

DON'T RUSH THE SEAMSTRESS: Second Thoughts on the Marriage of the

Why a standard design in each ISO is no guarantee of regional coordination.

By Marija Ilic and Leonard Hyman

HOW DO YOU COMPLETE AN EFFICIENT TRANSACTION that requires the cooperation of two or more markets when each is operated independently of the other? That is the “seams” issue that so concerns the Federal Energy Regulatory Commission (FERC), and the participants in the electric utility industry. This problem—conducting power transactions between geographic areas under well-defined rules and transmission tariffs—marks one of the main obstacles to the growth of electricity trading across the U.S.

In response, the FERC issued Order 2000,¹ with an implied assumption that the formation of regional transmission organizations (RTOs) would lead to the necessary upgrades of the transmission network. These RTOs would serve as improved, second-generation versions of independent systems operators (ISOs) which have already formed in a handful of regions around the country to manage the local transmission grid.

In June, the FERC took two major steps regarding the ISOs already in place

in the Northeast U.S. that should give reason to pause to an interested observer. Earlier, these three northeastern ISOs (New York, New England and PJM) had proposed vague plans to add RTOs to their regional structures, without a clear vision of how the RTOs and ISOs would interact, or how the new setup would encourage improvements in the transmission networks. The ISOs had developed a memorandum of understanding (MOU)² which would lead to a solution of the seams problem.

In the first of these two steps, the FERC singled out the operating platform and software of the PJM region and declared it to be the industry standard.³ That gave the three northeastern ISOs their marching orders. In the second step, the FERC ordered the three ISOs, plus the new PJM West, to enter into 45 days of negotiations that should lead to the formation of a single RTO.⁴ The commission proposed this shotgun marriage because: “[I]n order to successfully address seams issues... and to establish efficient markets in the Northeast, it is necessary that all four entities combine to form a single RTO.”⁵

By now, however, we should have learned that public policy decisions can produce unintended consequences.⁶ The California fiasco, alone, should cause warning lights to go off whenever a public agency decides to impose not only market structures but also software solutions.

So, for the sake of argument, we will assert that this rush to enforce consolidation, with the rules of operation set out by the FERC, will not solve the seams problem in a timely

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and efficient manner, but instead will lock in the Northeast electricity market to nothing more than a jazzy variation on the old utility paradigm.

What is wrong with the standard market design envisioned for the Northeast?

Actually, there is nothing standard about the design, other than the desire to make it the sole operating/software platform by implementing it everywhere.

In many ways, the standard market design (SMD) is a makeshift solution for the selection of suppliers, without clear signals or incentives to those demanding the electricity (the loads) or those owning the transmission lines. It uses a rigid unit commitment method, which originated in the regulated industry. Moreover, a closer look into the actual software shows that this computationally complex software is not useful for near real time decision making that turns units on or off. It does not optimize use of the transmission system during the commitment of generating units. Because it bundles together the ancillary services and reserve markets with the energy market and is too computationally complex to use in real time, the current platform (called MAPS) cannot differentiate value-offered-day-ahead from value-offered-in-near-real-time.

Furthermore, MAPS works with rigid reserve requirements, a relic of the old utility days. MAPS, moreover, does not capture the value of peaking technologies or of faster ramping rates. Nor does it offer quantifiable ways to value the willingness of customers to allow interruption of service or to shave peak demand. Any makeshift moves in this direc-

tion must end with the recognition that the amount of total reserve capacity is not related to what end users are willing to do when supply is short. This lack of sensitivity to the needs and desires of the ultimate customer could put an end to the development of a viable energy service provider industry.

Now let's move on to transmission constraints. The supposed model platform deals with them by a process of sub optimal unit commitment based on knowing the specifics of each given transmission system. In addition, the platform offers firm transmission rights (FTRs) as the means of hedging against volatile market conditions. The near-real-time Congestion Management System (CMS) has no protocols in place by which long-term

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FTRs would not be implemented in order to make way for more valuable spot market requests for transmission; this failure has a large impact on the revenue of the transmission provided, and also on the optimal use of overall transmission capacity available. The FTRs are rarely denied access except in case of emergencies. The transmission owner, of course, sees no income from the FTR.

In sum, the platform does not differentiate the value of various technologies (for generation, demand and delivery). As such, the SMD, in its current form, may stifle, if not throttle, the possibilities for a truly efficient, competitive power market. The design looks like an attempt to repackage old tools for dispatching power under the regulated paradigm, with an FTR mechanism grafted on. The FTR concept currently in place at PJM and destined for everyone else in the

The market design tries to repackage old tools—it's not related to what customers do when supply is short.

Northeast, seems to lack a link between the valuation and the management of the FTR and the investment process. One gets the feeling that the FTR design is biased in favor of FTR holders, while their risks are covered by everyone else.

Of course, the FTR concept is supposed to give someone the incentive to add to the transmission network when economically justifiable. The lack of concrete proposals to build on an unregulated basis in the Northeast may indicate that the region does not really need new lines or, possibly, that the FTR mechanism does not send the right signals. Incidentally, if the FTR mechanism works as advertised, perhaps the FERC could dispense with all the rate of return incentives that it proposes for new transmission investment. Do we need both?

How does the forced mediation order solve the seams problem?

We wonder whether the order, as presently proposed, might not create other problems in place of seams. Handled in the wrong way—using the current SMD platform without improvements—the order could lead to market failure, certainly not an unusual outcome these days.

Will the northeastern ISOs merge or just adopt the same platform under the jurisdiction of a northeastern RTO? The ISOs, probably, would prefer the latter course, as a means of survival as institutional entities. Would that motive impel them to adopt the SMD, based on the thinking that doing so solves the seam problem in an optimal manner, and keeps them in business as well? That approach could lead to problems involving differences of operating and planning practices at individual state and control areas. Furthermore, think of the transmission related cost shifts among transmission owners and the new RTO, which should create a major new source of income for regulatory lawyers.

On the technical side, the new setup could lead to highly conservative use of the system, with each ISO computing Available Transfer Capability (ATC) in a conservative manner, without incentive to relax its reserve margins. Duplication of the SMD in each ISO and exchange of data need not produce the coordination needed for near real time adjustments to produce regional reliability in the most efficient manner. For that matter, which entity of the many envisioned would have responsibility for overall reliability? Finally, we doubt that the new entity would have in place the right incentives to induce transmission investment.

We favor an inter-regional group, founded on profit.

You may wonder why we are asking so many questions. Don't we want to see progress?

Yes, of course, progress would be nice, but consider what can go wrong. So far, the restructuring process has featured a plethora of well-meaning, governmentally imposed, detailed solutions hammered out for the benefit of stakeholders, which, at best, have barely moved us in the direction of efficient, competitive markets, and, at worst, have led to economic and operational catastrophe. Now, could we come up with something better, a solution that utilizes market forces and considers technological limitations as well?

What we should do is encourage consumer choice, new technologies and timely progress. Now that may sound like apple pie, but it is not the current direction in which the industry is moving. To reverse the current trend, we propose that entrepreneurs form inter-regional transmission organizations (IRTOs). Does the country really need still another alphabet soup organization in the business? Judge for yourself.

The IRTO, as we envision it, would be a profit-making organization responsible for reliability within the entire region. It would act as a one-stop shop for those seeking to consummate transactions that require the user of more than

one ISO or control area. The IRTO would serve as a market maker for implementing inter-regional transactions. The suppliers of the inter-regional delivery are the entities within the IRTO, and the users of the IRTO's services are those proposing the transactions, which would be implemented according to a well-defined contractual arrangement.

Technically, the IRTO would provide direct tie-line flow control between control areas in order to implement regional transactions. The IRTO arrangement would fully preserve the autonomy of the entities within its purview, giving those entities a choice of how much power to transfer and at what value. Some of the profit from transactions would go to transmission owners, who could upgrade their systems. Technically, we are proposing a minimal, information exchange-based market for facilitating delivery of inter-market transactions, with a hierarchical structure, with ISOs, transmission owners and control areas as fully identifiable members of the IRTO.^{7,8,9,10}

What makes this idea different from a big RTO, as envisioned in the northeast consolidation? Basically, the IRTO would not rely on uniform SMDs and/or committee work to manage inter-regional transmission. Coordination would come about largely through value-based signals between the IRTO and its immediate lower level (ISOs, control areas, transmission owners) and between the IRTO and its customers for inter-regional transmission. Each individual ISO or control area or transmission owner could decide how much transmission capacity to make available to the inter-regional users (at the expense of its own reliability margin) and at what price. Keep in mind, though, that the IRTO will have an economic reason to want to facilitate inter-regional transactions. It will make more money if it does so. Keep in mind, too, that sooner or later, somebody will have to set up an IRTO, at least until North America manages to put together a continental grid.

Isn't the IRTO just one more idea that we don't need?

It's no more untried than anything else on the table, and we think that setting up the IRTO would be a more manageable task, computationally, than the MOU/SMD proposal.¹¹

To be fair about it, the FERC may have gotten one thing right—that a lot of small, uncoordinated ISOs will not succeed in forming viable competitive markets. The question on the table, however, is this: Will a hastily arranged marriage encouraged by FERC, with FERC prescribing the details of the market, produce a vigorous, efficient market, either?

That sounds like the opening of one of those old radio soap operas doesn't it? Unfortunately, it is not. **F**

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1. Regional Trans. Organizations, Docket No. RM99-2-000, Order No. 2000, Dec. 20, 1999, 89 FERC ¶61,285, modified on rehearing, Docket No. RM99-2-001, Order No. 2000-A, Feb. 25, 2000, 90 FERC 61,201.
2. Memorandum of Understanding Among the New England, New York and PJM Independent System Operators concerning Interregional Coordination Activities, signed Aug. 10, 1999. See www.isomou.com.
3. See Massey, Commissioner, concurring in, Order Initiating Mediation, Docket No. RT01-99-000, July 12, 2001, 96 FERC ¶61,065: "I am also heartened that today's orders addressing the Northeast clearly set PJM as the platform upon which the Northeast RTO will be built. The PJM market design, which is based on locational marginal pricing, has proven itself again and again." See also, Order Provisionally Granting RTO Status [PJM], Docket No. RT01-2-000, July 12, 2001, 96 FERC ¶61,061, Order on RTO Compliance Filing [New York], Docket No. RT01-95-000, July 12, 2001, 96 FERC ¶61,059; Order Granting, In Part, and Denying, In Part, Petition for Declaratory Order [New England], Docket No. RT01-94-000, July 12, 2001, 96 FERC 61,063.
4. Order Initiating Mediation, Docket No. RT01-99-000, July 12, 2001, 96 FERC ¶61,065
5. Id., mimeo at pp. 1
6. See, e.g., Marija Ilic and Leonard Hyman, "Getting It Right the First Time: The Value of Transmission and High Technologies", *Electricity Journal* Vol. 9, No. 9, Nov. 1996.
7. Ilic, M., "A Eulogy for RTOs - Interregional is Better", *Public Utilities Fortnightly*, Oct. 15, 2000.
8. Yoon, Y., Ilic, M. and Collison, K., "Efficient Implementation of Inter-regional Transactions", Proceedings of the IEEE PES Summer meeting, Vancouver, CA, July 2001.
9. Ilic, M. and Liu, S., Hierarchical Power Systems Control: Its Value in a Changing Power Industry, Springer-Verlag London Limited Series, Advances in Industrial Control, March 1996.
10. Intelligent Energy Systems, Inc.; rms@hutch.com, www.intelligentenergysystems.com.
11. Ilic, M., and Y. Yoon. "Inter-regional Transmission Organization: Designs, Functions and Tariffs", U. S. Patent Filing (MIT case 9062), October, 14, 2000.