

Mike Naeve Response to Additional Questions for the Record

**The Honorable Morgan Griffith**

1. Do you believe that the markets are adequately compensating baseload plants for their unique attributes (including dependability and reliability) they provide the grid?
2. What reforms do you think could be made to ensure baseload plants – particularly coal-fired power plants – are adequately compensated for these attributes?
3. If baseload units are forced to close – by a combination of market dynamics, unfavorable market rules, and escalating regulatory costs – will it require a major restructuring of transmission infrastructure?
  - A. Have the cost and impact of massive new transmission facilities been evaluated if major baseload stations continue to close?

**Question 1-3 Answer:**

With low natural gas prices and the growth of renewable generation facilities many baseload power plants cannot earn sufficient funds from market operations to cover their operating expenses and required capital investments. These market conditions most affect coal and nuclear generation, although many natural gas generation facilities also are challenged. The extent to which retirements of baseload plants will require transmission investment will depend on the number and location of plant retirements. Each of the nations' Regional Transmission Organizations and Independent System Operators engage in both short and long term transmission planning, and evaluate the need for incremental transmission investment under a number of potential generation supply scenarios.

4. What effect do renewable energy subsidies and mandates have on the grid and our bulk power supply – particularly in reliability?
  - A. How are baseload units affected by these markets preferences?
  - B. Have these preferences contributed to the closure of certain baseload units – particularly coal-power units?

**Question 4 Answer:**

The addition of renewable supplies to regional energy markets has had numerous effects on system operations and on the performance of existing generating facilities. In hours when renewable resources are producing electricity, the amount of renewable resources entering the market displace an equivalent amount of higher

cost generation. When this happens, market prices for energy fall, and all generators operating at the time receive fewer revenues. Renewable resources also increase the quantity of supply being offered into regional capacity markets, thereby lowering capacity charges to customers and capacity revenues paid to generators.

Because renewable resources are intermittent and generally not dispatchable, the increased supply of renewable resources also has changed the manner in which system operators call upon other resources to quickly reduce their output when renewables become available, and to ramp up their output to replace lost supply when renewables no longer are available. The greater the penetration of renewables in a market, the greater the need for generation that can ramp up or down quickly to balance supply and load. Not all generation resources have sufficient ability to quickly increase or decrease their output to meet the demands imposed on the system by intermittent resources. Moreover, the ramping and cycling of replacement generators can increase wear and tear and decrease performance.

It is reasonable to assume that the price effects of adding renewable to regional generation fleets have contributed to the economic difficulties faced by baseload generation plants, along with lower market prices for electricity due to abundant and low cost natural gas supplies.

### **The Honorable Paul Tonko**

1. It is clear that today's grid is different than 20 years ago, and it is continuing to change rapidly. Mr. Smith's testimony explained how different technologies and grid management techniques are testing the boundaries between federal and state jurisdictions. Tomorrow's grid will raise even more questions with the growth in storage capacity and microgrids.

A. Are there any lessons we can learn from FERC's actions in the 1980's and 1990's on how to plan for these impending changes, which will make our grid and electricity markets even more complicated than they are today?

### **Question 1 Answer:**

In the 1980's and 1990's FERC promoted the concept of regional planning involving participants from each major section in the power industry. In the intervening period FERC has broadened the scope of regional planning, and expanded the opportunities for new market participants to bring new ideas, resources and technologies to the process. The development of comprehensive and inclusive regional planning has enabled the grid to better adapt to rapidly changing market conditions, although many of the implementation details need to be refined in light of real-world experiences.