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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of Rocky Mountain Power to Implement Programs Authorized by the Sustainable Transportation and Energy Plan Act	Docket No. 16-035-36 **WESTERN RESOURCE ADVOCATES COMMENTS**

Western Resource Advocates ("WRA") submits these comments on Rocky Mountain Power's application to implement programs authorized by the Sustainable Transportation and Energy Plan Act in accordance with the March 22, 2019 Scheduling Order of the Utah Public Service Commission ("Commission").

I. INTRODUCTION AND SUMMARY

PacifiCorp is seeking authorization from the Commission to implement three new projects under the Sustainable Transportation and Energy Plan Act ("STEP"). These three projects can generally be described as grid modernization efforts. Grid modernization efforts should benefit customers by facilitating the integration of distributed resources, such as demand response, distributed generation, and storage; by increasing the reliability and resilience of the grid (e.g. with automated outage management, situational awareness); and by helping to prepare the system for load growth associated with electric vehicles and building electrification. The

STEP program has presented an opportunity for PacifiCorp to develop individual grid modernization programs; however, going into the future, PacifiCorp should be able to demonstrate that their grid modernization efforts are well-planned, integrated, and cost-effective for customers. WRA recommends that the Commission utilize the opportunities presented by these STEP initiatives to investigate and learn more about integrated distribution system planning and beneficial, cost-effective deployment of distribution grid investments.

The three STEP programs proposed by PacifiCorp should be designed to inform ongoing grid modernization efforts, with the aim of paving the way for timely and cost-effective deployment of grid solutions that provide reliable energy and grid services at low cost. These programs include: (1) a pilot project to use existing infrastructure that supports UTA's light rail system to economically provide fast charging for electric buses and other vehicles (the "Intermodal Hub Project"); (2) battery storage optimization in a large housing project (the "Battery Demand Response Project"); and (3) a project to increase the outage management capabilities of PacifiCorp's grid in Utah (the Advanced Resiliency Management System ("ARMS") Project. WRA supports approval of all three of these projects, but believes that, in order to maximize benefits to consumers going forward, grid modernization initiatives should be informed by an integrated distribution planning process. WRA makes some specific recommendations related to each of the proposed projects, below.

II. DISCUSSION

Intermodal Hub Project. PacifiCorp's proposed Intermodal Hub Project is an innovative approach to minimizing the capital and operational costs of infrastructure necessary to accommodate Utah's growing electric transportation needs. Electrification of rail service within

cities has already proven cost effective, compared to other forms of mass transit. Electrification of bus service will also prove to be more economical than gasoline or diesel-powered buses with lower fuel costs and lower maintenance. As Utah's transportation system becomes more electric, demand for charging infrastructure will grow. Electric busses, for example, need fast chargers with outputs of up to 400 kW. With this pilot project, PacifiCorp has proposed evaluating the feasibility of using active controls, demand management, and intelligent scheduling to increase utilization of existing infrastructure, as opposed to potentially very costly infrastructure additions, to meet growing demand for vehicle charging. The project that RMP has proposed will pool the resources of RMP, Utah State University's Sustainable Electrified Transportation Center, and the Utah Transit Authority ("UTA") to model and test increased utilization of existing grid infrastructure at UTA's Intermodal Hub site in Salt Lake City.

The Intermodal Hub site has extensive and robust grid facilities that were built to support the TRAX light rail system. The proposed pilot project will use $2 million in STEP funds to determine to what extent the same grid infrastructure can be used to also power fast chargers with outputs of up to 400 kW per charger. This will require robust forecasting of and adaptive power control to multiple systems at the facility. If proven feasible, the installation would provide fast charging solutions with lower infrastructure and operating costs. This is a new concept and, if feasible cost-effectively, could be used at other locations in Utah, and could provide a model for use in other states.[1]

Recommendations. WRA is supportive of this project, and supports the approval of a program that can demonstrate whether the Company's proposed solution at the Intermodal Hub

[1] *See* Direct Testimony of James A. Campbell, page 4 ("The system could serve as a model for deployment of highly efficient and intelligent power management systems to additional UTA and other customers sites.").

is useful, cost-effective, and replicable. Through this project, PacifiCorp will develop planning and real-time operation tools. The Company expects to demonstrate how the planning tools can be used to evaluate the cost-effectiveness of replicating this project and to learn whether the real-time operation tools and associated algorithms will be replicable at other sites.[2] In order to facilitate such an evaluation, WRA recommends that the Commission require the Company to provide the following as part of the STEP reporting requirements:

- Information about how the planning and operation tools will be used to demonstrate the cost-effectiveness of replicating the project at other sites.
- Information about and plans for applying project results to other sites, including cost-effectiveness evaluations.
- Information on whether and how the project is informing plans for electric vehicle charging infrastructure and distribution planning.
- Reports about the hardware, software, and power control technologies the Company is employing to control and schedule vehicle charging.
- Documentation of the benefits gained from this project.

Battery Demand Response Project. Progress in the design and manufacture of lithium ion battery storage has made it feasible to install relatively large battery storage systems behind the meter in residential settings. One opportunity presented by behind-the-meter battery storage is management of the batteries to provide grid services for the utility and to benefit utility customers (who may be paying for the grid services), while at the same time benefitting the customer who invested in the batteries. A utility, or a 3rd party aggregator, can manage charging

[2] *See* WRA data request 5.2.

and discharging of battery storage systems so that discharge occurs during peak load times and charging occurs when energy generation is highest.

PacifiCorp's proposed Battery Demand Response Project is a partnership between the Company and Wasatch Development, which is making the bulk of the investment, to take advantage of this opportunity to manage and optimize behind-the-meter solar and battery storage resources. Wasatch Development is installing individual batteries in each unit of a 600-unit multi-family development, with each battery being charged by dedicated solar generation facilities on the property. PacifiCorp will control the charge and discharge cycles of the batteries to optimize their use as a grid resource. PacifiCorp will be able to manage each battery individually or in groups.[3] While the batteries are capable of exporting energy to the grid, e.g. for demand response situations, they will not be configured to enable this capability in the early stage of the project due to safety and operational concerns. The batteries will, however, help optimize the use of electricity from the solar panels on site, while minimizing solar exports to the gird.[4]

PacifiCorp hopes to learn from this project how to use behind the meter battery storage for more widespread distribution grid management—from both a feasibility and cost-effectiveness perspective.[5] The Company plans to utilize this project to evaluate and develop scalable battery demand response solutions when customer-owned battery storage becomes more widespread.[6]

[3] WRA data request 5.33.
[4] WRA data request 5.34.
[5] *See* WRA data request 5.19.
[6] WRA data request 5.29.

Recommendations. WRA is supportive of this project but recommends that PacifiCorp be required to provide the following information twice yearly over the life of the project:

- Battery efficiency (round trip losses) statistics for the batteries;
- Number of charge/discharge cycle statistics for the batteries;
- Demand response statistics for the property due to battery use (e.g., reduced loads during peak energy periods for the associated feeder and substation and for the system in general);
- Information about the Company's efforts to quantify the benefits of this project and the cost-benefit computation method.[7]
- Total property energy import statistics, and import/export statistics when the Company tests exporting energy.

Advanced Resiliency Management System ("ARMS"). Utilities across the country have been investing in grid modernization efforts, including advanced metering infrastructure ("AMI") for the past ten years. The terms "smart meters" and "smart grid" represent the popularized versions of grid modernization. Old style "manual read" meters required utility employees to walk each neighborhood every month to literally read and record usage from the customer's meter. The next generation of meters, Advanced Meter Reading (AMR) meters, required utility employees to drive a vehicle down every street to record meter readings that were sent to the vehicle by the meter over a short range radio link. Neither of these meter techniques provided additional information to the utility regarding the health of the grid or information on outages. The utility was literally blind to an outage until customers called in to report the outage.

[7] *See* RMP_WJC-1, page 5, WRA data request 5.30.

The utility would then create a map of the outage by marking down where calls were their customers were reporting outages. This was slow, inefficient and caused long delays in responding to problems.

The Smart Grid, composed of Smart Meters and designated as Advanced Meter Infrastructure (AMI), started replacing AMR in many utilities about 12 years ago. Deployments of AMI are projected to reach 90 million customers in the US by the end of this year, representing about 70% of all customers. The installation of AMI yields significant reliability advantages for customers. Outages are immediately detected by the grid infrastructure itself and immediately relayed back to utility systems, allowing for fast location and isolation of the problem (e.g., when a tree falls on a power line crews can be dispatched quickly). RMP has not yet made the investment in AMI. Their ARMS project will essentially convert some of their AMR meters to AMI functionality, and with additional hardware and software will allow RMP to provide most of the reliability improvements that could be gained from full AMI deployment. This is a step toward grid modernization that will prolong the useful life of RMP's AMR infrastructure before it will need to be replaced with full AMI metering.

WRA supports this project and hopes that RMP will deploy AMI and supporting infrastructure for full grid modernization in the near future.

III. CONCLUSION AND RECOMMENDATIONS

WRA supports the three projects proposed by RMP as part of the STEP funding. These projects are a good addition to the pilot projects already under implementation under STEP. These new STEP programs are timely, state-of-the-art projects that will give the Company needed experience with several aspects of grid modernization. However, to fully integrate these

projects and previously-approved STEP projects, a more comprehensive distribution planning process should be considered. WRA recommends that the Commission initiate an investigation into requiring the utility pursue a transparent integrated distribution planning process every three years, with associated performance metrics, in order to ensure that customers receive the maximum benefits associated with distribution system investments.

Dated this 14th day of May 2019.

Respectfully submitted,

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CERTIFICATE OF SERVICE
Docket No. 16-035-36

I hereby certify that a true and correct copy of the foregoing was served by email this 3rd day of January 2019 on the following:

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