Demand Response in Wholesale Market Conference

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Demand Resources as an Alternative or Complement to Transmission Expansion

Richard A. Spring

Vice President, Transmission Services

Kansas City Power & Light

Good afternoon. My name is Richard Spring and I am Vice President of Transmission Service at Kansas City Power & Light. During my comments today, I will discuss the role of demand response in transmission planning and more specifically, the work that EPRI is doing around energy efficiency and demand response, how SPP is approaching demand response at a regional level, and some of our successes with demand response at KCP&L.

To start off, I'd like to reiterate my view that, given the role of transmission planning in delivering energy to the customer, demand response has the opportunity to provide the load shaving ability necessary to preserve grid reliability in times of peak demand as well as defer the need for new transmission and generation capacity.

In January, EPRI launched the Dynamic Energy Management initiative to blaze a path towards effective demand response. The initiative is addressing the needs of utilities and other stakeholders to deploy technologies which facilitate a smart power delivery, operation, load management and end-use system. As part of the initiative, representatives from more than 40 electric utilities will work with EPRI to address electricity savings, demand reductions and peak load management. The new program will focus on analytics and information on the economic and environmental impact of dynamic energy management and infrastructure component and system testing and development. To help accomplish these goals, EPRI is doing a study in their labs to examine:

- high efficiency end-use devices
- IP addressable electrical devices

- control systems to optimize performance with demand
- two-way communications to allow automated control of devices in response to price or demand reduction signals
- dynamic systems that allow real-time integration of consumers' building energy systems into system and market operations.

They are using these tests to help utilities with their demand response efforts by developing guidelines for capturing and documenting system requirements, mapping technologies to requirements and developing system management and security policies, which reflect the need for interoperability and the ability to manage and secure equipment over large scales and for integration with ISO/RTO operations.

At a regional level, SPP is taking a more active approach to demand response. While they have been mulling a demand response strategy since this commission first recognized them as an RTO in 2004, the discussions have become more substantial and in January of this year, the SPP Regional State Committee held a workshop on energy efficiency, demand response, and resource adequacy. The RSC expressed a strong desire to see a regional strategy implemented instead of the local approach that exists today.

Currently, each of the five states regulating SPP members treats demand response participants differently, resulting in wide variations between states. When SPP transitions to a regional strategy, making the treatment more uniform and we expect it to bolster the role of demand response across the region. A report on how demand response will be

integrated into the energy imbalance market operating today by the SPP is due to this Commission in August of this year.

Integrating demand response into the transmission planning process and markets on a regional basis also mitigates another challenge – the reliability of demand response in the face of peak demand. While testing the peak capacity of a power plant is simple, determining the capacity that can be freed up at peak times through demand response is more complicated. Consequently, we need standards in order to use demand response to offset capacity to a meaningful degree. While this conservatism may be necessary to ensure grid stability, it also means that we can't harness the full generation offset potential, thus diminishing the returns and the amount of investment we can economically justify to shareholders, customers, and regulators. On the other hand, if we integrate it into regional, rather than local, transmission planning, we can realize more of the value because the larger pool gives us more resources from which to activate demand response, representing a significant shift from simply using it for load shaping as we do today to a wholesale product and service. In tandem with better forecasting tools that can provide an estimate of how much reserve transmission capacity can be substituted with DR capacity, regionalizing demand response can significantly improve its economics.

The SPP region is also a pioneer in advanced meter technology, which is considered a prerequisite for effective demand response. In fact, four of the ten states with the highest AMR penetration are in the SPP region.

At KCP&L, we have leveraged this AMR technology, as well as other system enhancements, to make demand response an increasingly important part of our

transmission planning process. Through AMR and other enhancements, we've already been able to deploy three demand response programs – dynamic voltage control, AC cycling and C&I load curtailment.

Dynamic voltage control, also known as DVC, is the most significant component of our portfolio. This resource allows us to reduce peak load by more than 1% by slightly reducing the total voltage which reaches end users. On a normal day, for example, when a customer plugs in a 100 watt light bulb, it uses 100 watts. When DVC is used to reduce demand by 5%, the light bulb only uses 95 watts. The downside to this, of course, is that the light would be 5% dimmer. Consequently, DVC can only be used for short periods of time. Otherwise, customers would simply buy larger light bulbs (or AC units or any other electric device for that matter) to avoid the impact of DVC. When deployed occasionally and for a few hours at a time, however, most won't even notice that DVC is in effect. By 2010, we expect DVC to allow us to curtail peak load by more than 60 MW or approximately 1.5% of peak load

Our AC cycling program, called Energy Optimizer, allows KCPL to reduce residential and small commercial air conditioning load on peak summer days. To encourage customers to participate, we install a free programmable thermostat. In addition to serving as an incentive, this thermostat allows us to send a paging signal that can turn the air conditioner compressor off and on or ramp up the temperature over a period of time depending on the load reduction strategy established by KCPL. It also allows the customer to remotely program the thermostat through the internet. Since the inception of this program, KCPL has enjoyed tremendous success in obtaining customer

participation in this program, obtaining a savings of 13 MW in 2006, over twice our goal. Moreover, we believe Optimizer can shed 33.8 MW by 2010, approximately 1% of peak demand.

Our C&I curtailment program, called MPower, provides incentives for customers with the ability to curtail at least 200 kW to contract with KCPL to curtail their load when needed. Under MPower, the customer is invited to use the curtailment method(s) that best meets their capabilities and needs, which can include turning on a back-up generator, shutting off lights or production lines, raising their cooling system temperature several degrees, or closing the company and sending their employees home. To compensate our customers for participating, we pay them a fixed annual fee as well as a payment each time we curtail their load. Although this program has only been in effect for a short time, we have received encouraging feedback from customers and have revised to program to attract even more customers to participate by lowering the minimum curtailable load and options for the number of events and length of contract. We are very optimistic about the opportunity.

In addition to the above, KCPL recently completed a study to develop a portfolio of incentive-induced and price-induced demand response programs. The recommendations of the study have been reviewed and programs to round out our portfolio will be developed in the near future. These programs will include revamping of our time of use rates and programs such as critical or variable peak pricing. We believe linking pricing to the marginal production cost, even if only directional, will lead customers to more efficient consumption.

These demand response programs provide surrogate generation capacity. Rather than turning to a power plant or the wholesale market to meet capacity needs at peak times, we can turn to our customers through these DR programs. Unfortunately, this has an adverse economic impact on us -- as demand declines, so do our retail revenues. With wholesale revenues returned to our customers, demand response becomes a loss making investment in the absence of regulatory innovations.

To conclude, EPRI, SPP and KCP&L are committed to demand response and we will continue to look at this opportunity with a regional focus to maximize the load reduction and grid reliability potential. With the right tools and enablers, demand response can move from a complement to transmission service upgrades to an alternative.

Thank you for your time.