 – 571 | 572 |

1. Please confirm whether the same RTP rate proposed in JARP’s supplemental testimony has been adopted by any public utilities commission. If previously adopted, please provide the public utilities commission decision adopting the same RTP Rate JARP is proposing and the implementing tariff.

**JARP and Enel NA Response:** JARP and Enel NA are not aware of a jurisdiction that has adopted an RTP rate that is exactly the same as the rate proposed in our supplemental testimony. The rate we propose borrows from rates that have been approved in California and elsewhere. We wish to note that the rate we used for illustrative purposes in the supplemental testimony includes only one critical peak capacity adder, but we have proposed a rate with a base peak summer TOU adder and at least two higher peak period adders called on a day-ahead or morning of basis, which is modeled on OG&E’s SmartHours-VPP rate.[[1]](#footnote-1) We have also suggested that the critical peak adder could be differentiated by hour within the peak period, such as SCE’s RTP rate.[[2]](#footnote-2) We have not been able to locate the final decision of the Oklahoma Corporation Commission approving SmartHours-VPP rate, but we will provide it as soon as we are able to.

Regarding the availability of RTP tariffs for customers, retail electricity companies operating in restructured states offer RTP to customers without needing approval by a public utilities commission. Although wholesale market-based pricing is more common for non-residential customers Griddy[[3]](#footnote-3) and Evolve Energy[[4]](#footnote-4) are two companies that offer RTP to residential customers in Texas. For a public utilities commission decision approving the offering of RTP to residential customers, see the [2012 Final Order](https://www.icc.illinois.gov/docket/P2011-0546/documents/182678) in the Illinois Commerce Commission’s (ICC) Docket 11-0546, in which the ICC considered whether to continue Commonwealth Edison’s RTP program, which uses day-of real time prices as we have proposed. In a [related 2012 decision](https://www.icc.illinois.gov/docket/P2011-0547/documents/189644), the ICC approved the continuation of Ameren’s RTP program based on day-ahead hourly prices.

1. At page 9, JARP's supplemental testimony states that "one-sixth of Oklahoma Gas & Electric (OG&E) residential accounts are on its opt-in dynamic Smart Temp-VPP rate, and ComEd and Ameren utilities in Illinois have over 40,000 residential customers on an RTP rate."
   1. What is the source for the OG&E, ComEd, and Ameren customer data provided in this statement? How can the numbers be verified as current and accurate?
   2. How many residential customers are subscribed to the "RTP rate" referenced in this statement, per each utility - OG&E, ComEd, and Ameren?
   3. Please confirm whether the "RTP rate[s]" referenced in this statement is the same rate that JARP proposes. If different, please describe the differences for each utility’s rate – OG&E, ComEd, and Ameren.
   4. Please provide any and all available documentation providing an analysis of the "RTP rates" identified above that JARP considered in developing its proposal, including but not limited to:
      1. Customer surveys and related analysis
      2. Customer feedback reports
      3. Load impact data, related analysis, and reports.

**JARP and Enel NA Response:**

1. As of 2019, ComEd had 34,465 participants in its Hourly Pricing residential RTP program[[5]](#footnote-5) and Ameren had 12,970 participants in its residential Power Smart Pricing program.[[6]](#footnote-6) As cited in our testimony, the data on OG&E enrollment and load impacts comes from an email from email from Shane King at OG&E. However, the email from Mr. King includes a standard confidential warning, so we cannot provide it as this time. We have requested permission from OG&E to share the email, and we will provide it if we are able. For now, see [this press release](https://ogeenergy.gcs-web.com/news-releases/news-release-details/oge-offers-products-and-services-help-customers-save-energy-and), which states that SmartHours has over 120,000 customers enrolled and that OG&E serves a total of 830,000 customers, including non-residential accounts.
2. See response to question 6.a above.
3. See response to question 5 above.
4. For information on load response, and customer surveys related to the ComEd and Ameren programs, see the annual reports referenced in footnotes 5 and 6 as well as [this report](https://citizensutilityboard.org/wp-content/uploads/2017/11/20171114_FinalRealTimePricingWhitepaper.pdf) from the Citizens Utility Board and Environmental Defense Fund. For information on load response in the SmartHours-VPP program see [Ahmad Faruqui’s presentation](https://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Utilities_and_Industries/Energy/Energy_Programs/Electric_Rates/Faruqui%20Rate%20Design%20Panel%203%20Presentation.pdf) at the CPUC’s Advanced Rate Design Forum and [this summary](https://www.iea-isgan.org/dsm-case-usa/) of SmartHours evaluations. This [California Energy Commission report](https://ww2.energy.ca.gov/2020publications/CEC-500-2020-038/CEC-500-2020-038.pdf) provides information on the implementation of a pilot RTP program in SCE’s territory.

1. JARP Prepared Testimony at 3-3 and JARP Prepared Supplemental Testimony at 2. [↑](#footnote-ref-1)
2. JARP Prepared Testimony at 3-2. [↑](#footnote-ref-2)
3. https://www.griddy.com/ [↑](#footnote-ref-3)
4. https://www.evolvemyenergy.com/ [↑](#footnote-ref-4)
5. ComEd’s Hourly Pricing Program: 2019 Annual Report at 3. https://www.icc.illinois.gov/docket/P2015-0602/documents/299208/files/521714.pdf [↑](#footnote-ref-5)
6. Ameren Illinois Power Smart Pricing: 2019 Annual Report at 3. https://www.powersmartpricing.org/wp-content/uploads/PSP-2019-Annual-Report-and-Appendix-FINAL.pdf [↑](#footnote-ref-6)