

Comments for DOE QER
Quadrennial Energy Review:
Comment on the Public Meeting
“Gas-Electric Interdependence”

Remarks of Clifton Karnei
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Denver, CO
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Panel Description:

Looking out to 2030: Will Natural Gas infrastructure (storage, transmission and distribution) be Adequate to Meet Future Needs?

(Subpart: can the natural gas transmission, storage, and distribution system meet the operational challenges of having a material amount of its load come from customers with different requirements than traditional LDCs – the anchor customers much of the system was designed for.)

- My name is Clifton Karnei and I am the Executive Vice President and General Manager of Brazos Electric.
- Brazos Electric is the largest and oldest Generation and Transmission (G&T) electric cooperative in Texas. We own over 2,000 MW of generation capacity in ERCOT, and generate and procure through short-term and long term power purchase agreements, electric power and energy which we sell at wholesale to our 16 member-owner distribution cooperatives and one municipal utility.
- Brazos is a very active market participant in the ERCOT wholesale power market and I serve on the ERCOT Board of Directors. Brazos is the 8th largest transmission provider in ERCOT, having 2,637 miles of transmission lines and 376 wholesale distribution substations and metering points. Our 16 distribution co-op members serve over 550,000 electric retail customers in 68 counties of Texas, in an area stretching from just north of Houston throughout central Texas to the Oklahoma border and out to the panhandle of Texas. Our largest members have extensive load and load growth in the Dallas-Fort Worth area, one of the fastest growing areas of Texas.
- Brazos is headquartered in Waco, Texas and we have 360 employees in Waco and in our power plants and transmission field offices. As a co-op, Brazos’ mission is to provide reliable and affordable power to our member-consumers; affordability is especially important in rural communities that serve disproportionate number of customers below the poverty level. Co-ops are owned by and answerable to their member-consumers, so

our mission also includes being responsive to consumer needs. Co-ops are governed by boards of directors or trustees that are democratically elected by the member-consumers.

- All of our owned generation facilities are natural gas-fired, but we have long-term power purchase agreements with coal and lignite fired generation plants, as well as a hydroelectric facility. Brazos, as well as ERCOT, is heavily dependent upon natural gas for generating power, and power prices in ERCOT are highly dependent upon the price and availability of natural gas. Brazos has firm and interruptible gas transportation agreements with major Texas intrastate pipelines, and purchases its natural gas through NAESB (industry standardized) contracts on long term (3-5 years) and spot market bases. Brazos has storage contracts to accommodate the swings in delivery that match our swings in generation, (this is sometimes called balancing services) based on demand of our members and the ERCOT market for electricity.
- During this past winter Brazos encountered significant problems with natural gas deliveries to our plants. Most of these problems occurred on the coldest days of the polar vortex winter. Brazos experienced 25 days when the gas pipelines limited our hourly deliveries to no greater than our nominated supply which the pipelines expect or require flow at a constant or “ratable” amount over 24 hours. Ratable gas flows, that do not allow you to increase or decrease your generation output in response to electric load on the grid, are a significant problem.
- As an example Brazos operates two, 100 MW gas turbines at our Miller facility. On many of these 25 days, the turbines were needed by ERCOT to meet peak electric demand for four hours in the morning. In order to supply the 10,000 decatherm required to operate the turbines for these four hours, the pipelines required Brazos to nominate gas supply of 60,000 decatherm, but had no ability to inject the remaining 50,000 into storage to withdraw on the next cold day. Many cooperatives had similar experiences this past winter in the Midwest and mid-Atlantic regions.
- In order to maintain a reliable power grid, it is important to have an adequate amount of on-line electric generating capacity that is capable of dispatching up and down, in real-time, to match the constantly changing electric loads. We call this ramping capability. The current pipeline nomination model of fixed flows for a 24 hour period poses big risks and operating challenges that preclude electric generating units attempting to provide this important ramping service to the power grid operator.
- Brazos is considering adding additional natural gas-fired peaking capacity in ERCOT, but the potential risks of being unable to supply gas to this plant when our member cooperatives need it the most, such as during a future cold weather event, gives us great concern.

- As the national power grid moves forward into a world with significant coal plant retirements and higher concentrations of intermittent renewable resources, like wind and solar, the provisioning of ramping service is all the more important. In that future state, power grid operators will not only need to utilize gas-fired power plant ramping for load following but also to compensate for renewable resources that often times do not generate much energy during peak demand periods. In my estimation, given the severe constraints experienced on the natural gas pipeline system in the winter of 2013-14, the existing natural gas infrastructure is not capable of meeting the needs of the future power grid.
- As background, the FERC NOPR (Docket No. RM14-2-000) for "Coordination of the Scheduling Processes of Interstate Natural Gas Pipelines and Public Utilities" issued in March 2014 proposes to revise the gas operating day and scheduling practices used by interstate pipelines to schedule gas transportation service. The proposed revisions include starting the natural gas operating day at 4 a.m., moving the Timely Nomination Cycle later, and increasing the number of intra-day nomination opportunities to help shippers adjust their scheduling to reflect changes in demand. The NOPR is very thorough, well thought out, and addresses the gas scheduling changes needed to accommodate power generation today and into the future. Brazos supports the NOPR and feels it would lead to improvement in natural gas fuel procurement for power generators. The polar vortex of 2014 demonstrated the lack of coordination between the natural gas and electric industries. This lack of coordination led to economic and electric reliability concerns which will only worsen as the U.S. becomes more dependent on natural gas to fuel its power generation fleet. While there are physical infrastructure deficiencies in the gas pipeline system, unaligned gas-electric scheduling processes also create unmanageable risks and reliability concerns. The NOPR proposes a 4am gas start day which we believe is imperative to a well-functioning power generation market. Recent natural gas industry initiatives have challenged the 4am start day in favor of a later start time. However, a 4am start time is necessary to enable power generators to arrange for fuel supplies to meet the reliability needs of the morning winter ramp periods. Furthermore, Brazos supports the later day ahead timely nomination cycle and additional intraday nomination cycles as proposed in the NOPR. The NOPR does not address additional natural gas pipeline services that are needed to provide the instantaneous fuel needs of gas generators such as "no-notice" service and the relaxing of ratable around the clock fuel scheduling requirements, however, these will need to be addressed by the gas industry as we move forward. Overall, the NOPR would have a positive impact on Brazos and the industry at large.
- The FERC, NERC, state commissions, power grid operators, and natural gas pipeline operators are all aware that the mismatch between the needs of power generators for natural gas delivery flexibility and the ability of the existing natural gas infrastructure to provide such flexibility during critical times is an ever-growing problem. Many meetings have occurred on the subject. However, and unfortunately, very little progress has been made to close the gap. The energy market fundamentals point toward a future in which

the U.S. will become more reliant on natural gas fired power plants operating on a power grid with a greater need for ramping capability. In that future state, it will be of paramount importance for the natural gas pipeline grid to fully support the needs of the power grid – the reliability of the power grid will be directly linked to the ability of the natural gas pipeline “grid” to provide reliable operational flexibility.

- We ask that DOE consider the following actions:
 1. Support the 4am gas start day provision of the FERC NOPR.
 2. Persuade the gas industry to develop new and more flexible services like “No notice” and non-ratable gas scheduling.
 3. Evaluate the long term need for more pipeline capacity and storage in the Gas Industry.

- On behalf of Brazos and of the rural electric cooperative sector, we urge the Department of Energy to weigh in on this critical reliability issue. Improving and expanding natural gas infrastructure to support electric reliability is essential to the QER goals of improving economic productivity, ensuring our Nation’s security and protecting our environment. DOE is in a unique position to facilitate and accelerate the efforts of electric and natural gas industry stakeholders to develop and implement workable solutions to this ongoing issue. We look forward to continuing our active participation in these efforts.