

- BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH -

In the Matter of the Consideration of the)
Amendment of Title 16 U.S.C. 2621(d) and) DOCKET NO. 08-999-05
the Addition of Title 42 U.S.C. 6344 by the)
U.S. Energy Independence and Security Act) REPORT AND ORDER
of 2007)

ISSUED: November 30, 2011

SYNOPSIS

The Commission acknowledges Rocky Mountain Power's 2011 Report on Smart Grid Technologies and approves modifications to the timing and content of future annual reports.

BACKGROUND

On December 17, 2009, the Commission issued an order in this docket entitled "Determination Concerning the PURPA Smart Grid Investment and Smart Grid Information Standards (hereinafter "Smart Grid Determination" or "Determination"). In the Determination the Commission found compelling the Division of Public Utilities' (Division) recommendation for PacifiCorp ("Company"), dba in Utah as Rocky Mountain Power, to

"follow and evaluate the smart grid pilot programs and projects in the developmental state throughout the country to gain more useful knowledge and experience and to file an annual report summarizing its work of monitoring these projects and actions taken by the Company to evaluate or implement smart grid technology."¹

¹ See page 8 of the Division's October 27, 2009, comments in this docket.

The Company supported the Division's recommendation to prepare and file an annual report.² In order to ensure an annual report on smart grid provides useful information on the objectives of smart grid,³ the Commission directed the Company and other interested parties to meet and collaboratively determine the content of the annual report.

On March 30, 2010, a duly noticed technical conference was held to determine the content of the smart grid monitoring report and set a filing schedule. On August 17, 2011, the Company filed its first smart grid monitoring report ("Report") and proposed future reports on smart grid assessment activities be filed annually in July.

On August 31, 2011, the Commission issued an Action Request to the Division, requesting review of the Report and the proposed reporting schedule. On October 13, 17, and 14, 2011, the Division, the Office of Consumer Services ("Office"), and Utah Clean Energy ("UCE"), respectively, filed comments on the Report. Public comment was filed on September 6, 2011.

SUMMARY OF THE REPORT

The Report contains an Executive Summary, an introduction to the smart grid concept and the Company's associated management strategy, a description of technologies under consideration or evaluation, an explanation of required information and communication infrastructure, a discussion of the challenges and risks of implementing smart grid, and a list of regulatory considerations. The Report also provides a section entitled "Smart Grid Economic Review" in which costs, benefits, and savings are discussed. The Report ends with a brief

² See page 2 of the Company's November 25, 2009, comments in this docket.

³ The objectives of smart grid include improving reliability, security, efficiency of the electric grid; increasing demand-response or energy efficiency by customers; and incorporating renewable energy resources. See Smart Grid Determination, page 11.

discussion on the Company's plans for implementation of smart grid-related technologies followed by concluding remarks. The Report contains the following observations, discussion items, and comments, in no particular order:

- 1) The most critical smart grid infrastructure decision is the selection of the communications network;
- 2) The Company is focusing on smart grid technologies that can be readily integrated with existing infrastructure;
- 3) Smart grid technologies can be categorized according to their applicability to transmission, substation, and/or distribution systems;
- 4) To achieve some of the goals of smart grid pertaining to distribution automation would require a redundant and oversized system to be created;
- 5) Some smart grid technologies provide the infrastructure/information to enable customers to more effectively manage energy use, but contribute little to motivate efficient energy use;
- 6) Modification of consumer behavior (i.e., demand/response) would be central to realizing many smart grid-associated benefits and the sustainability of consumer behavior change remains uncertain;
- 7) The Company is actively exploring several smart grid-related technologies, including voltage optimization, conservation voltage reduction, centralized energy storage, and transmission synchrophasors;⁴
- 8) Challenges to implementing smart grid technologies include the current lack of interoperability standards, maintaining security of data (cybersecurity), incompatibility of legacy platforms with the use of real-time data, customer recruitment to participate in selected smart grid-related demand response programs, training of call center personnel, and handling of increased volume of data collected to support smart grid applications;

⁴ The term "synchrophasors" represents both the devices which enable synchronized measurement of phasors along the electric transmission system as well as the synchronized phasor measurements themselves. A synchrophasor system (including measurement, communications and visualization devices) provides real-time information about the performance of an electrical transmission system.

- 9) Modifications to the distribution system may be necessary to accommodate increasing levels of distributed generation and plug-in electric vehicles;
- 10) Implementation of smart grid deviates from the least cost/adequate service operational model. Related regulatory considerations include: a) how cost recovery of investments rendered obsolete by implementation of smart grid technologies will be treated; and b) implementation of rate structures which place a greater portion of fixed costs in non-volumetric fixed charges complemented by rate structures which encourage customers to use energy more efficiently and at the optimal times during the day (i.e., mandatory time of use (“TOU”)/critical peak pricing (“CPP”) rate structures, CPP opt out, or CPP opt in);
- 11) The enactment of mandatory TOU and CPP rate structures would require regulatory and/or legislative support in all Company jurisdictions;
- 12) A shift to time-based pricing would require a decoupling of volumetric sales from the recovery of utility costs; and
- 13) Customer education is important in order to achieve some of the benefits from smart grid.

The Company maintains smart grid technologies are in a state of constant development and evolution, there is a healthy level of uncertainty regarding the benefits of smart grid, and through time the benefits and costs will become more reliable. The Company states it is difficult to identify technologies which might be cost effective and available for implementation in its Utah service territory over the next ten years. As a result, the Company indicates it has no plans to implement in Utah any of the smart grid technologies discussed in the Report at the present time but will continue to monitor the smart grid activities throughout the nation thereby allowing for more precise estimates of costs and benefits.

COMMENTS

The Division, in addition to reviewing the Report, met with representatives of the Company and the Office, to discuss and obtain clarification on topics including: 1) the

Company's test project on transmission synchrophasors, 2) partial construction and phase-in of some smart grid technologies, and 3) the Company's exploration of less-than-smart grid technologies which achieve 70 percent of the benefits of a full smart grid solution but at a fraction of the cost.

The Division explains the Report focuses on technologies the Company chose as being most amenable to implementation in its current system such as advanced metering systems with demand response programs, distribution management systems and transmission synchrophasors. The Company elected not to study in depth auto-healing distribution systems, distributed energy systems (including electric vehicles), and direct load control programs.

The Division recommends the Commission acknowledge the Report and direct changes to its timing and content to correspond with the Company's similar report filed with the Wyoming Public Service Commission annually in September. The Division also recommends future reports include discussions and results of smart grid activities the Company is actually engaged in, as well as information on any smart grid-like activities which accrue some of the benefits of a smart grid system.

In light of the development of smart grid interoperability standards, technology improvements, and implementation of smart grid pilot programs, the Office maintains it is important for the Company and Utah regulators to stay abreast of smart grid developments in order to make appropriate decisions regarding potential smart grid implementation. The Office recognizes it is difficult to generate a smart grid cost benefit analysis with the limitations currently in place but believes an assessment of program cost effectiveness is an important element of a useful report. The Office acknowledges the Company's cost benefit analysis efforts

and anticipates elements of the analysis will improve with increasing knowledge of and experience with smart grid technologies and understanding of their acceptance by customers.

The Office assumes the Report will be enhanced as more information becomes available and recommends future reports include a description of installed equipment which has been designed to require only minor modifications to migrate to smart grid, and the associated costs benefit analysis. Future reports should also include a description of technology(s) the Company is contemplating or has actually installed which could support less than a full smart grid-type technology.

The Office points out the Company has created an internal smart grid department, the duties of which include the monitoring and assessment of smart grid pilot projects throughout the United States. The Office maintains utility-sponsored smart grid pilot projects are sources of valuable information and recommends future reports include a list and brief description of each of the projects being monitored by the Company.

In addition, because requirements imposed by other jurisdictions can have an impact on Utah customers, the Office recommends future reports include information regarding smart grid activities in the Company's other jurisdictions. Since the Report will not be filed more frequently than annually, the Office recommends the Company also provide separate notice of imminent actions in other jurisdictions. Finally, the Office supports an annual report filing.

In summary, the Office recommends future Smart Grid Monitoring Reports include the following information: 1) a section describing any upgrades or changes the Company is making relative to potential smart grid implementation; 2) A list and description of

smart grid pilot projects across the country that the Company is monitoring; and 3) a description of smart grid activities in the Company's other jurisdictions.

UCE indicates the Report is very informative and recognizes the importance of taking an intentional and measured approach to smart grid investments. UCE expresses its appreciation for the groundwork presented in the Report.

UCE submits three recommendations and associated comments regarding the Company's monitoring of smart grid technologies. First, based upon the relationship between smart grid technologies, demand side measures which require consumer responsiveness, and demand side management ("DSM") program planning, the Company should facilitate a technical conference on the content of this report for the DSM Advisory Group and other interested parties, to explain the range and possibilities of smart grid technologies.

Second, according to UCE the Report notes many benefits of smart grid are dependent upon lasting behavioral changes of customers in response to smart grid technologies. UCE therefore recommends the Company utilize the expertise of its DSM advisory group, or a subset thereof, as well as its Home Energy Reporting Program, to evaluate obstacles to and strategies for fostering consumer behavior change to complement smart grid technology.

Third, UCE suggests the Report's discussion of rate structures requires further explanation and clarification. UCE points out inconsistencies in the Company's discussion of rate structures necessary to complement and enable smart grid investments. For example, the Company indicates it will be essential to employ a rate structure to recover a greater portion of costs through non-volumetric customer charges in order to "fully realize the peak demand

management and energy consumption reduction objectives of the smart grid.”⁵ UCE maintains this structure would decrease the flexibility of volumetric rates to send price signals to customers. UCE observes other sections of the Report indicate TOU and CPP rate structures are necessary to send price signals to catalyze consumer behavior changes, and a shift to time-based pricing would require a decoupling mechanism. UCE maintains the Company does not explain whether it intends a high customer charge be accompanied by TOU and CPP rate structures, as well as decoupling, or whether this combination would result in the intended effects on customer behavior. UCE emphasizes a discussion of rate structures is a necessary aspect of investing in smart grid. Future discussions of rate structures included in the Report should include an explanation of the Company’s vision of the interaction of smart grid, rate structures, and consumer behavior.

Public comment filed argues that now is the time to introduce smart grid because its introduction will take several years and many of the energy-saving and distributed energy options depend on the smart grid. In addition, current regulations do not allow the Company to apply new cutting-edge technologies and the Report contained no discussion of electric vehicle-to-grid technology.

DISCUSSION, FINDINGS AND CONCLUSIONS

The Office and UCE indicate the Report provides useful information pertaining to an understanding of smart grid in general. We concur with this assessment. The Division states the Company filed its smart grid monitoring report pursuant to the Smart Grid Determination and recommends the Commission acknowledge the Report. We agree the Report satisfies the

⁵ Report, Page 28.

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Company's commitment and the Commission's directive regarding monitoring of and reporting on smart grid technologies. In addition, in support of the Company's overall smart grid reporting recommendation, we approve the Company's request the report be filed annually in July. For administrative ease, all future Smart Grid Technologies Reports should be filed in a new docket and cross-reference this docket, Docket No. 08-999-05.

We find value in UCE's recommendation that the Company facilitate a technical conference on the content of the report for the DSM Advisory Group and other interested parties. This will ensure the Report has a broader audience and will enable the DSM Advisory Group to provide additional insight on the relationship between customer education, sustainable customer behavioral changes, and the demand-side implications of smart grid. Therefore we direct the Company to provide a presentation and discussion of the Report to the DSM Advisory Group and other interested parties. This should occur at the next convenient DSM Advisory Group meeting, but no later than March 31, 2012. All future smart grid annual reports should be included as a discussion item at the next DSM advisory group meeting following submittal of the report. Also, in the event the Company nears the selection of a type of smart grid technology which would require changes in consumer behavior as a critical element supporting its cost benefit analysis, we find appropriate UCE's recommendation regarding usage of the expertise of the DSM advisory group.

Our review of the Company's SmartGrid Financial Summary ("Financial Summary") leads us to conclude the assumptions and worksheets supporting the Financial Summary are necessary not only for transparency but also to achieve an in-depth understanding of the Company's evaluation. Therefore, in future filings we direct the Company to provide the

worksheets and assumptions supporting the Financial Summary or other such analyses validating its results. We also direct the Company to explain the relationship between the analysis provided in the Financial Summary and the demand side resource performance standards approved by the Commission in Docket No. 09-035-27, “In the Matter of the Proposed Revision to the Utah Demand Side Resource Program Performance Standards Pursuant to Commission Order in Docket No. 07-035-T04.”

We decline to approve the Office’s recommendation the Company should provide separate notices of imminent actions in other jurisdictions. At this time, and given the requirement below to provide information on actions in other states, we find the annual nature of the report sufficient to provide information on this topic. We also do not approve the Division’s recommendation for the Company to adjust the timing and content of its report to correspond with its filing in Wyoming. We decline to require this of the Company as no such report is contained in the record, no review of such report has been provided, and the Division’s recommended report filing date (September) conflicts with that requested by the Company (July) without discussion.

We agree with all of the recommendations provided by parties on enhancements and improvements to future reports. Therefore we direct the Company to modify future reports to include: 1) a discussion (including project/activity description, cost, status, results and pertinent cost/benefit information) of all smart-grid related projects and activities the Company is actually engaged in throughout its system (e.g., tests of transmission synchrophasors, energy storage projects, voltage support projects); 2) a discussion of any smart grid-like activities the Company is either considering or has implemented which accrue some of the benefits of smart

grid; 3) a discussion of upgrades or changes the Company is making relative to potential smart grid implementation and the related benefit-cost analyses; 4) a list and description of smart grid pilot projects across the country being monitored by the Company; 5) a description of smart grid-related activities and requirements in the Company's other jurisdictions; 6) an explanation of the interaction of smart grid, possible rate structures, and consumer behavior; and 7) a discussion of vehicle to grid applications in the Plug-In Electric Vehicle section of the Report.

ORDER

The Commission acknowledges the Report on Smart Grid Technologies as complying with the Company's commitment and the Commissions December 17, 2009, Smart Grid Determination. NOW, THEREFORE, IT IS HEREBY ORDERED, that:

1. The Company shall file an annual Report on Smart Grid Technology in July; and
2. Future reports shall be modified as directed herein.

DATED at Salt Lake City, Utah, this 30th day of November, 2011.

/s/ Ted Boyer, Chairman

/s/ Ric Campbell, Commissioner

/s/ Ron Allen, Commissioner

Attest:

/s/ Julie Orchard
Commission Secretary
D#211873