RTO SCOPE AND ELECTRICITY MARKET DESIGN:
MAKING MARKETS WORK

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The usual separation into generation, transmission, and distribution is insufficient. In an electricity market, the transmission wires and the dispatch are distinct essential facilities. The special conditions in the electricity system stand as barriers to an efficient, large-scale bilateral market in electricity. A bid-based spot market model for dispatch and regional coordination helps overcome these barriers.
Two broad approaches suggest themselves for dealing with the problem of the commons associated with network externalities in a manner compatible with a competitive generation market.

- **Monopoly Management with Incentive Pricing**: Treat transmission like a large "black box" run by a monopoly that takes on the obligation to provide unlimited transmission service for everyone. With the appropriate price cap or other incentive regulation, the monopoly would make efficient investments or contract with market participants to remove or manage the real transmission limitations. This approach is pursued in part in England and Wales. It results in a powerful monopoly with the familiar problems of finding the "right" incentive regulation. It works in theory, but does it work in practice?

- **Market Mechanisms with Tradeable Transmission "Rights"**: Create and allocate a set of transmission "rights" that would be used by market participants to match the actual flow of power or be traded in a secondary market. This is the approach that dominates thinking in the United States and stands behind the policy at the Federal Energy Regulatory Commission and proposals across the country. The central problem is in the impossibility of defining the available physical transmission capacity that would accompany future dispatch requirements. Can it work in both theory and practice?

The short-term electricity market with a bid-based dispatch provides the foundation for building a system that includes tradeable transmission "rights" in the form of transmission congestion contracts. Coordination is unavoidable, and spot market locational prices define the opportunity costs of transmission that would determine the market value of the transmission rights without requiring physical trading and without restricting the actual use of the system.
The initial RTO filings displayed great diversity of approaches, but there were some common themes. Most importantly, the emphasis was not on the essential elements that seem difficult and controversial. The focus is on governance and issues that seem easier to discuss.

"Details to follow"
Faced with a stalled process, FERC ordered creation of larger regions. The mediation efforts in the Northeast and the Southeast looked at the details and found that the details mattered.

"... I purposefully cast the mediation task as *procedural* from the outset. ... attempting to *resolve* extremely contentious substantive issues among such a large and diverse interest group at this stage ... would be unproductive." (Northeast RTO Mediation report, 9/17/01. p. 3, emphasis in original)

**But the mediator was unable to ignore the details:**

"The PJM platform is sound and proven--within its region. That region, however, exhibits a substantially lower degree of divested generation than New York or New England. The same observation applies to load pocket problems." (Northeast RTO Mediation report, 9/17/01. p. 22)
The critical features for a successful electricity market include close coordination of the elements that determine bid-based security constrained economic dispatch. We know how to make the pieces fit together. And we know that the pieces must fit together.
The monopoly management approach includes a Transco that combines ownership and operation of the grid. This is attractive in its simplicity. Everyone could go home early. But the attraction fades if it does not provide a radical alternative to good market design.

"A Transco will be an owner/operator, which has benefits in terms of efficiency and accountability." (SPG Mediation Report, p. 11)
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Independence Of Market Participants

The rhetoric confronted the reality in the Southeast Power Grid mediation. Separation of the key functions responded to the diversity of transmission owners and conflicting interests. This leaves us still with the task of market design.

Southeast Power Grid (SPG)

- Market Monitor Corporation
- Independent Board of Directors
- Stakeholder Advisory Committee
- Independent Transco
- Independent Market Administrator

Standardized Transmission Operating Agreement Entered Into with the Independent Transco

- Electric Coops
- Fed/State Agencies
- Investor Owned Utilities
- Munis
- Other Owners
- ITCs

Mediation Report: 9/10/01
Cycles around the loop take months to years when it is only talk. Once implemented, cycles take years or forever.

- **Don’t Assume It is Easy to Muddle Through.** Errors are costly. Bad market design leads to serious disruption itself (PJM-1997, NE-1999) or helps make bad problems worse (California-2000). Bad governance structures make all problems more difficult.

- **Get the Prices Right.** When a monopoly that makes all the decisions, the details matter less. But whenever market participants are given a choice, it is critical that they see the right prices. Market participants will respond to incentives. That after all, is the foundation for restructuring. Opportunity cost pricing supports efficient behavior. Otherwise, the system operator and regulators will be forced to intervene with non-market mechanisms that negate the broader purpose.

- **Recognize that the Market Can’t Solve the Problem of Market Design.** There are too many moving parts that must move together. Absent strong public oversight, the complex interactions and the competing interests provide a textbook case for sacrificing the public interest and sinking to the least common denominator.

- **Face Squarely the Mandates of Order 2000.** If FERC means what it says, the Order goes a long way in defining how a wholesale electricity market must be organized. But it is too timid and indirect. “If it looks like a duck and walks like a duck, it must be a duck.” Until FERC makes clear that it means what it says, there is too much room for obfuscation and misdirection.
The Regional Transmission Organization (RTO) Millennium Order (Order 2000) contains a workable market framework that is working in places like New York and the PJM Interconnection in the Mid-Atlantic Region.

Poolco…ISO…IMO…GO/SO…Transco…RTO…IMA…: "A rose by any other name ..."
The core feature of a bid-based, security constrained economic dispatch with locational prices can be found in many existing or announced market designs.

- Argentina.
- Bolivia.
- Chile.
- Mexico (proposed).
- New England (proposed).
- New York.
- New Zealand.
- Norway (dynamic zones).
- PJM.
- Peru.
- and more .... .

The breadth of application and success of the framework dispel the notion that the model is too complex to be implemented. We now have both the theory and substantial operating experience.
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Reforms of Reforms

What should FERC do? Focus on the public interest. The role of the coordination function should be to support an efficient competitive market, and the role of the regulator is to make sure this is done in the public interest. Like it or not, the FERC is in the business of market design and is the principal participant charged with the public interest.

- **Northeast RTO.** The PJM and New York markets are the major successes of wholesale market restructuring, and New England was headed in the same direction. Don't break what isn't broken. But move forward with a clear eye towards embracing the best practices and integrating the operation of the markets. Recognize that this is neither easy nor guaranteed.

  "Any polemic is directed to--and as a caution to the Commission concerning--those interests who would sacrifice optimal RTO benefits in the long run to exploit more immediate economic opportunity in a sprint." (Northeast RTO Mediation report, 9/17/01. p. 23)

- **Southeast, Midwest, West.** Lay out the mandate for a standard market design based on the Northeast model. Make this the starting point for the cycle of discussion. Don't make the participants go through the delay and agony of repeating the bad ideas that have failed elsewhere. Place the burden of proof on other market designs rather than assuming that stakeholder preferences must prevail.
National progress in implementing the advance of regional transmission organizations under the Millennium Order (Order 2000) hangs in the balance. Time is running out.