Q. Please state your name, business address and present position with PacifiCorp dba Rocky Mountain Power ("the Company").

A. My name is Joelle R. Steward. My business address is 201 South Main Street, Suite 2300, Salt Lake City, Utah, 84111. My present position is Director of Rates and Regulatory Affairs.

Qualifications

Q. Please describe your education and professional background.

A. I have a Bachelor of Arts degree in Political Science from the University of Oregon and a Masters of Public Affairs from the Hubert Humphrey Institute of Public Policy at the University of Minnesota. Between 1999 and March 2007, I was employed as a Regulatory Analyst with the Washington Utilities and Transportation Commission. I joined the Company in March 2007 as the Regulatory Manager responsible for all regulatory filings and proceedings in Oregon. In February 2012, I was named Director of Pricing and Cost of Service in which I began overseeing the work of the cost of service and pricing groups. In May 2015, I assumed by present position where I manage the regulatory affairs group for Rocky Mountain Power in addition to continuing to oversee cost of service and pricing for PacifiCorp.

Q. Have you appeared as a witness in previous regulatory proceedings?

A. Yes. I have testified in regulatory proceedings in Idaho, Oregon, Utah, Wyoming, and Washington.

Q. What is the purpose of your testimony?

A. My testimony supports the Company recommendation to use a two-part analytical

framework to evaluate the costs and benefits of net energy metering ("NEM"), as required by Utah Code Ann. §54-15-105.1. Specifically, my testimony presents how the cost of service study can be used to capture the costs incurred for providing service to net metering customers as well as reflect benefits where net metering customers impose fewer costs on the utility system. The Company recommends that in the next rate proceeding, or applicable phase two in this proceeding, a separate class be created for residential NEM customers in the cost of service study. Using the cost of service study will reflect the costs and benefits for NEM customers in their capacity as ratepayers, consistent with the guidelines established by the Commission in its July 1, 2015, Order Re: Conclusions of Law on Statutory Interpretation and Order Denying Motion to Strike. The cost of service study is a tool familiar to the Commission and to parties in general rate cases, and is a foundation for setting rates. As such, the cost of service study will be a necessary bridge for determining the second step of the process set out by the Utah statute, which is to "determine a just and reasonable charge, credit, or ratemaking structure, including new or existing tariffs, in light of the costs and benefits."[1] In conjunction with the cost of service study, the Company recommends using avoided costs as the value for or benefit of any excess energy, as described in the direct testimony of Paul H. Clements, in future rate designs.

Q. What is a cost of service study?

A. A cost of service study is a tool that assigns all of the Company's costs in the jurisdictional (state) revenue requirement to different groups of retail customers,

[1] Utah Code Ann. § 54-15-105.1(2).

called classes or rate schedules, based upon how those classes use different aspects of utility service. The cost of service study is included in all rate case filings and is used as a guide for setting rates.

Specifically, the cost of service study uses a three-step process to assign responsibility of costs:

- First, costs are functionalized based on the aspect of service they support—generation, transmission, distribution, or retail services.
- Second, costs within each of those functions are classified to the component of service they provide—demand-, energy- or customer-related.
- Finally, costs are assigned or allocated to customer classes to determine the cost of serving each class of customer.

Q. How can the cost of service study be used in evaluating the costs and benefits for net metering customers?

A. The cost of service study assigns costs to a customer class based on the usage characteristics of the class. Using data from the load research study that is currently underway, the Company will be able to create a class profile for residential NEM customers, in the same manner done for other types of customer classes. This will enable the Company to assign costs to the NEM customers based on how they use the utility system. The specific costs include costs reflected in the revenue requirement and would include the following:

- Generation service – demand and energy related
- Transmission service – demand and energy related

- Distribution service – demand related
- Retail service – customer related.

The NEM customer load profile will also reflect benefits NEM customers provide to the system when they may contribute less usage to peak periods that are used to determine costs and therefore incur less cost responsibility. By creating a separate class for residential net metering customers in the cost of service study and comparing their cost of service against their revenue, the Company and parties will be better able to evaluate and design rates that balance the value NEM customers bring to the system with the costs of serving them.

Q. Generally, what are the key drivers for assigning costs in the cost of service study?

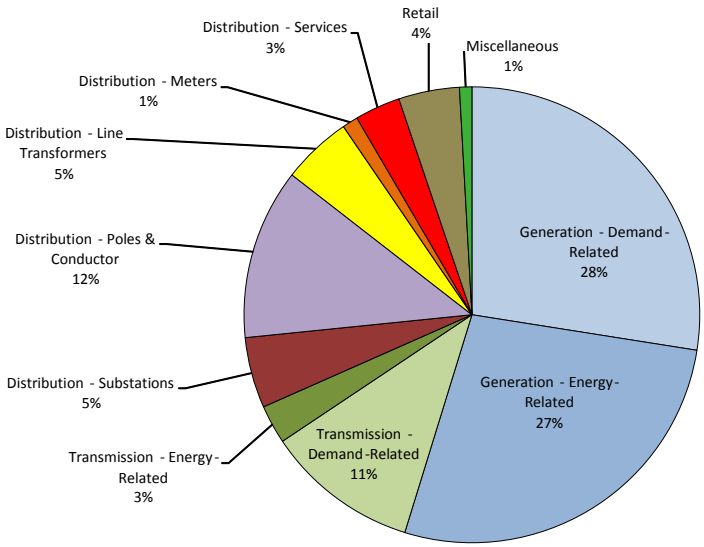
A. Key drivers are:

- Customer class usage (kW) at the times of monthly system coincident peaks, which is used for allocating demand-related costs of generation and transmission.
- Annual energy usage (kWh), which is used for allocating energy-related costs of generation and transmission.
- Customer class usage (kW) at times of the monthly distribution peaks for Utah, which is used for allocating costs of distribution substations and primary lines.
- Non-coincidental peak or maximum usage (kW) for customers using the distribution system, which is used to allocate costs for distribution transformers and secondary lines.

- Number of customers in the class, which are used to allocate costs for distribution service lines, meters, and retail costs, such as billing, metering reading, and customer support services.

For illustrative purposes, Figure 1 below shows the cost of service breakdown for the residential class from the last general rate case in Docket No. 13-035-184.

Figure 1. Residential Cost for Each Aspect of Service



Q. Why is creating a separate class for NEM customers in the cost of service study preferable to keeping them within the general residential class?

A. NEM customers have different characteristics than non-NEM customers since these customers are partially served by their own generation, making them partial requirements customers. NEM customers are also unique in that they also use the grid to export their own generation and rely on the system to be available to serve them at times when their generation is not producing all of their own energy

requirements. Creating a separate class will allow for a more refined determination on how NEM customers with distributed generation influence each element of cost of service (generation, transmission, distribution, retail). While they may take less energy (kWh) from the grid, their overall demand (kW) requirements from the grid may remain relatively unchanged, which significantly influences cost incurrence and allocation.

As explained in the direct testimony of Mr. Clements, under the current NEM program, NEM customers receive a credit at the full retail rate for all excess output of their facility, which reduces the revenue that would otherwise have been received from NEM customers. Separating residential NEM customers in the cost of service study will more directly show any benefits due to lower energy usage or avoiding the peak periods, either system coincident peaks or Utah distribution peaks, through lower allocations for the relevant costs, which can be compared against the revenues they provide. If their revenues, based on current rate design, are lower than their costs, then costs are unfairly shifted to other customers.

Separating residential NEM customers in the cost of service study will also enable the development of rates that provide appropriate price signals and reflect any benefits or costs on the individual customer level.

Q. Do you have an example of how the NEM customer profile may influence cost allocation?

A. Yes. Exhibit RMP___(JRS-1) shows examples of system coincident peak timing and distribution peak timing compared to a solar system's production profile, based on the peak periods from the last general rate case cost of service study. This shows

that during some months output from a solar system may fully or partially offset customer need during system and distribution peaks so they may receive a lower allocation of demand-related costs. In other months, however, the output from the solar system may not correspond to the peaks, showing a continued reliance on the system and therefore contribution to demand-related costs. The current net metering load research study will provide quantitative support to inform how distributed generation alters overall usage profiles.

Q. Can the cost of service be used as the framework for evaluating the costs and benefits of NEM for customer classes other than residential?

A. Yes, it could. However, since the general service rate classes are already separated by differences in overall demand requirements of the system and the rate designs are better aligned with the costs for different aspects of service through the inclusion of demand-based charges (kW) in addition to energy-based charges (kWh), the framework for capturing costs and benefits in NEM for non-residential customers is generally already in place.

The one aspect of NEM for non-residential customers that should be evaluated based on the framework analysis is the option on Schedule 135, Net Metering Service, for large-non-residential customers to select compensation for excess generation from either Schedule 37 avoided cost rates or the average retail rate. Consistent with the discussion by Mr. Clements, the Company recommends that excess energy be valued at avoided costs, which are a better reflection of the costs and benefits of distributed generation.

Q. Since the Commission has limited this phase of the investigation into net metering to establishing an analytical framework for determining costs and benefits, isn't rate design irrelevant?

A. No. Rate design is an essential element of net metering since rate design is how costs and benefits are captured; it's how customers receive price signals and compensation for distributed generation. Therefore, rate design cannot be completely separated from consideration in how costs and benefits are calculated for net metering. As discussed by Mr. Clements, the benefits to the system of distributed generation should be evaluated and applied consistently irrespective of the type of customer who invests in it unless a specific value can be isolated and quantified. For example, generation from a residential rooftop PV facility is not more valuable to the system than a generation facility on the rooftop of a commercial customer; however, because of the differences in rate design, the price signals and compensation to the residential and commercial customers are significantly different. So right now with rate design a residential customer can achieve greater bill savings than a non-residential customer for the same facility. To evaluate costs and benefits of *net metering*, as opposed to the costs and benefits of distributed generation, consideration of rate design is necessary to determine if the cost of service is being fairly recovered from NEM customers or being paid for by other customers.

To the extent it could be argued that the benefits of rooftop PV are greater from residential installations due to overall higher cost of service for residential

customers, using the cost of service study as part of the analytical framework to separately evaluate residential NEM customers will help inform the answer.

Q. Please explain how the differences in rate design between residential and non-residential customers will influence cost recovery from NEM customers.

A. As previously noted, key drivers of utility costs are tied to customer demand, specifically a customer classes' use of system at the time of system coincident peaks, distribution peaks, and the non-coincidental peak. Since the rate structures for most non-residential classes include demand-related charges or other rate elements such as higher basic charges or declining block energy charges, the current rate structures are significantly more capable of capturing differences in usage and system requirements for non-residential NEM customers than the residential rate structure that is limited to a small basic charge, minimum charge, and inclining block energy charges. Where rate design is more reflective of the cost of service, differences in usage profiles and the costs and benefits of net metering are better captured for individual customers within a class. For instance, Figures 2 and 3 show the difference in cost drivers (or demand- and customer-related versus energy-related costs) compared to how revenue is recovered. Figure 2 shows that while approximately 70 percent of residential costs are demand- or customer-related costs and therefore less variable in nature, over 90 percent of the revenue comes from variable energy-related charges. In contrast, Figure 3 shows that the relationship between cost driver and revenue source is more closely aligned for Schedule 6, Large General Service.

Figure 2. Residential Cost of Service and Charges

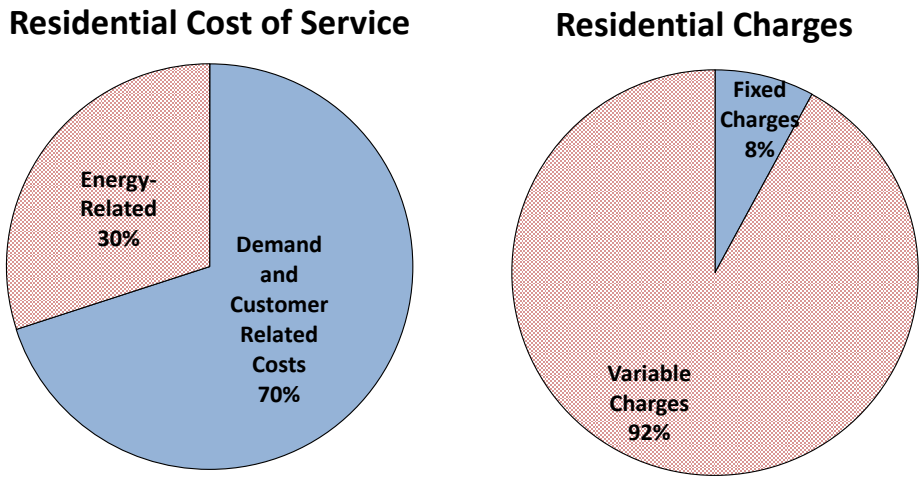
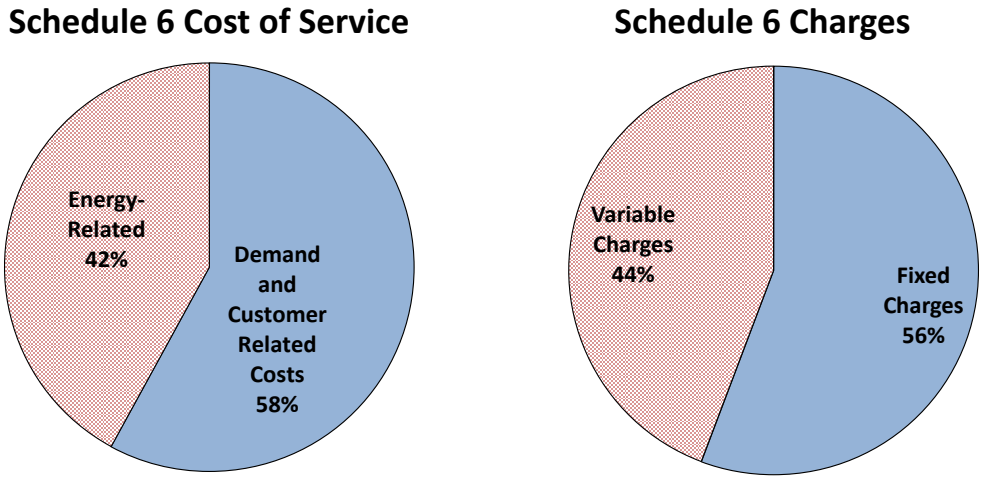


Figure 3. Schedule 6 – General Service Cost of Service and Charges



194 **Q. Why should different rates and a separate rate structure be applied to**
195 **residential NEM customers?**

196 A. As shown in Figure 2 above, while 70 percent of the residential class' cost of service
197 is demand or customer related, only eight percent of its revenue is recovered from
198 fixed charges with the remaining 92 percent recovered from energy charges. For
199 instance, in the last general rate case I calculated $25 per residential customer per
200 month for distribution and retail costs and an additional $31 per customer per month

for fixed generation and transmission costs. In contrast, the minimum charge a residential NEM customer may pay is $8 per month. To the extent that NEM customers are able to reduce the net quantity of energy for which they pay they may pay less than the fixed costs of the system they rely upon since the rates for energy are significantly relied upon to recover demand-related costs as well as energy-related costs, unless they demonstrate a corresponding reduction in demand as well as energy. A separate rate design based on the separate class within the cost of service study would bring the categories of cost into closer alignment with the rates to better ensure that costs and benefits accrue to the class and to the individual customers in the class. Such a rate structure would significantly reduce the risk that recovery of fixed costs properly belonging to NEM customers are not shifted to other customers. If the entire residential rate structure was able to capture demand and energy characteristics for individual customers like non-residential rate structures, a separate residential NEM class would likely not be necessary. Without the demand metering capability for all residential customers, however, separating residential NEM is the most practical and fair solution.

Q. You previously stated that NEM customers were partial requirements customers. Are other partial requirements customer classes included in the cost of service study as a separate class?

A. No. Customers taking partial requirements service on Schedule 31 are different from partial requirements customers participating in NEM for several reasons which makes it more difficult to incorporate Schedule 31 into the cost of service study. Schedule 31 customers rely on the Company for backup service for

unplanned and maintenance outages for their onsite generation, which is typically combined heat and power or natural gas turbines. This makes it more difficult to develop a consistent profile of usage that could be used in the cost of service study. Rates for Schedule 31 are developed based on rates for otherwise applicable service and include contract backup and facilities charges for recovery of fixed cost elements of distribution, transmission, and generation required for reliable service if and when it is necessary. They also have the ability and may contract to sell any excess output from their onsite generation at avoided cost rates.

In contrast, solar NEM customers have more predictable patterns of energy requirements than Schedule 31 customers who require service during unplanned outages, which are by their nature unpredictable.[2] An overall usage profile of when service is needed is possible with solar PV distributed generation, which enables this class to be incorporated in the cost of service study.

Additionally, evaluating NEM customers in the cost of service study would be consistent with the Commission's recent direction in its March 20, 2015 Report and Order in Docket No. 14-035-T02 approving Schedule 32, Service from Renewable Energy Facilities, where the Company was directed to evaluate the costs for the service in the cost of service study.

Q. Why is using the cost of service study for NEM preferable to using the

[2] The generation output from renewable facilities is intermittent and from hour to hour less predictable than the output from thermal facilities generally used by Schedule 31 partial requirements customers. However, the timing of forced outages for these thermal generators, which cause Schedule 31 customers to require utility service, can be highly volatile and Schedule 31 customers therefore do not lend themselves well to cost of service analysis.

traditional demand-side management ("DSM") cost and benefit test equations (i.e., Utility Cost Test, Ratepayer Impact Measure, Total Resource Cost, etc)?

A. With the exception of the ratepayer impact measure ("RIM") test, the DSM tests do not consider impacts on non-participating customers, which is necessary in order to meet the requirements of the NEM Statute. The traditional DSM tests are useful tools for determining whether a program should be offered for acquiring cost-effective resources, but they are not designed for setting rates. The cost of service study considers the revenue that each group of customers pays relative to the cost of all aspects of utility service and considers how any difference impacts other customers. The cost of service study is designed as a tool to aid in setting rates and is an appropriate vehicle for evaluating net metering, since net metering is a program whose cost recovery and incentive levels are set through rates.

The traditional DSM tests are primarily used to evaluate the cost-effectiveness of resource acquisition programs where utilities provide one-time monetary incentives to customers to improve the efficiency of end use equipment. These tests help inform which DSM resources should be used to meet load obligations now or in the future and the economics of acquisition efforts. In Utah, the incentives paid to participants and the administration for these DSM programs are recovered from customers through a separate surcharge that is outside of the base ratemaking process. Generally participants receive a one-time financial incentive for the measures that they take in addition to bill savings for reduced usage. In contrast, the primary incentive for net metering is conferred to participants through a bill reduction and offset to full retail rates for excess output.

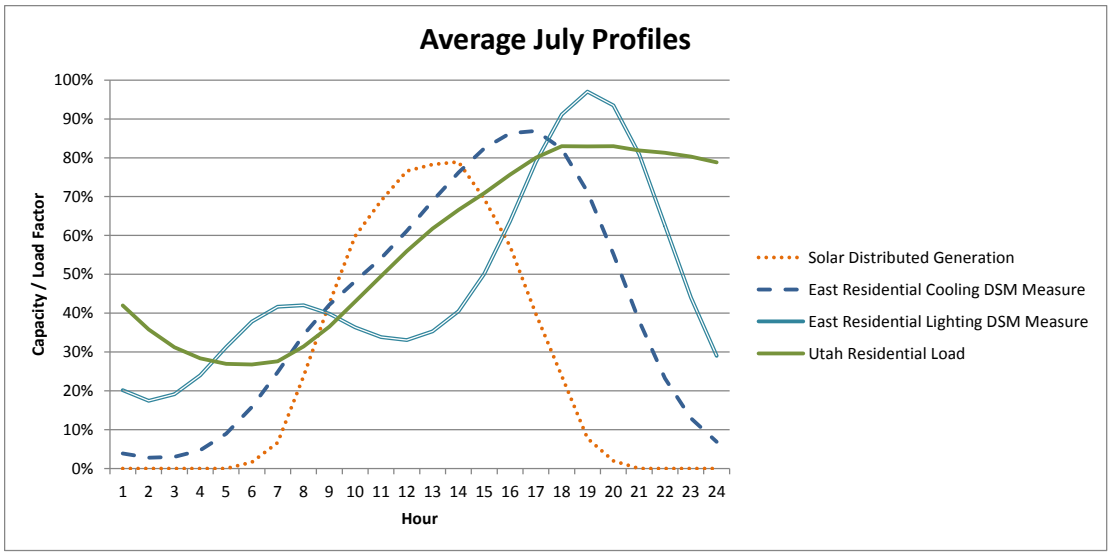
Q. In addition to the DSM tests not being directly applicable to NEM, are there reasons why distributed generation customers are different than traditional DSM customers?

A. Yes. While both distributed generation and DSM reduce the energy requirements for a customer, they are fundamentally different in that their reduced usage may not align with the peak. Energy savings from efficiency measures occur at the time that the customer would otherwise use that energy. A distributed generation resource may or may not produce energy at the time the customer requires energy. Also while DSM always reduces a customer's usage of the system, distributed generation has the potential for the customer to use the system more, since distributed generation also uses the system to export energy from the customer to the grid.

For instance, as shown in Figure 4, in July solar generation peaks in the early afternoon, several hours before the residential load peaks. In contrast, the profiles in July for both lighting and cooling DSM measures peak in the late afternoon and evening, closer to the time that residential load peaks. While distributed solar generation produces no energy during the nighttime, both profiles, shown in Figure 4 for the cooling and lighting DSM bundles, are above zero during all hours of the day.

Figure 4. DSM, Solar Distributed Generation, and Residential Load Profiles in July[3]

[3] DSM profiles are based upon data are from the 2013 IRP Class 2 DSM Decrement Study. The Utah residential load profile is based upon historic load research data from the 2014 General Rate Case (Docket No. 13-035-184). The solar distributed generation profile was developed in the National Renewable Energy Laboratory's PV watts calculator for a system in Salt Lake City, Utah.



Future Rate Design Framework for Residential Net Metering

Q. While the Commission has indicated that it will not consider changes in rate design for NEM customers in this phase of its investigation, would you provide a general discussion of how the framework that the Company has proposed in the Company's testimony will inform rate design?

A. Yes. By separating residential NEM customers in the cost of service study, the Company will be able to design rates that more directly capture the benefits these customers may bring, on both a class level and individual customer level. The Company anticipates proposing rates that would include demand and/or facilities charges in addition to a monthly customer charge and energy charges.

- A demand charge would be designed to recover demand-related generation and transmission costs from the cost of service study allocated to the class. The demand charge would be applied against the highest demand for the customer each month, possibly during an on-peak period.

- A facilities charge would be designed to recover demand-related distribution costs from the cost of service study and would be applicable to the highest demand for the customer at any time during the month.
- A flat per month customer charge would be designed to recover retail, miscellaneous, distribution-service, and distribution-meter costs from the cost of service study.
- All remaining costs would be recovered from energy charges.
- In order to minimize cost shifting to other customers, excess generation should be valued at avoided cost rather than a kWh credit.

Q. What are the advantages of this rate structure?

A. Including demand and facilities charges will send better price signals to these individual customers than those currently in place, because their rates will be in closer alignment with the different cost categories included in the cost of service study. Residential NEM customers will have an opportunity to reduce their bills by responding to these prices. In the short run, they can modify their behavior so that their peak energy usage occurs at the same time as their generation. In the long run, customers who invest in distributed generation can invest in resources that better match the timing of their peak usage. For example they could install solar panels that are more westerly facing to produce more energy in the afternoon and early evening. As I discussed earlier in my testimony, a rate structure for residential NEM that includes demand and facilities charges would also reduce the likelihood that fixed costs are under recovered.

Q. Please summarize your testimony.

A. In order for the Commission to fulfill its statutory obligation to evaluate whether the costs of NEM exceed the benefits, the Company recommends that the analytical framework include separating residential NEM customers in the cost of service study. The cost characteristics for NEM customers are different than other customers since they are partial requirements customers. Developing a separate class for residential NEM customers in the cost of service study will enable the Commission to determine if their revenues exceed or fall short of their cost of service. This will provide transparency regarding the level of cost or benefit of the residential net metering program for other customers and will also provide a sound basis for developing rates that will better reflect the aspects of service that these customers use.

Q. Does this conclude your direct testimony?

A. Yes, it does.