BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1667

In the Matter of	)	
	)	
PACIFICORP, dba PACIFIC POWER,	)	COMMENTS OF OREGON
	)	DEPARTMENT OF ENERGY
2015 Annual Smart Grid Report	)	
	)	

Introduction

The Oregon Department of Energy (Department) is pleased to submit these comments on the Smart Grid Annual Report by PacifiCorp (Company), dated August 3, 2015. Overall, the Department appreciates the effort that the Company has put into the 2015 Smart Grid Report and sees a steady development toward more detailed and comprehensive examination of smart grid technologies and their potential applications. Our comments focus on energy storage and demand response, referencing our comments in the current PacifiCorp Integrated Resource Plan (IRP) docket, LC62.[1] We also provide additional information on the topic of distributed resources and the potential for utilization of smart inverters. The Department comments include a recommendation to include smart inverters as a potential solution to adverse system impacts identified in the interconnection study process.

1. Centralized Energy Storage Assessment

The Department references pages 15-18 of our comments in docket LC 62 on the topic of energy storage. The Department encourages the Commission to direct the Company

[1] "OPENING COMMENTS OF THE OREGON DEPARTMENT OF ENERGY," Oregon Public Utility Commission Docket number LC 62, "PACIFIC POWER's 2015 Integrated Resource Plan," filed August 27, 2015, http://edocs.puc.state.or.us/efdocs/HAC/lc62hac15848.pdf

to conduct a more comprehensive, integrated evaluation of energy storage, which includes assessing more than one potential system benefit from an energy storage system investment.

2. Demand Response

The Department references pages 3-4 of our comments in docket LC62 on the topic of demand response. The Department appreciates the Company's efforts to implement a demand response pilot for irrigation loads in the Klamath Basin. We also appreciate the Company's outreach and partnership in developing the pilot. However, we would also like the Company to implement a demand response pilot that tests a load with year round availability for both peaking and regulation services on either the west side of Oregon or the Klamath Basin.

3. Distributed Resources – The Value of Smart inverters

The Department provides technical support and incentives to distributed renewable energy projects. These projects, particularly those using variable energy resources (VER) such as solar or wind energy, can have reliability and/or operational impacts on the transmission and distribution (T&D) system. There is a robust and well-understood methodology for studying the interconnection of distributed resources, and an Oregon Administrative Rule, 860-082 Small Generator Interconnection Rules, with detailed processes for interconnection of renewable energy projects 10MW and smaller. The Oregon rule is based on an internationally-accepted technical standard, IEEE 1547, which was published in 2003, when inverter technology was not as advanced and utilities did not experience significant penetration of VER on the distribution system. Consequently, the common utility practice for evaluating interconnection of distributed resources, including the interconnection study process used by the Company, does not include evaluation of smart

inverter capabilities. At present, there are significantly advanced smart inverters available commercially which, when applied properly, can minimize system impacts of distributed VER. Using smart inverters may prove to be less costly for the interconnecting VER project compared to paying for upgrades elsewhere on the Company's T&D system. Beyond minimizing system impacts, smart inverters can contribute to solving existing problems on the T&D system, reducing or deferring investments by the Company in other distribution system infrastructure.

In PacifiCorp's presentation to the Commission on February 11, 2015, "PacifiCorp 2015 Smart Grid Report", the Company describes its approach toward implementation of smart grid projects. The presentation states, "Smart grid projects are considered for implementation when they

- Exhibit a positive business case
- Solve an operational problem
- Are required by regulatory mandate"

Smart inverters are capable today of exactly that: solving an operational problem. The Department encourages the Commission to direct the Company to evaluate smart inverters in the interconnection of distributed resources whenever the system impact studies show that the distributed resource does result in an operational problem.

4. Standards Development and Inverter Capabilities

The technical standard IEEE 1547 has been updated, and the resulting IEEE 1547a Amendment 1 was passed in 2014. The primary purpose of updating the standard was to allow the distributed energy resource to stay connected to the grid during grid disturbances and to contribute to restoring grid stability. In addition, IEEE Standards Coordinating

Committee 21 (SCC21) is undertaking a complete revision of IEEE 1547 to be completed no later than 2018. The most recent version of IEEE 1547a with Amendment 1 includes detailed guidance on how to interconnect distributed resources and utilize the capabilities of the interconnecting equipment, typically a smart inverter, to provide:

- Voltage support during normal operations and during grid disturbances
- Voltage ride-through during grid disturbances
- Frequency ride-thru during grid disturbances
- Islanding and anti-islanding operations

As the Company mentioned in the 2015 Smart Grid Report, the California PUC has recently adopted modifications to Electric Tariff Rule 21 which include extensive utilization of smart inverter technologies. For reference, a product of the Smart Inverter Working Group is attached which includes recommendations for which smart inverter functions should be utilized and how.[2] This detailed table, describing 40 potential functions of smart inverters, shows the opportunity for distributed energy resources connected through smart inverters to support utility operations.

An important distinction among these 40 functions is whether the smart inverter can perform the function in an autonomous mode, or whether the utility must initiate the function through direct communications. In Portland General Electric's Distributed Standby Generation program, a program that can control output of generators from a few hundred kW up to multi-MW size, careful attention to implementing an optimized communications infrastructure has resulted in a resource that is economically advantageous to PGE customers

[2] SWIG_Phase_3_Functions_v3 found at http://www.energy.ca.gov/electricity_analysis/rule21/documents/phase3/

and technically reliable. An optimized utilization of smart inverters would include integration of information flows between the utility and the distributed resource, utilizing the utility SCADA system or another means of communication.

5. PacifiCorp's Interconnection Policy Update

The Department encourages the Commission to direct PacifiCorp to include the evaluation of smart inverters in the upcoming interconnection policy update being undertaken by the Company. As pointed out in the Company's 2015 Smart Grid Report, Underwriters Laboratories is currently reviewing and plans to revise its standards regarding smart inverters and PacifiCorp prefers to wait until the UL standards are updated to implement smart inverters. That notwithstanding, the Department maintains that there could be mutual benefit to the Company and the interconnection customer if smart inverters are an option that is evaluated when a system impact study shows adverse impacts. If the study shows a need for a T&D system investment to meet the interconnection standard, then the Company should allow the distributed energy resource project to request the study of the use of a smart inverter in parallel with the study of a more traditional system upgrade. If at the time of signing the Interconnection Agreement the proposed smart inverter is UL compliant, and resolves the system impacts, the Company should allow distributed energy resource projects to use them.

///

///

///

///

The Department looks forward to an update on the results of smart inverter evaluations in future Smart Grid Annual Reports.

Dated this 18th day of September 2015.

Respectfully submitted,

ELLEN ROSENBLUM
Attorney General

Lore Bensel #891646
for Renee M. France, #004472
Assistant Attorney General
Of Attorneys for Oregon