

# **Exhibit 3-SSY**

**17-035-61 Phase 2 Vote Solar Exhibit 3-SSY 5-8-2020 Yang**

October 10, 2019

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RE: UT Docket No. 17-035-61  
Vote Solar 7<sup>th</sup> Set Data Request (1-8)

Please find enclosed Rocky Mountain Power's Responses to Vote Solar 7<sup>th</sup> Set Data Requests 7.1-7.8. Also provided are Attachments Vote Solar 7.1, 7.3 and 7.4. Provided via encryption is Confidential Attachment Vote Solar 7.2. Confidential information is provided subject to Public Service Commission of Utah Rule 746-1-602 and 746-1-603.

If you have any questions, please call me at (801) 220-2823.

Sincerely,

\_\_\_\_\_/s/\_\_\_\_\_  
Jana Saba  
Manager, Regulation

Enclosures

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17-035-61 / Rocky Mountain Power

October 10, 2019

Vote Solar Data Request 7.1

**Vote Solar Data Request 7.1**

Please provide a copy of RMP's most recent PG study, as referred to in RMP's response to VS 6-1.16.

**Response to Vote Solar Data Request 7.1**

Please refer to Attachment Vote Solar 7.1 which provides a copy of the most recent private generation (PG) study.

## **Vote Solar Data Request 7.2**

For request VS7-2, refer to “Confidential Attachment Vote Solar 6.5”:

- (1) Please confirm that rows 5-15 and row 26 in the tab entitled “T&D Capacity Additions” reflect all of RMP’s planned distribution capacity additions from CY19 through CY24. If they do not, please provide a description of all of RMP’s planned distribution capacity additions, as well as, for each, the planned expenditures each year, in-service date, and MVA added.
- (2) Please explain what is represented by the “Substation Thermal Loading” values in row 15 of the tab entitled “Utilization Factor”, and why the values differ in May-Oct from other months of the year.
- (3) Please explain RMP’s rationale for calculating a “Weighted Distribution Peak” in row 42 of the tab entitled “Utilization Factor”.
- (4) Please explain RMP’s rationale for multiplying the \$/kW by the “Utilization Weighting” in row 26 of the tab entitled “Summary” to calculate the distribution component of deferral value.

## **Response to Vote Solar Data Request 7.2**

- (1) The Company objects to this request on the grounds that the term “all” is overbroad and unduly burdensome. RMP is providing the planned distribution capacity additions of which the business unit that has been responding to these types of requests is aware. Without waiving the objection, please refer to Confidential Attachment Vote Solar 7.2 which provides updated capacity additions based on the 2019 approved capital plan.
- (2) “Substation Thermal Loading” represents the percent loading of nameplate capacity allowed by PacifiCorp engineering guidelines. The differing values represent percent loading of nameplate capacity allowed in the summer (105 percent) versus winter (120 percent).
- (3) The “Weighted Distribution Peak” was calculated to account for the difference in “Substation Thermal Loading” versus nameplate capacity (as explained in the Company’s response to subpart (2) above) for the monthly peak loading. The “Weighted Distribution Peak” is used in the utilization factor calculation to represent a utilization factor based on allowable loading guidelines as opposed to nameplate capacity.
- (4) When a distribution substation’s peak load is expected to approach its rated capacity, it is necessary to take steps to ensure sufficient capacity continues to be available to serve customer load. The referenced utilization weightings represent the average

loading of the distribution system in a given state, relative to the total distribution system capacity in that state. Applying the utilization weighting results in differentiation between regions with significant unused distribution capacity, which would not incur costs for additional distribution capacity until significant load growth occurs, and regions with little unused distribution capacity, which would require additional distribution capacity after a small amount of additional growth. In reality, the substation requirements are more granular, but the idea is that for a state with a 60 percent utilization factor, approximately six out of 10 locations would have a distribution capacity need while four out of ten locations would not. If the transmission and distribution (T&D) capacity credit is to be applied to all locations in the state, and not targeted to locations with a near-term need, the effective benefits are expected to only be 60 percent of the cost of distribution upgrades, since not all locations would have incurred distribution upgrade costs in the first place.

Confidential information is provided subject to the Public Service Commission's confidentiality rules R746-1-602 and R746-1-603.

17-035-61 / Rocky Mountain Power

October 10, 2019

Vote Solar Data Request 7.3

### **Vote Solar Data Request 7.3**

Please provide detailed descriptions of the specific activities and associated costs that are included in the values each year for DER integration, as referenced in RMP's response to VS 6-8.3.

### **Response to Vote Solar Data Request 7.3**

Please refer to Attachment Vote Solar 7.3. Column A shows specific activities included in the values for DER integration as referenced in RMP's response to VS 6-8.3. Cells that are blank or that only include a number/letter code reflect either (1) information that is customer-specific that has been removed (blank cells) (2) the fact that the Company does not possess such information (blank cells); or (3) the only information the Company possesses (number letter code).

### **Vote Solar Data Request 7.4**

For request VS7-4, refer to the NEM Distribution Line Loss Study in “Confidential Attachment Vote Solar 6.21-1”:

- (1) Of the 143 homes in the URD neighborhood study area, please provide the actual number with rooftop solar sized to provide “net zero” energy use as of 8/31/19.
- (2) Please indicate when RMP expects all 143 homes in the URD neighborhood study area to have rooftop solar sized to provide “net zero” energy use.
- (3) Please indicate how many homes served by the Bingham #11 circuit have rooftop solar sized to provide “net zero” energy use as of 8/31/19.
- (4) Please provide the maximum loading (in amps and volt-amps) that RMP allows for 3-phase 4/0AWG medium voltage cable.
- (5) Please provide the maximum loading (in amps and volt-amps) that RMP modeled on the 2,872 ft. of 3-phase 4/0AWG medium voltage cable in the Line Loss Study and indicate when (date and hour) this maximum loading occurred.
- (6) Please provide the maximum loading (in amps and volt-amps) that RMP allows for 1-phase #2AWG medium voltage cable.
- (7) Please provide the maximum loading (in amps and volt-amps) that RMP modeled on the 12,835 ft. of 1-phase #2AWG medium voltage cable in the Line Loss Study and indicate when (date and hour) this maximum loading occurred.
- (8) Please provide the maximum loading (in amps and volt-amps) that RMP allows for 350kcmil triplex secondary cable.
- (9) Please provide the maximum loading (in amps and volt-amps) that RMP modeled on the 8,600 ft. of 350kcmil triplex secondary cable in the Line Loss Study and indicate when (date and hour) this maximum loading occurred.
- (10) Please provide the maximum loading (in amps and volt-amps) that RMP allows for 1/0AWG triplex service cable.
- (11) Please provide the maximum loading (in amps and volt-amps) that RMP modeled on the 7,150 ft. of 1/0AWG triplex service cable in the Line Loss Study and indicate when (date and hour) this maximum loading occurred.
- (12) Please explain the modifications, if any, RMP has made to its URD design and construction standards to account for the results of the NEM Distribution Line Loss

Study.

- (13) Please confirm the units, whether MWh or kWh, in which the following items (grouped under “Annual Energy Summary”) are expressed in table 5 on page 10 of the NEM Distribution Line Loss Study: kWh Consumed; PV Generation; Total Energy Flow; Import; Export; Net Energy Flow.
- (14) Please confirm that the values for ‘XFMR No Load Loss’ in table 5 on page 10 of the Annual Loss Summary are in MWh as labeled.
- (15) Please explain RMP’s rationale for calculating “Total Losses (kWh)” (in table 5 on page 10 of the Annual Loss Summary) by adding Load Losses (in kWh) and XFMR No Load Losses (in MWh).
- (16) Please provide updated values, in consistent MWh or kWh units, for the Base Case and Net Zero scenarios in Table 5 on page 10 of the Annual Loss Summary, including load losses attributable to the 143 homes that occur “upstream” of the virtual meter (i.e., primary line losses from the virtual meter to the distribution substation, distribution substation losses, and transmission system losses).
- (17) Refer to the Reactive Power Support values in Table 5 on p. 10. Please explain whether RMP believes the increased 4 kVARh of reactive power support in the Net Zero scenario could be provided by rooftop PV with inverters compliant with IEEE Standard 1547-2018? If not, please explain.
- (18) Please explain what RMP means by the statement at page 14 that “Accurate capture of no-load losses is [dependent] on the scale of volumetric energy import/export rates”.
- (19) Please explain what RMP means by the statement at page 14, “The use of battery storage or time shifting energy usage to optimize usage could lead to [significant] underestimation of no-losses [*sic*] using the traditional loss factors”.

#### **Response to Vote Solar Data Request 7.4**

- (1) The Company does not collect the data necessary to classify customers as "net zero".
- (2) The Company does not collect the data necessary to classify customers as "net zero".
- (3) The Company does not collect the data necessary to classify customers as "net zero".



- (4) The Company allows a maximum loading of 225 amps for 3-phase 4/0AWG medium voltage cable.
- (5) A maximum loading of 871.6 kilovolt ampere (kVA) for the study area only occurred on May 24 at 1300 hours. The 4/0AWG cable feeds other areas loads beyond the study area.
- (6) The Company allows a maximum loading of 126 amps for 1-phase #2AWG medium voltage cable.
- (7) Loading information was only monitored at the point where the distribution system entered the study area. A time-series analysis of the loading on individual cable segments within the area was not included in the study.
- (8) The Company allows a maximum loading of 316 amps for 350 kcmil triplex secondary cable.
- (9) Loading information was only monitored at the point where the distribution system entered the study area. A time-series analysis of the loading on individual cable segments within the area was not included in the study.
- (10) The Company allows a maximum loading of 150 amps for 1/0AWG triplex service cable.
- (11) Loading information was only monitored at the point where the distribution system entered the study area. A time-series analysis of the loading on individual cable segments within the area was not included in the study.
- (12) No changes were made as a direct result of this study.
- (13) In the "Annual Energy Summary" all numerical results were calculated in 'Mega' units and reported as such. However, the following items were mislabeled with 'Kilo' units: kilowatt-hour (kWh) Consumed, Photovoltaic (PV) Generation, Total Energy Flow, Reactive Power Support. Please refer to Attachment Vote Solar 7.4.
- (14) Results for 'XFMR No Load Losses' were calculated and reported in 'kilo' units. However, units for 'XFMR No Load Losses' in the table were mislabeled 'Mega' units. Please refer to Attachment Vote Solar 7.4.
- (15) Numerical results for 'XFMR No Load Losses' were calculated and reported in 'kilo' units. However, units for 'XFMR No Load Losses' in the table were mislabeled. Please refer to Attachment Vote Solar 7.4.
- (16) Losses outside of the study area were not calculated.

- (17) The effects of utility interactive inverters with voltage and reactive/active power control functionality were not studied.
- (18) No-load losses do not change with the level of load whereas the loss expansion factors do because they are a relative percentage of losses as compared to load. While the component of the numerator for no-load losses will remain constant, differences in the load used in the denominator will change the relative significance of the no-load losses in the calculation.
- (19) Shifting energy usage times to be more coincident with photovoltaic production profiles and/or using battery storage to optimize self-consumption could reduce volume of energy flow on the system and effect the no-load loss calculation as explained in the Company's response to subpart (18) above.

17-035-61 / Rocky Mountain Power

October 10, 2019

Vote Solar Data Request 7.5

### **Vote Solar Data Request 7.5**

Please provide an estimate of the typical increase in an RMP residential customer's annual load (in kWh) from the installation and utilization of a Level 2 EV charging port.

### **Response to Vote Solar Data Request 7.5**

Annual energy consumption estimates by charging technologies are not currently available. However, please refer to the PacifiCorp Demand-Side Resource Potential Assessment for 2019-2038, Volume 4: Class 2 Demand-Side Management (DSM) Analysis Appendices A through H. Specifically, please refer to Table A-13, Table A-19 and Table A-31 for single family residential household electric vehicle (EV) annual energy consumption estimates for the Rocky Mountain Power (RMP) states.

[https://www.pacifiCorp.com/content/dam/pcorp/documents/en/pacifiCorp/environment/dsm/2019-final-study/PacifiCorp\\_DSM\\_Potential\\_Vol\\_4A-H\\_Class2\\_Appendix\\_Final\\_2019-6-30.pdf](https://www.pacifiCorp.com/content/dam/pcorp/documents/en/pacifiCorp/environment/dsm/2019-final-study/PacifiCorp_DSM_Potential_Vol_4A-H_Class2_Appendix_Final_2019-6-30.pdf)

## Vote Solar Data Request 7.6

Please provide a copy of the current draft 2019 IRP referred to in RMP's response to VS 6.5 and provide an explanation of how RMP applies the T&D deferral value credit in its IRP.

## Response to Vote Solar Data Request 7.6

PacifiCorp intends to file and publish the completed / final version of PacifiCorp's 2019 IRP October 18, 2019. The Company will supplement this response shortly thereafter.

The transmission and distribution (T&D) credit value is applied to each of the Class 2 demand-side management (DSM) cost bundles as a dollar per megawatt-hour (\$/MWh) credit, or reduction, to the cost of that bundle.

To convert the credit value from dollars per kilowatt-year (\$/kW-year) to \$/MWh, the following calculation is applied using \$13.56/kW-year as the T&D credit value in the example, the T&D credit is multiplied by the planning capacity factor (PCF) then multiplied by 1,000 (converting kilowatts (kW) to megawatts (MW)), then divided by the annual capacity factor shape.

$(\text{T\&D Value} \times \text{PCF} \times 1,000) / (\text{DSM2 1-year shape [between 1 and 8,760]})$

*Example for Utah 50-60 cost bundle (D2UT\_f\_50):*

$(\$13.56 \times .73 \times 1000) / 3659 = \$2.69/\text{MWh reduction in the DSM cost.}$

**Table 1 - Sample of T&D credit values**

State	Bundle	Bundle Name	Hourly Shape	Summer PCF	T&D Credit (\$/MWh)
UT	20 - 30	D2UT_c_20	4204	73%	\$2.35
UT	30 - 40	D2UT_d_30	4270	77%	\$2.45
UT	40 - 50	D2UT_e_40	3870	66%	\$2.31
UT	50 - 60	D2UT_f_50	3659	73%	\$2.69

17-035-61 / Rocky Mountain Power

October 10, 2019

Vote Solar Data Request 7.7

**Vote Solar Data Request 7.7**

Provide any available updates to 2017 IRP Tables 6.1 and 6.2, and 2017 IRP Update Tables 5.5 and 5.6, either in final or in draft form.

**Response to Vote Solar Data Request 7.7**

The most recent supply side table representing Table 6.1 and Table 6.2 is available on the Company's website as follows:.

<https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2019-irp/2019-irp-presentations-and-schedule/2018-10-092%20-%20Supply-Side%20Resource%20Table.pdf>

### **Vote Solar Data Request 7.8**

Provide all hourly demand, wind generation, solar generation as used in IRP modeling for the preferred portfolio, in either spreadsheet or .csv data file.

### **Response to Vote Solar Data Request 7.8**

The Company objects to the data request on the basis that the request seeks information that is not relevant in this case and therefore not likely to lead to the discovery of admissible evidence. Without waiving the objection, the Company responds as follows:

Please refer to the Company's response to Vote Solar Data Request 6.10, specifically Confidential Attachment Vote Solar 6.10-1 and Attachment Vote Solar 6.10-2 which provided the confidential and non-confidential data disks containing all available work papers supporting PacifiCorp's 2017 Integrated Resource Plan (IRP). Please also refer to the Company's response to Vote Solar Data Request 6.10, specifically Confidential Attachment Vote Solar 6.10-3 and Attachment Vote Solar 6.10-4 which provided the confidential and non-confidential data disks containing all available work papers supporting PacifiCorp's 2017 IRP Update.

Specifically, the available work papers have been provided as follows:

#### **2017 IRP Data Disks (Confidential Attachment Vote Solar 6.10-1):**

- Loads - Data Disk 2\_CONF\Assumptions + Inputs Conf.zip\Assumptions + Inputs\Load, CONF
- Shapes Wind and Solar, not generation - Data Disk 3\_CONF\Planning & Risk Inputs+Output, Part 1\Preferred Portfolio.zip\Preferred Portfolio\Model Input + Output\FS-GW4\_MW\Index.Dat

#### **2017 IRP Update Data Disks (Confidential Attachment Vote Solar 6.10-3):**

- Loads - DataDisk\_CONF\Assumptions + Inputs\Load CONF
- Shapes Wind and Solar, not generation - DataDisk\_CONF\PaR Inputs-Outputs.zip\P\_I17U-17PrefPr-MM\ Index.Dat