

Transmission Strains (from *energybizInsider*)

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The strains to our transmission system have been evident for some time.

"The U.S. transmission system is under tremendous strain and only marginally stable," Wayne Brunetti, the former chief executive officer of Xcel Energy, observed in 2002. "It was designed as a regional system and has been forced to function as a national system, a function for which it was not designed and does not handle very well."

And he made that statement before some tree branches on power lines in Ohio caused a blackout across most of the northeastern United States and parts of Canada in 2003. He also made the statement before someone threw the wrong switch in southern Florida and blacked out much of that state in 2008, with disturbances in the grid felt and observed across most of the eastern United States. Florida Power & Light Co. recently was assessed a \$25 million fine for that event.

Brunetti made his statement before things like smart grid, renewable energy portfolio standards, carbon cap-and-trade, and a host of other issues reached the level of hype and legitimate concern they have reached today. He also made it before it became widely recognized that many of the required renewable energy systems, such as large-scale wind and solar farms, likely will be built in remote areas, with new transmission systems required to bring the power from where it is generated to where it is needed.

One problem Brunetti also mentioned back in 2002 is that it is increasingly difficult to site and build new transmission lines in many parts of the country because of environmentalists and more general not-in-my-backyard opposition. That hasn't changed and, as a result, Brunetti's original statement about the grid being over-stressed and marginally stable is as true today as it was then -- perhaps more so.

The Energy Information Administration lists concerns about the nationwide bulk power grid. The EIA says the four significant challenges to improving the power grid infrastructure are:

Siting new transmission lines (and obtaining approval of the new route and needed land) when there is local opposition to construction;

Determining an equitable approach for recovering the construction costs of a transmission line being built within one state when the new line provides economic and system operation benefits to out-of-state customers;

Ensuring that the network of long-distance transmission lines reaches renewable sites where high-quality renewable resources are located, which are often distant from areas where demand for electricity is concentrated, and

Addressing the uncertainty in federal regulatory procedures regarding who is responsible for paying for new transmission lines; this uncertainty affects the private sector's ability to raise money to build them.

The EIA also stated, "Most of the electrical transmission components have been in existence for many years. It is generally agreed that some replacement and upgrading of current lines will have to be done, and that new lines need to be constructed to maintain the system's overall reliability."

Reliability Issues

The fact that the transmission system already is aged -- much of it was constructed 50 years ago, with components expected to last 50 years -- also is a major reliability concern, as noted by the EIA. Fortunately, this situation is not nationwide, but there are parts of the country where a lack of bulk transmission is becoming critical. These include the Northeast in the megalopolis from Boston to Washington, and in southern California, where there are shortages of lots of things, including electric transmission.

To overcome these regional problems, in 2005 Congress authorized the Federal Energy Regulatory Commission to designate certain critical corridors for construction of major transmission lines. FERC did so, but again lawsuits, primarily filed by environmental organizations, have held up construction in those corridors. A federal court also stripped FERC of some of this authority. Two corridors FERC has approved are:

The Mid-Atlantic Area National Corridor, which includes some or all counties in Delaware, Ohio, Maryland, New Jersey, New York, Pennsylvania, Virginia, West Virginia, and Washington, and

The Southwest Area National Corridor, comprised of seven counties in southern California and three counties in western Arizona.

Some new transmission has been built in Texas over the last several years, primarily accessing wind farms in outlying areas. However, that success is relatively unique across much of the country.

The DOE also has provided incentives to encourage utilities to invest in transmission. These incentives include higher returns on equity and some cost recovery programs.

According to P. Kumar Agarwal, FERC acting director of the division of reliability and engineering services, a transmission project is assumed to qualify for incentives if it is approved through a regional planning process, is in a National Interest Electric Transmission Corridor and is approved by a state siting authority. Agarwal said thus far 27 projects totaling about 6,000 miles of transmission have been approved. They range from 230- to 765-kilovolt lines.

Assuming those 6,000 miles are built in California, Oklahoma, Kansas, North Carolina and the Northeast - TransAllegheny -- they certainly will help. Some like the TransAllegheny and North Carolina lines, however, are under intensive attack.

Just as Wayne Brunetti cautioned almost a decade ago, the problem of reliability is alive and well today.