Rocky Mountain Power
Docket No. 16-035-36
Witness: Douglas L. Marx

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

Direct Testimony of Douglas L. Marx in in Support of the Advanced Substation Metering and the Solar and Energy Storage Programs

September 2016

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

A. My name is Douglas L. Marx. My business address is 1407 West North Temple, Salt Lake City, UT 84095. I am the Director of Engineering Standards and Technical Services for the Company.

QUALIFICATIONS

Q. Briefly describe your educational and professional background.

A. I have worked for the Company for 35 years in various engineering, operations and management positions. I hold a bachelor's degree in electrical engineering from the University of Utah and a master's degree in business administration from Utah State University. I am a licensed professional engineer in the state of Utah.

Q. What are your responsibilities as Director of Engineering Standards and Technical Services?

A. I oversee all non-routine technical studies including distributed generation, power quality and smart grid reports. I am responsible for the development of all material and equipment specifications and standards used in the construction and maintenance of the transmission and distribution systems.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. My testimony supports: (1) the Company's proposed Advanced Substation Metering Program described in the Application, and included as Exhibit C thereto; and (2) the Company's proposed Solar and Energy Storage Technology Program described in the Application, and included as Exhibit D thereto. The Company

respectfully requests the Commission approve the Advanced Substation Metering project pursuant to U.C.A. § 54-20-105(1)(c) and (h), as an electric grid related project and an innovative utility program in the interest of the Company's utility customers. The Company also respectfully requests the Commission approve the Solar and Energy Storage Technology project pursuant to U.C.A. § 54-20-105(1)(c) and (h), as both a battery storage or electric grid related project and an innovative utility program in the interest of the Company's utility customers.

ADVANCED SUBSTATION METERING PROGRAM

Q. Please describe the Company's proposed Advanced Substation Metering Program.

A. The Advanced Substation Metering project, if authorized, will enable the Company to purchase and install advanced substation meters at approximately 50 circuits connected to distribution substations in order to enable greater data visibility of the distribution system and integration of distributed generation resources. The Company is requesting authorization of $1.1 million over the five-year STEP pilot for this project. A full description of the proposed Advanced Substation Metering Program is included as Exhibit C to the Application. The substation monitoring and measurement of various electrical quantities will provide information necessary for the development of a more progressive electric grid, in particular for the integration of distributed generation resources. Data collection and analysis at substations will be of paramount importance as the Company continues to integrate the rapid growth of distributed energy resources into its system.

Q. What benefits will the program provide?

A. In addition to providing a greater understanding of innovative solutions that will allow the Company to make the grid more progressive, the program will also enable the Company to manage increasing levels of distributed energy resources on the power grid in an affordable and reliable way by providing increased visibility on loading levels, load shape and event information needed to develop thorough interconnection studies and hosting capacities for customers; determining safe switching procedures; and cost effective capital improvement plans in the future, as well as helping the Company identify and control risks associated with the integration of significant penetration of distributed energy resources. The management of distribution resources is a critical technological issue that the Company needs to gain as much information on to protect the system and its customers.

SOLAR AND ENERGY STORAGE TECHNOLOGY PROGRAM

Q. Please describe the Company' proposed Solar and Energy Storage Technology Program.

A. Pursuant to the STEP legislation, the Company is requesting authorization to use $5.05 million of the STEP funding to install a stationary battery system, to be connected to one or both of the 12.5 kilovolt distribution circuits connected to a Company-owned substation in central Utah. In addition, the Company proposes to utilize an additional $1.95 million from Blue Sky community funds to install a large-scale, company-owned solar project in conjunction with the battery

installation. The storage and solar technology is expected to defer or eliminate the need for traditional capital investments, and will reduce the loading on the power transformer, improve voltage conditions and mitigate costs associated with connection on the 69 kilovolt bus at the substation. A full description of the proposed Solar and Energy Storage Technology Program is included as Exhibit D to the Application.

Q. What kind of benefits will the program provide?

A. The program will provide a number of benefits to the Company's customers. The benefits include: (1) reducing load on the transformer at the substation, ensuring the voltage on the transmission line does not drop below ANSI standards; (2) providing high-speed reactive power support to ensure load rejection in the area does not impact voltage levels; (3) deferring the need for traditional capital investment; (4) enabling the Company to get first-hand operational experience with control algorithms and efficiency levels associated with energy storage combined with solar; (5) enabling the Company to become familiar with and utilize innovative technologies to provide customers with solutions to power quality issues; and (6) providing an opportunity for the Company to meet requests from its Blue Sky customers for physical “steel in the ground” renewable facilities. The Company anticipates that the application of combined solar and battery storage projects may exist in the future, and experience with the technology will provide the Company with valuable insight into how the two technologies interact, and how the Company could implement future projects more efficiently.

CONCLUSION

Q. Please summarize the proposal for Solar and Energy Storage contained in this Application.

A. The Company consistently implements reliability and power quality enhancements on its transmission and distribution system to mitigate system operation problems. This project enables us to not only correct a voltage issue with an innovative technology in lieu of traditional infrastructure, but it provides a platform to objectively study and enhance the operational performance of a technology that will begin to permeate the system as more renewable and distributed generation systems are connected to the future grid.

Q. Please summarize the proposal for the Advanced Substation Metering Program contained in this Application.

A. As the energy sector moves towards more distributed renewable resources, advanced data will be needed about the distribution systems to enable us to more readily connect these generation sources. This project will provide the information necessary for the development of a more progressive electric grid and for the integration of distributed generation resources.

Q. In your opinion, are these two projects consistent with STEP and in the interest of Rocky Mountain Power's customers?

A. Yes.

Q. Does this conclude your direct testimony?

A. Yes.