



Managing Transmission Grid Investment in a Competitive World

A GF Energy White Paper
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Regulation alone cannot improve operation of our transmission grid to the level required by a 21st Century economy. Success requires experienced visionary grid management teams with a long-term stake in this outcome.

FERC must establish a new process for reviewing transactions in which electric utilities sell their transmission assets to third-party, independent transmission system operators. This new process goes beyond FERC's existing utility merger process by focusing on:

- **Operational expertise through a Buyer Business Plan, Deficiency Analysis and Congestion Analysis that set out business goals, identify remediation needs and provide plans for relieving system congestion;**
- **Financial expertise through minimum equity requirements and bond ratings; and**
- **Performance expertise through financial incentives and penalties to reward improved efficiency, investment reliability and performance of the network.**

Introduction

The US transmission grid forms an electron “superhighway,” the strategic link between power plants and electricity consumers. Transmission lines are the platform on which generators compete with one another, encourage the entry of distributed and renewable sources into a wider marketplace, and provide for the growth of an increasingly digital society. A transparent transmission grid is essential, too, for the commercialization of more environmentally acceptable technologies including many of the emerging distributed technologies.

Yet amid the Federal Energy Regulatory Commission’s (FERC) regulatory actions to secure the benefits of competition, there is growing concern that grid reliability is declining, and that the industry’s efforts to improve the quality of the system are not keeping up with its increasing use by the competitive electric power industry. For more than a decade, investment in the grid has been declining as utilities have cut costs, regulatory incentives have steadily declined and uncertainty has grown about future ownership rules.

Since the passage of the Federal Power Act in 1935, all strategic decisions regarding transmission have had to meet public interest tests.¹ The Energy Policy Act of 1992 recognized the importance of an open, nondiscriminatory transmission grid in promoting competition that benefits consumers. In implementing the 1992 law, FERC has taken many steps, culminating in the Standard Market Design (SMD) proposal issued in 2002, to ensure that the transmission grid is open to competitors on a nondiscriminatory basis.

FERC Chairman, Pat Wood, reinforced this need when he pointed out that the wholesale power market today “has many of the worst features of both regulated and competitive markets, and few of the benefits of either,” and cited as one example

¹ FPA Section 201 (16 USC 824)

that under-investment in transmission today raises energy costs by billions of dollars across the grid and exacerbates reliability problems.²

Despite its continuous pressure to force the opening of the grid and its more recent interest in pushing utilities to divest transmission ownership, until now FERC has shown very little interest in mandating new investment to overcome existing deficiencies even as it encourages utilities to sell their assets to independent companies by promising them higher rates of return. Nor has FERC identified financial standards for grid owners despite the recent financial scandals facing the industry.

The Transmission Industry Today

The US transmission system as we know it dates from the mid-1930s. The system originally was intended to largely serve individual local utilities and their customers. That is why, on a map, utility transmission systems often appear to be self-contained. But over the years, utilities began building larger, more efficient generating stations located farther away from consumers. Many of these plants were alternatives to the smaller, more polluting plants that were located in densely populated city centers. These newer, larger plants required larger and longer transmission lines and related facilities.

Also, utilities began trading electricity, developing interconnections allowing them to trade electricity from one utility to another. This helped make the transmission system more reliable and more efficient, as utilities were able to take advantage of different load patterns, time zones and outages to help each other out in times of need. Overall, it has given consumers the benefit of more economic, efficient and environmentally acceptable sources of electricity. The competitive changes that are sweeping today's electric power market have further changed the nature of the transmission system, as electricity merchants and marketers that are not affiliated with utilities use the transmission grid to buy and sell electricity.

² FERC Chairman Pat Wood, testimony before the Senate Energy and Natural Resources Committee, September 17, 2002.

FERC's emerging market design policy calls for increased independence of the transmission system from the generators whose power is sent over the lines and the load serving entities whose customers use that electricity. Independence is seen as the best way to ensure that the wholesale power market is open to all on a nondiscriminatory basis. What is now emerging from all this is a new breed of independent transmission companies that either own or operate the transmission systems of individual utilities or groups of utilities. These systems then come under the direction of large Regional Transmission Operators (RTOs) that FERC wants to see cover all regions.

At the same time, a growing number of transmission assets are being sold as FERC increases its pressure and as utilities try to raise cash. GF Energy expects to see the number of transmission asset sales increase significantly in 2003 and beyond. These sales, however, can do more than ensure independence. Properly regulated, they represent a real opportunity to improve transmission performance, and produce an immediate tangible benefit to customers. So far, FERC has paid little or no attention to the financial strength, technical capability and capital plans for these new independent players. Consistent with its obligations under the Federal Power Act, GF Energy believes it is important for FERC to condition the sale of transmission assets. There are growing public policy issues: how to ensure there is reliable operation and increased investment and efficiency on the transmission grid. This paper proposes criteria by which FERC can evaluate the commitment, expertise and reliability of new and existing grid owners.

Meeting Transmission Needs

The competitive world envisioned by the Federal Energy Regulatory Commission through Order No. 2000 and the Standard Market Design implies the US transmission grid serves two distinct purposes:

- **Provide customers with highly reliable, cost-effective services that can grow with the economy and are resilient to terrorist attack; and**
- **Enable competition among generators without bias among fuel type, between distributed and central sources, and without undue concern about the location of power plants.**

The nation's 158,000-mile electricity transmission system has not been keeping pace with either the growth of the electric power market or the digitization of society. Annual investments in transmission have been declining by almost \$120 million a year for the past 25 years,³ even as grid congestion caused by consumer demand and increased trade has intensified. Grid congestion also has worsened over the past year: After taking a dip in 2001, congestion as measured by Transmission Loading Relief (TLR) incidents worsened in 2002, from 1,020 in 2001 to 1,494 in 2002.⁴

And these constraints can be costly: Transmission constraints cost California electricity customers \$222 million for congestion alone between September 1999 and December 2000.⁵ Compared to other critical infrastructure in the US, the transmission grid is characterized by 1950s and 1960s technology trying to meet the ever-more rigorous performance standards of the 21st century.

Transmission investment in 1999 was less than half of what it had been 20 years earlier.⁶ And according to the North American Electric Reliability Council (NERC), transmission investment over the next 10 years will grow by little more than 10,000 miles, or 5 percent.⁷ Many attribute this to the uncertainty in the electric power industry following passage of the Energy Policy Act of 1992 that raised the risk of such investment, and to regulated returns not considered commensurate with that risk. Others blame transmission siting, noting the longstanding delays in building transmission facilities because of opposition from state and local officials. Whatever the causes, the reinjection of large-scale capital in the transmission grid over the next decade is a major challenge—and it is not being met.

For example, meaningful use of distributed generation requires operating the grid as a "plug-and-play" network instead of forcing expenditures on expensive customized

³ Eric Hirst and Brendan Kirby, "Transmission Planning for a Restructuring US Electricity Industry," Edison Electric Institute, June 2001

⁴ North American Electric Reliability Council, TLR procedure log trend charts, http://www.nerc.com/pub/sys/all_updl/oc/scs/logs/trends.htm

⁵ FERC Chairman Pat Wood, testimony before the Senate Energy and Natural Resources Committee, July 24, 2002

⁶ Edison Electric Institute, Statistical Yearbook 2001

⁷ North American Electric Reliability Council, Reliability Assessment 2002-2011

solutions that are not cost beneficial to small-scale generators. Meanwhile, our networked digital economy requires constant voltage levels and “high quality” power. Electron flows can be enhanced through electronic switching and in many cases, heavying-up wires can allow the same towers to carry much bigger loads.

As a result, the US faces a huge remedial action campaign. Transmission owners must invest heavily in the next decade just to get the grid back into shape to optimize the existing assets. In addition, new technology that can reduce congestion and optimize flow will also have to be rolled-in. Most important, transmission owners need to apply a new system of operational tools. All of this does not even consider an even more costly imperative—the actual addition of new transmission facilities.

GF Energy believes it will take at least a decade to correct existing problems and rebuild the system. Regulatory and siting requirements mean that transmission upgrades take many years to achieve. This long lead-time infers that transmission owners need to be in the business for the long haul, with a buy, hold and operate strategy. It also means that **FERC should encourage transmission operators that have the technical capability to enhance existing rights of way as a method of increasing capacity quickly and cheaply.**

While it is difficult to quantify the impact of today’s inefficiencies, it is clear that outages can have devastating economic effects: industrial and digital economy firms collectively are losing \$45.7 billion a year, primarily from equipment damage, lost productivity, and idled labor.⁸

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⁸ Consortium for Electric Infrastructure to Support a Digital Society (CEIDS), “The Cost of Power Disturbances to Industrial and Digital Economy Companies,” July 2001

What FERC Must Do

To facilitate competition in power markets, the transmission grid must allow open and fair access to all who wish to use it. FERC has taken many regulatory steps to ensure that, from Order No. 2000 to Standard Market Design to Order No. 592, in which the commission determined that it would review mergers based on their effect on competition, their effect on rates and their effect on regulation.⁹ And FERC's policy of promoting transmission ownership that is operationally independent of generation ownership will surely advance that goal.

But the trend of transmission assets changing corporate hands is different from the utility mergers and acquisitions that come under FERC jurisdiction and Order No. 592 review. Indeed, the transfer of transmission assets between corporate hands was not specifically contemplated when FERC instituted Order No. 592 in 1996.

The sale of transmission assets does not affect competition in the same way as the sale of an integrated utility. In Order No. 592, the merger of two integrated utilities was viewed through the prism of what effects the combined utility would have on competition, rates and regulation. The sale of transmission assets to an independent transmission company does not raise those types of issues. As the ownership and operation of the transmission grid focuses instead on the ability to meet customers' needs and expand the grid to accommodate future growth, FERC must take a new look at its merger and acquisition policy with an eye toward adding a new process addressing the acquisition of transmission assets.

In this new process, **FERC should consider the effects of transmission transactions not just for their competitive value, but at the financial capability of the buyer, and the buyer's ability to commit to, and successfully execute, grid capital investment improvements. FERC also should ensure that grid owners who have any influence on the operations of and investments in the grid possess hands-on transmission experience.** It is not enough to hire former utility employees as operators. **The strategic leadership of the owner-operator must have a long-term**

⁹ FERC Order No. 592, issued December 18, 1996.

stake in the success of competition and possess the skills and competencies to make this happen.

FERC appears to have taken some initial steps in that direction. In the case of the \$610 million sale of DTE Energy's transmission assets to ITC Holdings (approved February 19, 2003), the commission sought information concerning:

- A copy of the ITC Holdings LP partnership agreement and any other agreements dealing with the ultimate management and control of the company, involving the general partner, Ironhill Transmission, LLC, and as limited partners investment funds associated with Kohlberg Kravis Roberts & Co. (KKR) and Trimaran Capital Partners LLC.
- All financial interests held by employees and management of ITC Holdings Corp., ITC Holdings LP, ITC Holdings GP, LLC and International Transmission in any market participant.
- The identity of the investment fund associated with KKR that will serve as the limited partner.
- An explanation of the expected equity-to-debt capital structure of 60:40.¹⁰

This line of questioning is a good start in determining the financial interest and dedication to transmission grid operations that is necessary for this new breed of transmission owner/operator.

Model for a New Acquisition Policy

GF Energy believes that the Commission must take a more comprehensive, deliberative and structured approach to assessing these transactions. As the FERC has determined it is in the public interest to determine a utility merger's effects on competition, rates and regulation, so too must it determine a transmission acquisition's effects on operation of and investment in the grid—which in turn affects competition, rates and regulation.

¹⁰ ITC Holdings Corp., et al., Docket Nos. EC03-40-000 and ER03-343-000

To make this determination, the **FERC must insist that organizations seeking to acquire ownership and operational influence over this vital public infrastructure:**

- **Demonstrate realistic, long-term plans for accomplishing both these objectives, together with milestones by which progress can be judged; and,**
- **Demonstrate the systems understanding, technical capacity, and financial strength to implement their plans.**

Making these demonstrations of intent and capability can be done if the following become requirements for approval to own and operate transmission assets:

- **A Buyer Business Plan that sets out operational goals, identifies top management and operational personnel and their expertise, and includes a long-term financial plan to invest in system upgrades.**
- **A Deficiency Analysis that identifies the under-conforming condition of the transmission facilities, assesses their operating condition and clearly outlines the work that must be undertaken to remediate any problems, including estimated expenses and manpower needed to complete the work.**
- **A Congestion Analysis providing technical and financial details of the congestion management of the system at the time of purchase, and a schedule of actions that will be considered in relieving that congestion;**
- **Minimum equity requirements and bond ratings; and**
- **A plan of financial incentives and penalties that will reward improved efficiency, investment reliability and performance of the network.**

Conclusion

Clearly, competition and the new players it has introduced to the electric power generation market have helped to make the industry more efficient, and have lowered prices and the wholesale and retail level. But the transmission sector is different from the generation business. Properly viewed, transmission is not competitive. It operates as a monopoly, enabling competition in power generation to take place, as multiple generators in different regions use the transmission grid to

compete with each other to serve consumers. Transmission is the platform that allows generating plants to compete for market share. **Grid owners in effect make the physical marketplace on which competition is based, so they must (a) understand the nature of that competition, and (b) actively provide for it in their operations and capital planning.**

The transmission grid cannot facilitate competition in our increasingly digital world unless it can be expanded and modernized to accommodate new technologies. The transmission sector is capital-intensive and has a specialized technical nature that requires experienced, dedicated grid owners and managers who are committed to improving the operation of the nation's transmission grid in a manner consistent with FERC's broad RTO and SMD goals.

As the industry is seeing increasing incidents of transmission owning utilities selling their transmission facilities to third-party groups such as independent transmission companies, it has become incumbent upon FERC to establish a new conditioning approach and acquisition policy for reviewing these transactions—a system that goes beyond the Order No. 592 screen for utility mergers and acquisitions. This new system of review focuses on the transmission buyer's determination of how the system is run, where the congestion is located, and how it plans to make improvements and increase efficiency. This will demonstrate clear and immediate benefits to customers above and beyond independence.

About GF Energy

GF Energy works with senior management and boards of directors of energy companies providing management counsel and strategy and working as an independent source of reliable, independent business intelligence and solution discovery. Armed with a successful 15 year track record in the industry and a forward-looking perspective on restructuring and competition strategies, GF is a pioneer in identifying new and developing market characteristics and trends in this next stage of energy deregulation and restructured electricity markets in the US, Canada and abroad.

Additional copies of this white paper are available, please email us at inquiries@gfenergy.com.

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