THE VISIBLE HAND IN ELECTRICITY: USING A POOL TO EXPAND CUSTOMER CHOICE OR THE ISO: "HOW NOT TO GET IT WRONG"

WILLIAM W. HOGAN

Restructuring ’97 Conference
Amelia Island, FL

April 3-4, 1997

Center for Business and Government
John F. Kennedy School of Government
Harvard University
Cambridge, Massachusetts 02138

The Visible Hand in Electricity:
Using a Pool to Expand Customer Choice
or
The ISO: "How Not to Get It Wrong"

William W. Hogan[1]

> "The question is," said Alice, "whether you *can* make words mean so many different things."
> "The question is," said Humpty Dumpty, "which is to be master -- that's all." --Lewis Carroll.

Introduction. The United States is wasting time and effort in a confused debate over the role of an Independent System Operator (ISO) in a pool-based system for introducing competition in the electric sector. Everyone wants to allow for bilateral transactions between generators, marketers and final customers. The pooling approach allows for customer and generator bids to be cleared through a coordinated spot market administered by the ISO. Despite much high rhetoric to the contrary, the two objectives are not necessarily mutually exclusive, or even in conflict. An attractive option is to embrace both, and give market participants the maximum set of choices. The real issue, much obscured by the labels, is the extent to which the market will be efficient, non-discriminatory and open to all. The underlying technical problem is the coordination of short-term network interactions and treatment of transmission congestion.

Visible Hand. Contrary to the presumption supporting the extreme version of the invisible hand model for electricity dispatch, the electric system with current technology requires the very

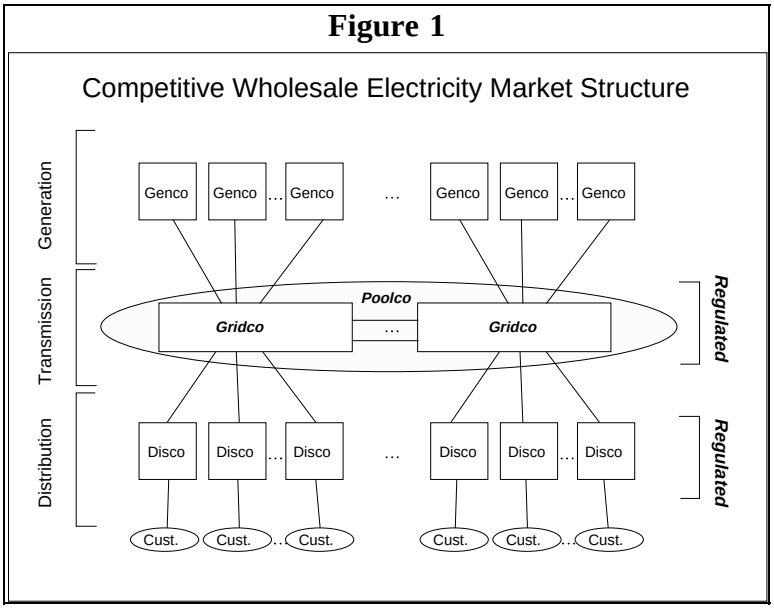
---

[1] William W. Hogan is the Thornton Bradshaw Professor of Public Policy and Management, John F. Kennedy School of Government, Harvard University. This presentation draws on work for the Harvard Electricity Policy Group and the Harvard-Japan Project on Energy and the Environment. Many individuals have provided helpful comments, especially Robert Arnold, John Ballance, Jeff Bastian, Ashley Brown, Judith Cardell, John Chandley, Doug Foy, Hamish Fraser, Geoff Gaebe, Don Garber, Scott Harvey, Stephen Henderson, Carrie Hitt, Jere Jacobi, Paul Joskow, Maria Ilic, Laurence Kirsch, Jim Kritikson, Dale Landgren, William Lindsay, Amory Lovins, Rana Mukerji, Richard O'Neill, Howard Pifer, Susan Pope, Grant Read, Bill Reed, Brendan Ring, Larry Ruff, Michael Schnitzer, Hoff Stauffer, Irwin Stelzer, Jan Strack, Steve Stoft, Richard Tabors, Julie Voeck, Carter Wall and Assef Zobian. The author is or has been a consultant on electric market reform and transmission issues for British National Grid Company, General Public Utilities Corporation (working with the "supporting" companies of the PJM proposal), Duquesne Light Company, Electricity Corporation of New Zealand, National Independent Energy Producers, New York Power Pool, New York Utilities Collaborative, Niagara Mohawk Corporation, San Diego Gas & Electric Corporation, Trans Power of New Zealand, and Wisconsin Electric Power Company. The views presented here are not necessarily attributable to any of those mentioned, and the remaining errors are solely the responsibility of the author.

visible hand of the system operator to manage the short-term power flows and associated operation of generating plants. Due to network interactions and the lack of well-defined property rights, complete reliance on independent bilateral transactions with only decentralized decisions is not possible. Property rights organized through coordinated trading could function quite well, but the basic coordination functions will always be there, somewhere.[2] A system coordinator (or pool by any other name) is required in support of any electricity market. This insight is available from experience with the operation of competitive electricity markets in other countries. For example, Norway is often mentioned as having a system with a high utilization of bilateral contracts that embody the commercial activities of the market, where over 85% of the power is covered by long-term contracts. However, despite the acknowledged importance of the contract and negotiated business agreements for exercising customer choice, Norway relies on a pool operation to handle the short-term arrangements that provide the underpinning of the competitive market: "The importance of effective Pooling arrangements in a competitive [Electric Supply Industry] cannot be overstated."[3]

The structure of this market could follow many different forms. For the sake of the present discussion, it is useful to describe the various elements and functions in terms of the industry organization suggested in Figure 1 for the wholesale market. However, as discussed below, it is the division of the functions that matters, not any particular ownership structure or the extension to the retail customer. The key point in Figure 1 is to distinguish the "Poolco" dispatch and coordination function as an essential facility with open access

Figure 1



[2] For a discussion of the use of transmission capacity reservations in support of a competitive market, see the Federal Energy Regulatory Commission, "Capacity Reservation Open Access Transmission Tariffs," Notice of Proposed Rulemaking, RM96-11-000, Washington DC, April 24, 1996. For a further analysis, see Scott M. Harvey, William W. Hogan and Susan L. Pope, "Transmission Capacity Reservations Implemented Through a Spot Market with Transmission Congestion Contract," Electricity Journal, November, 1996. For a useful analysis set in the context of Norway and Sweden, see Paul Dawson and Graham Shuttleworth, "Efficient Transmission Pricing in Norway and Sweden," A NERA Report for NVE (Norwegian Water Resources and Energy Administration), February 18, 1997.

[3] J. Moen, "Electric Utility Regulation, Structure and Competition. Experiences from the Norwegian Electric Supply Industry (ESI)," Norwegian Water Resources and Energy Administration, NVE, Oslo, April 1994, p. II-5.

requirements just as important as physical connection to the transmission wires as provided by "Gridco." This pool-based market provides many advantages that flow from the interaction of the various elements. In particular the pool-based system creates or builds on a few key ideas to exploit coordination for competition within a consistent structure that conforms to the particular operational and economic characteristics of the electricity system.

Transmission, Dispatch and Poolco. By now in the United States there is widespread understanding that a more competitive electricity market with customer choice and efficient, non-discriminatory access to the transmission system would be facilitated through the movement of the control function from the utilities to an Independent System Operator (ISO) to handle short-term coordination of the dispatch and associated power flows. The emphasis is on "independence" of the interests of any subset of the market participants. The required tools and procedures for the ISO are less well understood. However, with the prodding of the Federal Energy Regulatory Commission (FERC) and the further impetus from several evolving ISO proposals, slow progress is being made. For example, in filings with the FERC, a number of utilities and others have described the need for and outline of a new approach to transmission pricing and access that builds on principles of competitive markets adapted to the unavoidable requirement for short-term coordination.[4] This conceptual advance should be preserved and extended.[5]

An essential feature of efficient, non-discriminatory transmission is a set of prices that reflect the cost of congestion when the transmission system is constrained. These prices would differ by location, and everyone would pay for use of the congested transmission according to these locational differences. Separate features would deal with embedded cost recovery and long-term transmission contracts; these long-term elements are important but can be handled without affecting the short-term procedures of the ISO.

The FERC's own apt summary of the pool(co) proposal includes:[6]

..., the poolco would be an independent entity that would not own any (or

---

[4] The number of comments and proposals is too large to list each here. For the most succinct presentation, see "Comments of San Diego Gas and Electric Company, "Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities, Docket No. RM95-8-000; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, Docket No. RM94-7-00," Federal Energy Regulatory Commission, August 3, 1995, pp. 5-9. The December 1996 FERC filing of the PJM Supporting Companies and the January 1997 filing of the New York Power Pool carry these principles into detailed tariff proposals.

[5] W. Hogan, "Electricity Transmission Policy and Promoting Wholesale Competition," Initial Response to the Notice of Proposed Rulemaking Regarding Promoting Wholesale Competition Through Open-Access Non-Discriminatory Transmission Services by Public Utilities, Docket No. RM95-8-000, Federal Energy Regulatory Commission, August 7, 1995, pp. 36-44.

[6] Federal Energy Regulatory Commission, Inquiry Concerning Alternative Power Pooling Institutions Under the Federal Power Act, Docket No. RM94-20-000, October 26, 1994, p. 5-7.

> would own only a limited number of) facilities, but would control the operation of some or all generators, and all transmission facilities, in a region. The poolco would be open to all generators connected to the grid, who would automatically receive any transmission service needed to sell power into the regional pool. In effect, the poolco would be responsible for creating and maintaining a regional spot market for electricity.
>
> ... In effect, the poolco would become the market clearinghouse for the hourly energy market. Under the poolco concept, dispatch benefits are implicitly allocated among sellers and buyers by the spot trading at a market-clearing price. The poolco would have no further role in dividing or allocating benefits. Also the proposed poolco would have no role in long-term energy or capacity markets. Generators and distributors could enter into contracts outside the poolco.
>
> Under San Diego's poolco concept as currently proposed, spot prices would vary from one geographical location to another to reflect transmission constraints. This would allow the spot trading to be conducted at a price that reflects the real ability and limitations of the grid to move power from low-cost to high cost areas. The proposal includes opportunity cost pricing for grid congestion, as well as tradable capacity rights.

The attraction of the poolco proposal to public and private utilities, across the country and in other nations, stems in part from the gradual recognition that the poolco is not a radical proposal. Rather, poolco recognizes what exists today and what must happen under any system for a competitive electricity market.

This does not mean that the idea of an ISO coordinating a spot market is universally accepted or easily adopted. The opposition stems in part, as we shall see below, from the observation that this pool-based approach would make the market highly accessible and easy to use for even small players in the system. Many customers and generators could be largely passive participants. Although this might be attractive as a public policy, it would not serve the interests of those who would hope to profit themselves by selling services to help small players participate in the market. Hence there has arisen a concerted effort to build a wall between the ISO and the necessary coordination functions. The harder it is for the ISO to support the spot market, the greater will be the arbitrage profits available to the big inside players.

To see the debate in sharp relief, it is necessary to focus on a critical function of the ISO. After some initial confusion, the continuing participants in the analysis of the electricity market recognize that the characteristics of the electricity system require the continued existence of an independent system operator. The only issue is the scope of the system operator's functions. Balancing services stand at the center of the debate.

Balancing Services and the ISO. At a minimum, the system operator must coordinate the

actions of the market participants, to avoid violation of short-term system operating constraints, and provide balancing services that ensure both load following and backup for uncontracted demand. This coordination function exists today within the power pools or the utility control areas. Once it is clear that the coordination and balancing function must continue, three questions arise that define the role of the independent system operator and the connection to the poolco proposal.

The balancing functions require that the system operator have operational control over a minimum number of flexible generating plants and loads. The precise minimum number is difficult to define, with views ranging from many to few. However, it may not be necessary to define the number, depending on how we answer three remaining questions about the nature of the services provided by the system operator. For the flexible plants and loads, the balancing function is a dispatch function. The first issue is whether the system operator should dispatch the flexible plants to achieve the lowest possible cost under an economic dispatch:

Should the system operator be allowed to offer an economic dispatch service for some plants?

The alternative approach would be to define a set of administrative procedures and rules for system balancing that purposely ignore the information about the costs of running particular plants. There is no doubt that there are feasible options, such as minimizing the use of the transmission wires, that would preserve reliability and maintain system balance. However, the costs would be high. If we are to find an economic dispatch, then the argument is that the system operator should be able to do so better than anyone else. Although there are minor differences between textbooks in their respective definitions of natural monopoly, the common theme is that a single firm can provide the lowest total cost in serving a particular market. The economics -- the costs -- are essential, with the distinctive characteristic of a natural monopoly being not that there is no alternative to a monopoly, but rather that provision of supply through a monopoly is the lowest-cost solution. The arguments underlying the poolco proposals stand squarely behind the proposition that economic dispatch is a natural monopoly. It seems that the natural answer is that the operator should be able to consider costs and provide an economic dispatch for some plants and loads, at least those that are part of the flexible components which must exist at some minimum level.

Once the economic dispatch service is available for some plants, access rules must be established to determine who can participate. Hence, the second question about the role of the system operator is:

Should generators and customers be allowed to participate in the economic dispatch offered by the system operator?

At one end of the policy debate stands the view that the minimum number of flexible plants is a very small fraction of the total. The prediction may be that only the minimum number will participate, or implicit in the argument may be a view that participation in the economic

dispatch should be restricted to the smallest number of plants possible. From this perspective, there would be sharp restrictions on who could offer bids to the ISO, strict restrictions on the form the bids could take, and narrow limits on the volumes that could be traded through the coordination function of the ISO.

These limitations are essential for those who want to make it difficult to use the balancing and associated trading services that the ISO could provide so easily. However, the natural extension of open access and the principles of choice would suggest that participation should be voluntary. With only the caveat that a minimum number must be flexible, the principle should be that market participants can evaluate their own economic situation and make their own choice about participating in the operator's economic dispatch or finding similar services elsewhere in the market through bilateral transactions.

System control is a monopoly and therefore will be under regulation of some form. Its pricing rules are a matter for public oversight. If the operator does consider costs and choose an economic dispatch for the flexible plants, there is an issue in setting the prices that will apply to the associated power flows. And these same prices will play a central role in defining comparable transmission tariffs for those who do not participate in the economic dispatch. Hence, the third question about the role of the system operator is:

Should the system operator apply marginal cost prices for power provided through the dispatch?

The simplest conceptual approach would be to have an administrative price or penalty for the power obtained through the operator's economic dispatch. However, if set too low, there will be an incentive for participants to rely too much on the supply from the system operator, constituting a subsidy that the operator may not be able to support. Set too high, the administrative price becomes a penalty that provides incentives to avoid the economic dispatch and raise overall system costs. This would be attractive to large aggregators, but hardly seems like a good idea for the design of the market. The alternative of marginal cost pricing based on participant bids has an obvious appeal. Under an economic dispatch for the flexible plants and loads, it is a straightforward matter to determine the locational marginal costs of additional power. These marginal costs are also the prices that would apply in the case of a perfect competitive market at equilibrium. In addition, these locational marginal cost prices provide the consistent foundation for the design of a comparable transmission tariff for all uses of the transmission system.

The three questions are posed to isolate what is reasonably left to be decided under the system variants that might be different than the poolco model. And if the answers follow the recommendations here -- just say yes -- the system operator will provide an economic dispatch service that is open to anyone who wishes to participate. Pricing will apply marginal cost principles based on the voluntary bids of the participants. And these same prices would apply to all uses of the transmission grid under a comparable, open access transmission tariff. Bilateral contracts would be fully available to meet all other commercial requirements.

This discussion of the balancing role of the ISO focuses on the short run of the spot market. However, it is important to note that the real purpose is only secondarily to achieve the benefits of efficient use of the transmission system. The more important purpose of this pool-based approach is to approximate the right price incentives for rationing the use of the grid and signalling consistent long-run investment. The pool-based market provides the foundation for moving many of the command-and-control procedures of the past towards market-based solutions.

This issue of transmission usage pricing appears in the discussion of the interaction between the ISO and the market participants, with special emphasis on the treatment of "physical" bilateral transactions and dispatch of other transactions through a pool.[7] Bilateral transactions and a pool can co-exist, but the ability to provide efficient, non-discriminatory transmission depends critically on the tools provided to the ISO. At one extreme, regulators could be asked to apply handcuffs that would virtually preclude efficient use of the transmission system. Alternatively, a harness fashioned from different procedures could put the ISO to work in solving some of the most difficult problems that market participants and regulators face in simplifying and ensuring efficient, non-discriminatory use of the transmission grid.

Handcuff the ISO. The most restrictive approach would limit the ISO by foreclosing information on the willingness to pay or be paid to adjust either generation or load under the self-nominated schedules. If so, then comparable treatment of the pool would similarly preclude the ISO from receiving such bidding or economic dispatch information. In this case, the ISO would have no bidding information associated with the schedules. All nominations would be in the form of "quantity only" schedules: i.e., schedules of the form of '100 MW from A to B,' '150 MW from C to D,' etc. The ISO would have no information about the relative values of the schedules. The underlying theory of this approach relies on physical delivery of specific power from specific locations -- essentially the contract-path model of transmission -- and the ability to manage transmission constraints with a simple ranking system.

The contract-path model is a fiction that is not compatible with an efficient competitive market, as has been explained enough by now not to require repetition here. Furthermore, the notion that efficient management of the transmission grid can be found through comparing simple rankings of quantity transactions ignores the real complications of the transmission system. Transactions should not be reduced in a simple sequence of priorities: "If interchange must be reduced, interrupting certain interchange transactions may *worsen* the transmission overload."[8] Without information about the relative value of the transactions, provided through discretionary bids, the ISO would not have the essential information to determine efficient redispatch or

---

[7] Whether accounting for bilateral transactions is done through "physical" tracking or financial "contracts for differences" is a detail that matters little other than for jurisdictional distinctions between state and Federal authorities.

[8] Comments of the North American Electric Reliability Council, "Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities, Docket No. RM95-8-000," Federal Energy Regulatory Commission, August 7, 1995, pp. 20. (emphasis in original)

calculate the costs of congestion. The result would be an excessively conservative and inefficient use of the transmission system, complex battles over queues and priorities, and no market signals for system investment.

Harness the ISO. An alternative approach would harness the ISO to support the competitive market. The key is in how the ISO provides balancing services, adjusts for transmission constraints and charges for transmission usage. The ISO would buy from some and sell to others in the short-term market. The ISO would receive "schedules" that could include both quantity and bidding information. For the participants in the pool, these schedule-bids would be for loads or generation with maximum or minimum acceptable prices. For the self-nominations of bilateral transactions, the schedule-bids would be for transmission quantities with increment and decrement bids for both ends of the transaction. The responsibility of the ISO would be to integrate the schedules and the associated bids for deviations from the schedules to find the economic combination for all market participants. This range of schedule-bids would be more varied and flexible, giving everyone more choices.[9] For example, a partial list of the schedules (and bids) could include the following:

S1. '100 MW from A to B,'

S2. '50 MW from A to B, with decrements at A below 2 cents and at B above 3 cents,'

S3. '150 MW load at D, for a locational price less than 7 cents,'

S4. '150 MW generation at C, for a locational price greater than 3 cents,'

S5. '150 MW generation at D, for a locational price greater than 6 cents.'

The first two schedule-bids might have come from a self nomination for a bilateral transaction, with the latter three schedule-bids coming from the pool. Assuming that the strict retail-wheeling type schedule of 100 MW from A to B would be feasible at all, the ISO would find the best balance for the transmission system and the associated locational prices that arise from the cost of congestion. Suppose for sake of illustration that after considering these and many other schedules, the locational prices obtained as the marginal costs for each region were 3 cents in region A, 4 cents in C, and 5 cents in both regions B and D. Then the results and associated payments would be:

S1. Generation and Load of 100 MW. Pay 2 cents * 100 MW for transmission usage.

S2. Generation of 50 MW and Load of 0 MW. Pay 2 cents * 50 MW for transmission

[9] The debate includes issues of using bids that include start-up, minimum load and ramping constraints. Although important, these matters are technical details compared to the challenge of ensuring that everyone has free access to the services of the ISO.

usage; Receive 5 cents * 50 MW for the resale (through reduction in load) at B.

S3. Load of 150 MW. Pay 5 cents * 150 MW.

S4. Generation of 150 MW. Paid 4 cents * 150 MW.

S5. Generation of 0 MW. No Payment.

Note that self-nomination 'S2,' in effect, ends up voluntarily selling the 50 MW generated at A for 3 cents. If this same self-nomination were converted into two bids, one for generation at A at 2 cents and another for load at B for 3 cents, the result would have been the same, both for the self nomination and for everyone else. Likewise, if the pool bids in 'S3' and 'S4' were combined into the equivalent self nomination of '150 MW from C to D, with decrements at C below 3 cents and at D above 7 cents,' the results again would have been the same. Hence, both the bilateral self-nominations and the pool-type bids are treated in the same manner and charged the same usage costs for the same services. Furthermore, because the ISO has the information needed to determine the most efficient use of scarce network capacity, there is efficient, non-discriminatory use of the transmission grid.

What's the Beef? The flexible ISO, with everyone having the opportunity to bid for load and generation, is such an attractive idea that one might ask what argument could be left. The debate is heated and extended, however, for the simple reason that it would work too well. The argument against the ISO coordinating the spot market is presented in a variety of complaints that sound good on the surface but don't withstand even brief scrutiny. A sampling includes:

"Economic dispatch implemented by the independent system operator creates an inherent conflict of interest with an unavoidable bias in favor of transactions through the pool."

> Actually, it doesn't. The ISO is independent of the participants in the market and is responsible for determining an economic or least-cost dispatch based on the stated preferences of everyone in the interconnected system covered by the ISO's activities. The use of an economic dispatch with locational prices is precisely a means to ensure that both the spot-market bids and bilateral transactions are treated in the same way. Basing the payments for transmission opportunity costs on the locational price differences eliminates any bias in favor of *or against* the spot market.

"Locational marginal cost based prices would be too volatile. The market could not deal with the associated uncertainty."

> The marginal costs measure the impact on the system and, hence, the magnitude of the externalities. The more the costs change the more important it would be to recognize the impacts, get the prices right, and avoid cost shifting. For those who want to protect themselves against price changes, a combination of a power contract and a

transmission congestion contract can lock in the average delivered price of energy.

"Locational prices would be both hard to calculate and come from a black box. The electricity market cannot function without a simpler system."

The prices would be determined by the actual dispatch, which makes the problem simple. The computations are easy, and have been available for years in power pools; they just haven't been used. Calculating locational marginal costs for the actual dispatch is easier than the familiar and widely used split-savings methodology. Furthermore, since locational pricing is already done (almost in full) in Argentina, Chile, New Zealand, and Norway, there is a demonstration that the technical computation is straightforward. Once the method is explained, system operators always say the prices could be computed easily. This brings us to the issue of the perception and comprehension of the market participants. At the moment the majority of market participants would claim that the idea of using locational prices is too complicated. However, the view of the moment should not be all that concerns us. So far, every simple alternative proposed has turned out to be pretty complicated, once the implications of the full package unfolded to include the extensive regulatory rules needed to negate the incentives of incorrect prices. Furthermore, there is a way to implement and discuss locational pricing within a hub-and-spoke model that captures the major simplification that has been suggested.

"The Poolco model replaces voluntary market approaches with mandatory central planning."

The basic approach of bidding and least-cost dispatch relies on the discretionary bids of the participants. The only mandatory parts that are essential are that everyone must be given the option of expressing their dispatch preferences and the prices must be applied consistently to all participants. But anyone could provide a must-run bid or its equivalent, and refuse to participate in the dispatch. Those who did so would have to pay the opportunity costs of their choice, and could not impose their choice on others. Furthermore, the dispatch would cover only a short horizon, probably no more than a day ahead. This is hardly planning, and since everyone's preferences would be honored, at the market prices, the approach is more like a central exchange than central planning.

"The Poolco approach with market clearing locational prices creates market power for the big utilities."

The ISO provides open access to the grid at opportunity cost prices. This unbundles the system and eliminates vertical market power. Horizontal market power arises from concentration of ownership of generation plants. The auction mechanism in the bid and dispatch system does not create market power; a dominant firm would not need the auction to manipulate market prices. Furthermore, compared to charging locational marginal cost prices, all the alternatives involve some form of averaging, which would

both enhance and hide horizontal market power. Hence, locational marginal cost pricing would reduce market power relative to the alternatives and make the exercise of market power more transparent.

"The Poolco approach would preclude the development of a futures market by limiting the ability to buy and sell in a spot market."

A principal feature of a pool-based system is to simplify the task of buying and selling in a spot market. The only limitation on the ability of anyone to buy and sell would be in their own discretionary bid setting a reservation price. Hence, the pool based mechanism provides the most accessible spot market. Furthermore, the use of transmission congestion contracts would help reduce locational basis risk that could otherwise be a major problem for trading in futures. If prices are volatile enough, then the pool-based mechanism would simplify the operation of a futures market and complement the efficiencies that could be achieved through futures trading. Of course, there is the possibility that spot price volatility would be so low and spot transactions so easy that there would be no demand for futures trading. Although unlikely, this would be evidence of a happy condition, not a problem to be solved.

"Regulators could never understand or implement the rules. A more simple-minded solution is required."

The rules would not be that complicated, they simply would be different. We are now in the midst of a learning period, but as witnessed by the experience elsewhere, this not an insurmountable barrier. After all, the split-savings systems have existed for years, and these are actually more complicated than locational marginal cost pricing.

"Regulators would understand the rules too well and would be able to interfere with the market in pursuit of their own ends."

True, but this fact is not unique to locational marginal cost pricing, and the possibility of interference cannot be avoided. Since there must be a central coordinator, there must be some pricing rule. Any rule other than locational marginal cost pricing must include a degree of averaging, which would be arbitrary and provide an even greater opportunity to obscure the effects of interventions in the market.

And, finally, the most illogical of the arguments in favor of restricting access to the ISO:

"I don't want to be forced to trade through the ISO, so such trading should not be allowed."

Surprisingly, this logical fallacy seems hard to kill. The principle of voluntarism and discretionary bidding is at the core of the pool-based ISO proposal. Anyone who does not want to participate in the spot market coordinated by the ISO may choose to schedule their own transactions, subject only to the unavoidable requirement of

notifying the ISO of the schedules and paying any associated costs. However, there is no good reason that the option not to participate should be extended to a prohibition that prevents others from participating in the ISO coordinated spot market. No market participant should be required to participate in the economic dispatch offered by the ISO, but at the same time no market participant should be prevented from using this service as one of the many options that will expand customer choice.

Summary. Efficient pricing of transmission usage is an essential support of the competitive electricity market and widespread customer choice. To ensure non-discrimination, the system operator must be truly independent of individual market participants. To ensure efficiency, the ISO must have information about the relative value of alternative uses of the transmission grid. Transmission access, operation and pricing in a competitive electricity market with customer choice require a network-based approach that goes beyond traditional concepts of transmission management. In the face of transmission constraints, use of the system would include pricing to reflect congestion or redispatch costs. These short-term transmission prices would differ by location and would apply to all users of the system. The congestion prices would be obtained as a byproduct of the determination by the ISO of the constrained dispatch to reflect the least-cost method of meeting the constraints while balancing supply and demand. Seemingly innocuous rules limiting the flow of information between the ISO and the market participants could strike at the heart of efficient transmission access and pricing. Efficiency and non-discrimination can co-exist with both bilateral transactions and a pool, but only if the ISO is given the appropriate tools to harness rather than handcuff the management of transmission constraints.

The ISO: "How Not to Get It Wrong?"

"Just Say Yes."