RESPONSE OF SUSAN TOMASKY 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?**

Wholesale electricity markets are designed to benefit consumers by providing adequate and reliable power supply at competitively determined prices. In general, competitive markets have successfully accomplished this; the competitive advantage currently enjoyed by natural gas-fired generators is a product of the preference in the marketplace for lower priced supply. In prior periods, when natural gas prices were higher, the markets have strongly favored other fuel types, including both coal and nuclear, and in those market conditions those generation owners prospered. These price responses signal a properly functioning competitive market, delivering electricity to customers at the lowest price the market can provide.

Nevertheless, there are important goals related to the operation and longer term planning of the electricity system that current wholesale market rules haven't fully addressed. When Order No. 888 was adopted, it was generally assumed that most of the nation's baseload fleet (composed primarily of nuclear plants and a substantial number of highly efficient large scale coal plants) would continue to operate at a low marginal cost relative to other generators (natural gas and less efficient coal plants). While there were different views among experts about the future price of coal vs. natural gas, the radical and sustained price decline in natural gas associated with shale development was not predicted. This has undermined early expectations, and as a result we are seeing a number of baseload plants not being dispatched as expected. In the absence of economic support, some plants are being retired well before the end of their operational lives; some others, though currently operating, are at risk of premature retirement as the wholesale market price continues to be affected by low natural gas prices.

The key question, then, is whether those plants provide a special value to the system, so that it is important for electricity customers to pay to have them available, even if they do not dispatch economically under a low gas price environment. I believe that in some instances (though not necessarily all) they do have special value: for example, large steam plants can play a role in the reliability of the system by protecting the grid from electrical disturbances. Certain plants also provide locational stability. While some of these plants may not compete well against today's very low natural gas prices on a marginal cost basis, they do represent a significant part of the country's generation investment. They cannot be replaced easily and quickly, and certainly not without significant new investment that customers would ultimately have to pay for. Toward this end, some markets operators (ISO's and RTO's) have begun to embrace capacity markets as a means to provide compensation to secure the availability of capacity to meet future needs. These efforts are headed in the right direction,

though it appears that in some cases stronger incentives will be needed. I believe that these solutions are well within the operating framework of an efficient regulated market place, i.e., that it is possible to establish a reasonable value for contribution of these facilities to the operational security of the system. This will not "save" every baseload nuclear and coal plants; nor should it. These plants vary in their efficiency and importance from an electrical perspective. But through an RTO-based (or in some cases a state based) planning process it is possible to identify the longer-term capacity needs of the system and provide incentives to ensure continuing adequacy of supply.

2. What reforms do you think could be made to ensure baseload plants – particularly coal-fired power plants – are adequately compensated for these attributes?

As noted above, I believe that it is possible to use devices such as capacity markets and payments adders to compensate generators who provide additional value to the electrical system by making longer term commitments to keep generation available to meet current and future needs for capacity, grid stability and similar functions. In these cases, the inherent value to be compensated has more to do the baseload characteristics of the plant, or its location within the grid, than it has to do with fuel type. Nevertheless, if incentives are needed to support the efficient and cost-effective operation of the grid by maintaining the availability of certain capacity (nuclear or coal), RTO's and market managers should take the initiative to pay for that added value, and they should have the ability to do so within the current regulatory framework.

There are other values, however, that are more difficult to quantify and whose relative merits are subject to substantial public policy debate. These values -- such as fuel diversity, environmental benefits, and local economic impact – have less to do with the baseload characteristics of a plant and more to do with their contribution to other public policy goals that are often part of the debate over the future of electric power supply in the U.S.

For example, fuel diversity is often embraced as an important attribute of the U.S. generation fleet, both as a device to moderate volatile price effects over time and to ensure security of supply by ensuring that the system is not exposed to a single set of operational risks (e.g., fuel supply interruption for gas or coal plants or operational issues for nuclear plants). Similarly, many have argued for environmental reasons that price penalties should be attached to high carbon emitting fuels, or that adders should be available to support environmentally preferred nuclear plants, energy efficiency and renewables. Indeed, renewables do receive subsidies in various forms Federally and in various states; energy efficiency is favored in some state programs and also is emerging as a product in competitive markets. There are strong arguments for supporting existing nuclear capacity as it comprises, by far, the largest contribution to low/no carbon generation in the nation's existing fleet. In some jurisdictions there are significant local economic benefits associated with existing coal plants and their supporting industries, which may compel preferences for protecting those units; and, in some states policymakers may argue for the benefits of a local power supply, which could support a variety of generation sources. In each case, opponents will argue that compensating for these other values distorts the market and adversely affects the price of power.

Whatever the relative merits of these solutions, the challenge in compensating for these attributes lies not in the design of the competitive market, or the inability to design regulatory mechanisms to reward them. The real challenge lies in the difficulty of forging a policy consensus as to which attributes should be rewarded, and who -- state or federal decision-makers -- should make those decisions. Until a framework for resolving both of those issues is established, we may see piecemeal responses that benefit particular generation choices, but we will not see a systematic approach to future power supply decisions that incorporates a recognition of these values.

3. If baseload units are forced to close by combination of market dynamics, unfavorable market rules, and escalating regulatory costs - will it require a major restructuring of transmission infrastructure?

The closure of some baseload units could create system reliability and stability issues and if so, they would need to be addressed through transmission upgrades, replacement generation resources or a combination of the two. The answer to the question about the scope of needed new infrastructure requires engineering analysis based upon the particular facilities involved.

Have the cost and impact of massive new transmission facilities been evaluated if major baseload stations continue to close?

I am not personally aware of broad-based transmission related studies in this regard, though I would expect that Regional Transmission Organizations and regulators are evaluating those issues in a variety of contexts. For example, I understand that the New York ISO has published a study indicating a need for significant transmission upgrades to accommodate the goals of the Clean Energy Standard, and PJM regularly studies the operational consequences of plant retirements on future resource needs.

4. What effect do renewable energy subsidies and mandates have on the grid and our bulk power supply - particularly on reliability?

A. How are baseload units affected by these market preferences?

Because of the subsidies and mandates, renewable resources have the ability and incentive to offer their facilities below their cost of production in both energy and capacity markets. While in most areas renewable generation still only comprises a very small percentage of available supply, it is capable of displacing baseload resources and suppressing the price in both energy and capacity market prices. The most obvious example is the phenomenon whereby wind generators are incentivized to produce electricity at a loss, where the value of the federal tax credit alone makes it worthwhile. This has had the adverse effect of overloading the grid in certain parts of the country, particularly at night, forcing nuclear generators to be taken offline.

B. Have these preferences contributed to the closure of certain baseload units - particularly coal-powered units?

The specific factors contributing to the decision to close a particular plant will vary. Under current market conditions a number of factors are contributing to the closure of baseload coal units, including increasing operating costs due to environmental requirements and other changing operation conditions, the age of plants and related capital maintenance requirements and the relative cost of natural gas relative to coal. There may well be instances in which preferences for renewables have also contributed. However, I have not personally studied each of these decisions and am not able to say with certainty what factors ultimate contributed to each.

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?

I believe that the most important lesson we have learned is that competitive markets have created not only competitive prices but have also encouraged ingenuity and innovation, and have laid the foundation for further technological progress. I believe in principle that the most important part of planning for change is creating a framework open to many different market participants and technological solutions. Decision-makers should open pathways to participation in the marketplace but should resist the temptation to map too specific a course forward, based on today's vision of preferred technologies. States can be excellent proving grounds for fostering new technologies that are not developed enough to win broad support and that innovation should be encouraged, particularly in the customer-facing aspects of the business. At the same time, I believe strongly that in the years since Order No. 888, we have seen the validation of regional approaches to wholesale power supply and transmission planning. We should draw from that a compelling case for fundamental confidence in the market to operate efficiently to bring value to consumers. In my view, it is critically important to preserve both the Federal role in supervising and designing these markets.

2. **At the time of FERC's Order No. 888, were there any formal attempts to forecast the potential for the adoption of new technology or other changes that might impact the federal-state jurisdictional relationship significantly.**

3. **If so, were those forecasts accurate in predicting the ways the grid and electricity markets have evolved.**

   I do not recall any such studies.