UCE Data Request 4.1

Questions Regarding Clements Rebuttal Testimony - Please provide the Black & Veatch study referenced in footnote 9 on p. 18 of witness Clements' rebuttal testimony.

Response to UCE Data Request 4.1

Please refer to Attachment UCE 4.1-1 and Confidential Attachment UCE 4.1-2.

Confidential information is provided subject to Utah PSC Rule 746-100-16.

UCE Data Request 4.2

Questions Regarding Clements Rebuttal Testimony - In relation to Graph 1 on page 18 of witness Clements' rebuttal testimony:

(a) Please provide the day and hour in which system peak occurred in each year.

(b) Please provide a detailed description the method by which the "capacity factor" (line 382) is calculated. In particular, please disclose the rating convention used for the resource. For example, was the rating convention DC-STC?

(c) Was hourly solar production determined for each year? Please describe how this was accomplished.

(d) What years were the solar data taken from? For example, the NREL Typical Meteorological Year "TMY-3" data for Salt Lake City lists solar data for 1991 for July.

(e) Please describe the assumptions used for the tilt and orientation of the hypothetical solar resource used to develop Graph 1.

(f) Please describe the assumptions used for the component ratings of the hypothetical solar resource, including solar panels and inverter.

(g) Were avoided losses included in the analysis, and if so, how were these calculated?

Response to UCE Data Request 4.2

(a) Please refer to Attachment UCE 4.2, sheet 4.2a for the system peak information.

(b) Please refer to Attachment UCE 4.2, sheet 4.2b for the capacity factor calculations. The rating convention was the net AC output divided by the inverter maximum capacity.

(c) Hourly solar production was determined from the study provided in response to Data Request UCE 4.1. Solar data used was taken from TMY3, please see (e) below for a further explanation.

(d) The solar data used was TMY3 for Salt Lake International Airport. TMY3 data provided by NREL is a data set made up of weather data taken from years 1976-2005 which represents a typical year. A typical meteorological year (TMY) data set provides designers and other users with a reasonably sized annual data set that holds hourly meteorological values that typify

conditions at a specific location over a longer period of time, such as 30 years. Although not designed to provide meteorological extremes, TMY data have natural diurnal and seasonal variations and represent a year of typical climatic conditions for a location. Source: Users Manual for TMY3 Data Sets, published by NREL, S. Wilcox and W. Marion; Sections 1.2 and 1.3.

(e) Please refer to the file: SLC PVSYST Report-FT.PDF provided in Attachment UCE 4.1. 27 degrees of tilt and zero degrees azimuth.

(f) Please refer to the file: SLC PVSYST Report-FT.PDF provided in Attachment UCE 4.1.

(g) Losses from the panel to the point of interconnect are included and can be found in the file SLC PVSYST Report-FT.PDF provided in Attachment UCE 4.1.

UCE Data Request 4.3

Questions Regarding Marx Rebuttal Testimony - On page 2, beginning with line 39, witness Marx states: "As the Company integrates increasing numbers of distributed generation systems, the Company expects this will cause an overall increase in the Company's distribution costs."

(a) Beyond the interconnection process for a net metering system, what current measures is RMP taking to integrate distributed generation with its distribution system?

(b) Has RMP undertaken any analysis to determine at what penetration level of distributed generation (e.g., 10% of utility peak demand) the Company would experience an increase in distribution costs as a result of distributed generation? If so, please provide such analysis.

(c) Has RMP undertaken any analysis of the maximum capacity of any individual feeder to host distributed generation without requiring upgrades or additional protective equipment? If so, please provide such analysis.

(d) Has RMP undertaken any analysis of whether the hosting capacity of its feeders (i.e., the ability to accommodate distributed generation without upgrades or additional protective equipment) is greater than the amount of capacity currently allowed to interconnect under the level 1 or level 2 interconnection fast track technical screens? If so, please provide such analysis.

Response to UCE Data Request 4.3

a) Other than work required to connect distributed generation, no physical improvements to the system are being done as preliminary measures.

b) To date, we have not completed a detailed analysis within our service territory. RMP began a study on a single distribution circuit in August 2015 to analyze the effects of various amounts of rooftop solar. The circuit being considered is in the South Jordan area. Data gathering and prefatory engineering has begun. Results expected to be complete during the first quarter of 2016.

c) See response to 4.3b.

d) RMP objects to the question as being vague, ambiguous and possibly duplicative to 4.3c above.

Notwithstanding and without the objection, the company has completed an analysis sampling 24 residential customers that have load profile meters installed. The analysis focused on the calculated value of rooftop solar necessary to generate enough energy to be considered net-zero. Costs for system improvements were not calculated. The results of that analysis are provided in Attachment UCE 4.3. The calculated solar values were estimated using NREL's PVWatts® calculator.

UCE Data Request 4.4

Questions Regarding Marx Rebuttal Testimony - On page 4, beginning with line 74, witness Marx states: "If a residential customer installs a "right-sized" solar system to achieve annual net-zero energy, the net generation peak that occurs at solar noon during the summer months can be greater than the peak load for that customer. This may require an increase in the size of those facilities directly serving the customer in order to handle this peak reverse current flow."

(a) How many net metered customers does RMP currently serve that it considers to be "net-zero" customers? Please provide the number of net metering customers in each year of the last three years for which RMP has data for whom production of kWhs completely offset consumption of kWhs over the course of the annual billing period. (If RMP defines net-zero differently, please explain.)

(b) How many residential net metered systems are currently operating in parallel with RMP's system?

(c) What is the total installed nameplate capacity (expressed in kW-DC) of residential net metering systems currently operating in parallel with RMP's system?

(d) What is the average system size (expressed in kW-DC) of all residential net metering systems?

(e) Please provide the number of instances in which the installation of a residential net metering system required RMP to increase the size of its existing facilities in order to accommodate the installation and continue to provide electrical service to the account.

(f) Under the current interconnection rules, does a customer that causes RMP to increase the size of its facilities to accommodate a net metering system bear all of the costs of increasing the size of those facilities?

(g) If not, please provide the total incremental costs (i.e., costs beyond the customer's contribution to the expense of increasing facility size) RMP incurred in increasing the size of existing electrical service facilities to accommodate residential net metering systems.

Response to UCE Data Request 4.4

a) The table below provides the number of accounts that meet the "net-zero" definition. The company is defining "net-zero" as an account where the kWh

provided to the grid from the customer is equal to or greater than the amount of kWh provided to the customer from the grid on an annual basis.

Year	Customer Accounts
2013	167
2014	215
2015	453

b) On August 31, 2015, there were 4,773 active residential net metering accounts interconnected in Utah.

c) On August 31, 2015, the total capacity of residential net metering systems interconnected in Utah was 23,560 kw-DC.

d) On August 31, 2015, the average residential net metering system size was 4.94 kw-DC.

e) Four instances required an increase to facilities directly serving the account. The level of residential rooftop solar net-metered installations in Utah is low at this time. Due to this fact, a very low number have met a threshold that would require an increase. This does not mean that future equipment upgrades will not be required as more installations occur. For additional information, see response to 4.4b.

f) The current Utah Administrative Code regarding interconnection places the responsibility for the cost of modifications to the utility distribution system "to allow a generating facility to be interconnected consistent with safety, reliability and power quality standards" on the interconnection customer.

g) For the four instances referenced in 4.4e, all were paid for by the requesting customer as the facilities provided direct service to them. The average cost was $6,047 per site.

UCE Data Request 4.5

Questions Regarding Marx Rebuttal Testimony - On page 5, beginning with line 94, witness Marx states: "It means that when considering local neighborhood distribution systems and applying the appropriate coincidence factors, the net generation peak for net-zero solar systems that occurs at solar noon during the summer months can be greater than the peak load requirement. Again, with high saturations of rooftop solar, this will require an increase in the size of those local neighborhood facilities serving the customers within a defined boundary. Increasing the size of these local neighborhood facilities increases distribution costs." Please provide the following:

(a) The number of instances in which the size of local neighborhood facilities had to be increased in order to accommodate the installation of a residential net metering system.

(b) Under the current interconnection rules, does a customer that causes RMP to increase the size of its local neighborhood facilities to accommodate a net metering system bear all of the costs of increasing the size of those facilities?

(c) If not, please provide the total incremental costs (i.e., costs beyond the customer's contribution to the expense of increasing facility size) RMP has incurred in increasing the size of existing local neighborhood facilities to accommodate residential net metering systems.

Response to UCE Data Request 4.5

a) The level of residential rooftop solar net-metered installations in Utah is low at this time. Due to this fact, no local neighborhood facilities have met a threshold that would require an increase. This does not mean that future equipment upgrades will not be required if more installations occur.

b) See response to 4.4f.

c) See response to 4.4g.

UCE Data Request 4.6

Questions Regarding Marx Rebuttal Testimony - On pages 6 and 7, witness Marx discusses the bi-directional flow of electricity due to net metering systems. Please provide the following:

(a) The number of instances in which the bi-directional equipment described in Table 1 had to be installed in order to accommodate the installation of a residential net metering system.

(b) Under the current interconnection rules, does a customer that causes RMP to install the equipment listed in Table 1 to accommodate a net metering system bear all of the costs of increasing the size of those facilities?

(c) If not, please provide the total incremental costs (i.e., costs beyond the customer's contribution to the expense of the equipment) RMP incurred in installing the equipment in Table 1 to accommodate residential net metering systems.

Response to UCE Data Request 4.6

a) The level of residential rooftop solar net-metered installations in Utah is low at this time. Due to this fact, no bi-directional equipment for outage management is needed today. This does not mean that future equipment upgrades will not be required if more installations occur.

b) See response to 4.4f.

c) See response to 4.4g.

UCE Data Request 4.7

Questions Regarding Marx Rebuttal Testimony - In reference to Table 2 on page 8 of witness Marx's rebuttal testimony, please provide the following:

(a) The number of instances in which the bi-directional equipment described in Table 2 had to be installed in order to accommodate the installation of a residential net metering system.

(b) Under the current interconnection rules, does a customer that causes RMP to install the equipment listed in Table 2 to accommodate a net metering system bear all of the costs of increasing the size of those facilities?

(c) If not, please provide the total incremental costs (i.e., costs beyond the customer's contribution to the expense of the equipment) RMP incurred in installing the equipment in Table 2 to accommodate residential net metering systems.

Response to UCE Data Request 4.7

a) The level of residential rooftop solar net-metered installations in Utah is low at this time. Due to this fact, no bi-directional equipment for voltage management is needed today. This does not mean that future equipment upgrades will not be required if more installations occur.

b) See response to 4.4f.

c) See response to 4.4g.