

**Electricity Market Design and Structure:
Working Paper on Standardized Transmission Service
and Wholesale Electric Market Design**

**Comments
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These comments are submitted on my own behalf in connection with the Commission's deliberations on the "Federal Energy Regulatory Commission Working Paper on Standardized Transmission Service and Wholesale Market Design," (working paper) distributed March 15, 2002. Development of a standardized market design that can support a competitive electricity market is an important task that this Commission is right to undertake with vigor. As I have testified before, the current situation of a half complete restructuring of electricity markets is less likely to meet the needs of the nation than either the highly regulated world of the past or the more market-oriented approach to which we aspire. We should not stay where we are today. The status quo will support neither efficient operations nor adequate investment. It is very difficult to see how to go back the world that existed before passage of the Energy Policy Act of 1992, even if this were desirable. Hence, the best option is to go forward with a sound restructuring of electricity markets. To move forward, certain institutions will be needed that require the Commission's design and support.

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In previous comments filed with this Commission, I attempted to identify and elaborate on the required core elements of a workable standard market design. In my judgement, the basic ideas have been there in the Commission's orders and deliberations that followed Order 888. For example, the earlier proposal for a Capacity Reservation Tariff contained elements that could be fashioned into a workable standard design.² The key feature was in the use of a spot market coupled with creation of point-to-point financial transmission rights.³

The Commission went further in describing the responsibilities of Regional Transmission Organizations (RTO).⁴ Among other things, the RTOs must provide access to a real-time electricity balancing market and market mechanisms for managing transmission congestion. Inevitably, these two functions interact with each other to a degree that one cannot be designed or operated without some view of how the other would operate. A working integrated market for balancing and congestion is available in the form illustrated by the market design built on locational marginal pricing and financial transmission rights.⁵

The Commission's present working paper crystallizes the best of the Commission's previous analyses and exploits the lessons learned in comparing the results of expensive failures against the working successes found in the Northeast wholesale electricity markets. With one exception, I agree with and support the Commission's description of the necessary elements of a standard market design.

The working paper is clear on the centerpiece of a coordinated spot market organized as a bid-based, security-constrained, economic dispatch with nodal prices. This includes bilateral schedules charged for transmission at the difference in locational prices. Furthermore, "[w]hile a day-ahead market is not strictly necessary for resolving imbalances, experience has shown that the combination of a day-ahead market and real-time market enhances system reliability and efficiency compared to operating only a real-time market."⁶ There is no ambiguity about these conclusions and they set a clear direction.

There is caution in the working paper about other elements such as the need for additional measures designed to ensure adequate long-term generation supplies. Here

² Federal Energy Regulatory Commission, "Capacity Reservation Open Access Transmission Tariffs," Notice of Proposed Rulemaking, RM96-11-000, Washington DC, April 24, 1996.

³ For further details, see Scott M. Harvey, William W. Hogan, and Susan L. Pope, "Transmission Capacity Reservations and Transmission Congestion Contracts," Center for Business and Government, Harvard University, June 6, 1996, (Revised March 8, 1997), available on the author's web page also filed with the Commission.

⁴ Federal Energy Regulatory Commission, "Regional Transmission Organizations," Order No. 2000, Docket No. RM99-2-000, Washington DC, December 20, 1999.

⁵ For a further discussion, see William W. Hogan, "Regional Transmission Organizations: Millennium Order on Designing Market Institutions for Electric Network Systems," Center for Business and Government, Harvard University, May 2000, available on the author's web page also filed with the Commission.

⁶ FERC Working Paper, p. 12.

again I agree with the Commission that further investigation would be required to define the need and decide on the best approach to long-term investment. It would be premature to rule out or include such approaches in the standard market design. In short, the working paper generally does an excellent job of describing what is needed and defining the current limits of the standard market design.

The exception noted above has to do with the working paper's current description of the nature of transmission rights in the standard market design. Although it is possible to interpret what is said as consistent with a model that works, it is also possible to interpret the words in a way that would be a major setback in the development of a workable competitive electricity market. It is not that the working paper is wrong, but rather that it is ambiguous. On this topic, ambiguity is not helpful.

The confusion arises in the description of transmission rights that sound like physical rights to schedule power deliveries but in effect are equivalent to financial rights to collect a payment that depends on the outcome of the coordinated spot market.⁷ It takes a careful and friendly reading to conclude that the net effect is the same as for financial transmission rights. However, the phrase "financial transmission right" is conspicuously absent from the working paper.

Were it not so important, this ambiguity of language might be ignored as standard practice in a compromise to give everyone a little of what they want and avoid making a choice when opinions are strongly held. However, in the context of the evolution of standard market design, this benefit of ambiguity is not worth the price. There has been too much confusion on this point, as the industry has struggled for years in the futile search for a workable system of physical transmission rights. Confusion on this very point created the strong objections to the innovative and sensible Capacity Reservation Tariff. Much of the delay in implementation of restructuring can be traced to misunderstandings or misdirections on this issue.

If the failure to call a financial transmission right a "Financial Transmission Right" is caused by indecision at the Commission, then the matter is even more serious. Then much more would be required. Since the details would matter so much, the cursory description in the working paper would not suffice. If these are to be "physical" rights, the Commission must face the reality that there is no workable model that resolves all the difficulties of using "physical" rights. Questions of timing of release of unused rights, the ability to withhold, treatment in contingencies, requirements for priority scheduling, and so on, would have to be explored and answered.

My hope and expectation is that the Commission will not take this path towards physical rights. This path has been a dead end, and would only cause more delay. The simplest way to move on is to clarify the order by calling the transmission rights what they are and not duck the decision.

⁷ See the Working Paper discussion under "Day-ahead scheduling," p. 9. Or "An obligation requires the customer either to (a) physically transmit energy from its source to its sink points, or (b) receive the congestion revenues (either positive or negative) between the points," p. 11. The obligation under financial transmission rights does not include (a), which is irrelevant, and is defined solely as (b).

The innovation of financial transmission rights greatly simplifies what is otherwise an intractable problem. Furthermore, the financial transmission right concept fits naturally into the standard market design framework. The experience in PJM and New York has demonstrated how point-to-point financial transmission rights defined as obligations can and do support the standard market design for a competitive electricity market.

The working paper outlines extensions of the financial transmission right idea to include point-to-point options and financial flowgate rights. "At the start of Network Access Service, the transmission provider must offer source-to-sink obligations. Upon the request of market participants, the transmission provider must also offer source-to-sink options and flowgate rights as soon as it is technically feasible." ⁸ This seems to be a sensible approach. The last caveat, in particular, alludes to the possibly significant complications that could arise with the expanded definitions.

In support of the Commission's examination of the broader definitions, the attached paper explores the technical issues raised by different formulation of financial transmission rights. The summary from that paper further supports the direction of the policy laid out in the Commission's working paper:

" So-called physical transmission rights present so many complications for a restructured electricity market that some other approach is required to provide property rights for the grid. Under a standard market design built on a bid-based, security-constrained, economic dispatch with locational prices, the natural approach is to define financial transmission rights that offer payments based on prices in the actual dispatch. Different models have been proposed for point-to-point and flowgate rights, obligations and options. With consistent definitions, the rights can be shown to be simultaneously feasible and revenue adequate in various AC formulations or approximations. The conditions for simultaneous feasibility also define the form of auctions that would award or reconfigure the rights. In the case of point-to-point obligations, the practical feasibility of the approach has been demonstrated with adaptations of commercial dispatch software. In the case of point-to-point options, the computational strategies could be extended and might also work but have not yet been demonstrated. In the case of flowgate rights in the full definition, the computational approach available from dispatch software no longer applies and something new would be required. Or the flowgate implementation might require significant restrictions and simplifications that would compromise the theoretical value of flowgates as hedges. If all forms of rights are to be included in a hybrid model, the policy implication is to start with point-to-point obligations as the first practical implementation. Later evaluate the introduction of options or flowgate rights once these have been demonstrated to be workable in a real grid with complexity that does not appear in simplified examples."

⁸ FERC Working Paper, p. 11.

With the exception of the perhaps unintended ambiguity in the declaration of financial transmission rights as an integral part of the standard market design, the Commission's working paper points the country in the right direction. The standard market design should be implemented in Regional Transmission Organizations to support a competitive electricity market within the regions, and to minimize the sometime vexing seam issues between regions. The Commission's initiative to adopt a standard market design is critical. There is no time for delay.

Attachment: William W. Hogan, "Financial Transmission Right Formulations," Center for Business and Government, Harvard University, March 31, 2002.