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Expanding Transmission

Bringing Power to the People

Introduction

The North American electric transmission system is composed of over 200,000 miles of high-voltage transmission lines. These transmission lines act as the arteries that deliver electricity from the point of generation to the final destination of consumption. This complex and integrated system was originally designed to serve the localized region. Transmission lines are now being used to move power over much longer distances. This shift in use has added stress to the grid. Today this system needs to be closely monitored to ensure it remains capable of providing reliable energy service for millions of Americans, including New Yorkers.

A study by the Brattle Group titled “Transforming America’s Power Industry” published November 2008, estimates that by year 2030 the entire power industry will have to invest over 1 trillion dollars to upgrade its infrastructure. In some areas significant investments are in the process of being made to build additional transmission. In other areas, including in New York, a combination of new resources including demand side and renewable resources have provided needed energy supplies. In most areas of North America, many transmission investments made in the post-war years are coming to the end of their useful life and may require replacement just to maintain the existing level of system capacity and capability.

Transmission system upgrades provide an ideal opportunity to create value by allowing power to move more freely between regions and address public policy issues such as integrating renewables and promoting fuel diversity. Transmission should be viewed as an enabler for the trade of power between regions. This paper addresses the various benefits of an expanded transmission system, and examines market and regulatory barriers to implementation.

This is an exciting time of transformation for the energy industry. New technologies applied to the transmission system will enable the incorporation of cleaner generation and smart grid technologies that include advancements in demand response areas. Governor Paterson’s 2009 State of the State Address recognizes the link between the expansion of renewables and the development of battery storage technology for the large scale advent of Plug-In Hybrid Electric Vehicles. New transmission makes this link possible. The State Energy Plan should guide planning and encourage the required investments, resulting in a vibrant, robust transmission grid.

Discussion

Prior to industry restructuring, utilities made investments to expand the transmission system justified by the need to achieve local area reliability and the delivery of power from utility-owned power plants over utility-owned transmission lines to meet the needs

of utility customers. The transmission system was not designed to share resources across widespread regions.

With the advent of competitive markets, electrical energy has come to be viewed as a commodity and transmission lines as the means to transport that commodity from one region to another. As a result, energy is moving much longer distances. Transmission may also facilitate meeting the objectives of reducing carbon and providing more diverse fuel supplies, especially when existing remote resources are available.

As the northeast moves to aggressively address climate change issues while continuing to support a competitive wholesale market, objectives will not only include maintaining reliability, but also will include achieving energy cost and public policy goals like reducing greenhouse gas emissions. State and federal regulators continue to encourage electric utilities and independent transmission developers to invest in transmission both to increase overall system reliability and robustness and to increase transfer capacity between areas. Regulators appear to agree that more investment is needed in transmission for the sake of both improving reliability and expanding trade.

The New York Transmission owners, working with the NYISO, are engaging in a long range planning initiative for the bulk power system. The New York State Transmission Assessment and Reliability Study (STARS) will complement and be synergistic in nature to the NYISO's reliability planning efforts and the New York State Energy Planning Process. STAR is a transmission study and asset development plan which will identify the potential future electric transmission needs to maintain the reliability of the existing system and to suggest additional investments that will address a variety of issues including reliability of the bulk power system beyond the ten year view taken in the NYISO's studies, meeting local reliability requirements, demand growth, integration of renewable resources and other public policy goals and economic benefits.

The NYISO markets are designed to provide clear economic signals for new generation to be built. Conversely, they do not necessarily support the development of transmission facilities not tied to a specific new generation resource. FERC's Order 890 recognized this and mandated an economic planning process to identify transmission expansions that could be economically advantageous to customers by reducing the overall cost of electricity. As a result, the NYISO has incorporated an economic planning component into its planning process. The NYISO's new Comprehensive System Planning Process (CSPP) will include studies of possible transmission expansions that are not required to meet reliability criteria but which could provide customers with economic benefits in excess of project costs. The new process should also include the ability to assess more qualitative public policy objectives, as described below:

Renewable Portfolio Standard. On September 24, 2004 NYS Public Service Commission issued its order regarding retail Renewable Portfolio Standards (RPS). The RPS order calls for an increase in renewable energy used by consumers from 19% to 25% by year 2013, and as recently advanced by Governor Paterson, the objective will be 30% by 2015. In order to meet this requirement as

much as 4,000 MW of wind capacity will be required. While some wind may be developed off-shore and in areas across the state, not all will be close to customers and it may be necessary to transport wind energy from remote areas of the state to population centers.

Regional Greenhouse Gas Initiative. The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort by ten Northeast and Mid-Atlantic States to limit greenhouse gas emissions. RGGI is the first mandatory, market-based CO₂ emissions reduction program in the United States. Starting in 2009, CO₂ emissions will be capped. The increasing cost of emissions regulations requires access to sources that harmonize with the new policy mandates. Achieving these policy mandates will require integration of new renewables within New York and, where possible, the delivery of additional zero-carbon resources from our neighbors. This can include distant nuclear resources as well as hydro power from Canada.

Increasing Fuel Diversity. According to the NYISO, improvements in combined cycle gas turbine technology, expansion of gas pipeline capacity and stricter emissions regulations has resulted in an increase in New York's reliance on natural gas. The statewide fuel mix of electric generation capacity is currently 35% natural gas. Downstate load zones are even more dependent, with a gas fuel mix of 54%. Transmission can facilitate more fuel diversity by providing access to non-gas fired resources. Expanding the fuel diversity mix will alleviate the dependency on a single fuel. For example, plans have been announced to expand the capacity of nuclear facilities in upstate New York and elsewhere. New nuclear capacity will increase fuel diversity, but transmission will be needed to deliver that energy to customers.

Market and Regulatory Barriers. Transmission projects inherently lead to a debate over who the primary beneficiaries are. It is important that clear metrics and cost recovery mechanisms be established, understood and adhered to by all participants. Absence of clarity in cost allocation can produce the fear of protracted regulatory proceedings. Conflicting federal and state regulatory policies can result in unrecoverable, trapped costs. FERC and states must ensure that the necessary regulatory mechanisms are in place to allow for the full recovery of all prudently incurred costs and the avoidance of trapped costs.

Bulk Power system constraints can also impact the benefits of cheaper and integrative renewable resources through out New York State. An example of this occurs during thunderstorm alerts in New York City. During thunderstorm alerts, to reduce contingencies on the system, overhead transmission flows are reduced, while in-city generation is increased. This has an adverse impact on costs and the ability to derive all the benefits from renewable resources. Such operating procedures must be examined as transmission projects are being considered.

Proposal

The expansion of the transmission system will enable New York State to deliver safe, clean, secure, reliable and affordable energy to residents and businesses in the state. This expanded transmission system will help meet future reliability goals, integrate new renewable resources, enhance electric generator fuel diversity, and promote economic energy within all regions of the state.

In order for this to occur the following steps should be considered:

1. The State Energy Plan should accommodate and incorporate the NYTOs Strategic Assessment and Reliability effort (STAR). STAR will be carried out in compliance with FERC's Order 890 and in coordination with the NYISO's planning process.
2. The State Energy Plan should explicitly endorse an infrastructure system investment charge which provides for full and current recovery of transmission investments, such as those identified in the STAR initiative, provided they are prudently incurred and annually reconciled to actual expenditures necessary to deploy infrastructure investments. This would be via an adjustment charge similar to the market supply charge.
3. The State Energy Plan should encourage proper incentives to develop electric transmission needed to meet public policy objectives – incentives that recognize the risks involved in development efforts and lack of transmission access that may be blocking the use of additional renewable resources. The NYTOs should be allowed to recover FERC-approved transmission costs from customers through their bundled rates, including incentive adders which are explicitly intended to enable transmission builders to attract the capital needed to mitigate the risky undertaking of constructing transmission.
4. The State Energy Plan should consider the benefits of joint-ownership and development of new bulk power transmission assets by NYTOs commensurate with customers served. Joint-ownership of assets needed to achieve public policy goals and deliver new sources of energy to load centers will encourage all transmission owners to develop projects that benefit their customers, as well as ensuring that financially-viable utilities can continue to make the investments needed by their customers. In this era of credit uncertainty, joint-ownership will allow building transmission owners to leverage the financial strength of funding new transmission and reduce the overall cost of financing these expensive investments.
5. The State Energy Plan should advocate partnering with federal agencies to expedite the construction of needed transmission facilities. It should allow for accelerated depreciation in ratemaking to improve financial flexibility, and promote additional transmission investment. FERC should play a critical role in the process of siting expanded transmission that relieves bottlenecks and integrates renewable resources.

All these measures, taken together, will ensure that the New York bulk power transmission system will remain viable in the short term and into the future. A robust transmission system is the great enabler in providing our customers reliable service, while integrating renewable resources, and promoting a clean energy environment, and therefore the State Energy Plan should promulgate policies that result in a robust transmission system.

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