U.S. Department of Energy Quadrennial Energy Review

Second Installment

Electricity Distribution and End Use: How Do We Manage Challenges and Opportunities

Public Meeting, April 25, 2016 - Salt Lake City, Utah

Written Comments of Paul Radakovich, Vice President, Transmission and Distribution Operations, Rocky Mountain Power

Good morning, I am Paul Radakovich, vice president, transmission and distribution operations for Rocky Mountain Power. Thank you for the opportunity to be here today. Rocky Mountain Power (a division of PacifiCorp) provides safe, reliable, and affordable electric service to approximately 1.1 million customers in Utah, Wyoming, and Southeast Idaho. Our industry and the services we provide to our customers are changing rapidly to keep pace with a transition to cleaner sources of energy and with many customers desiring greater choice, flexibility, and control of their electricity usage – and for some, generation. For the past century or more, the power grid has served society well by providing safe, reliable, and affordable energy that improves our quality of life and serves as an engine for economic prosperity. Energy companies like Rocky Mountain Power are fully engaged and ready to work with all stakeholders to ensure the grid continues to provide this essential service to our customers and communities.

THE POWER GRID

I first want to comment on the good work that is underway to make the power grid smarter while remaining safe, reliable and affordable for all of our customers. We are revamping our planning tools and processes to accurately model load, energy efficiency, distributed generation, and demand control and response characteristics. The power grid is rapidly becoming more 'digital', enabling ever more data to be utilized to study and predict conditions that allow the optimal configuration and operation of the physical assets. We are investing in proven new technologies including smart meters, communications enabled devices, distribution automation, and protection and control equipment that can handle two way power flow. We now evaluate distributed energy resources, typically solar, storage batteries, or a combination of the two, along with the traditional assets like larger transformers and conductor to find the least cost adequate solution to serve our growing and changing customer requirements.

Our planning engineers are performing proactive studies to understand the distribution power grids' hosting capacity for distributed energy resources. This entails modeling increasing levels of distributed energy resources (typically local generation) to find locational breaking points in terms of steady state voltage, voltage fluctuation, and grid protection. Best practice solutions are

then applied to understand the smart grid investments that will be required as additional distributed energy resources are integrated onto the network. Our work to date has informed investment decisions in 'no regret' proven smart grid technologies and shows there is time for thorough analysis and planning for future deployment of increasing levels of distributed energy resources.

BIG DATA

The information technology requirements for the evolution to a smarter power grid could be the most important change component to consider. This has the potential to be the largest information technology project ever undertaken with tremendous quantities of data that must be transmitted, analyzed, and stored. Integrating new and existing information technology systems will be critical to realize the full value of investments for our customers. Important decisions regarding what is possible and what is affordable and prudent requires careful analysis in light of rapidly changing technologies. This is an area where policy makers could play an important role by providing open architecture standards for grid and grid edge information technologies. A quick breakdown of information technology opportunities and challenges are:

Opportunities

- Providing customers with more flexibility and control of their electrical usage.
- Operating efficiencies for meter reading and remote connect and disconnects.
- Power grid optimization using real time data.
- Improved outage response and prioritization of grid upgrades.

Challenges

- Data management – what to store and how long to store it.
- Integration with legacy information technology systems.
- Open architecture versus proprietary systems.
- Vendor compatibility and longevity.
- Cybersecurity – ensuring customer data is protected.

REGULATION AND POLICY

The evolution to a smarter power grid is well underway. The speed with which the evolution occurs will depend partly on the evolution of energy company state regulation. Important fact based discussions and analysis are required to determine the value of grid technologies. For instance, local net metered generation, local generation with data visible by the grid operator, and local generation coupled with energy storage and controllable by the grid operator will result in dramatically different value propositions. Appropriate pricing must be established, absent speculative externalities, to recoup the energy company's fixed costs and to credit customers for local generation production at wholesale rates. Proper pricing will incentivize new renewable energy construction without imposing inappropriate subsidization, thereby providing fair pricing for all customers.