XII Repsol YPF - Harvard Seminar on Energy Policy

"Recent Lessons on Liberalization and Regulation in the U.S."

Remarks by
William L. Massey, Commissioner
U.S. Federal Energy Regulatory Commission

Palma de Mallorca, Spain
July 6, 2001

I. Introduction

I am honored with the opportunity to address this important conference on energy market liberalization and regulation. In the United States, the discussion on moving to market solutions for energy is in terms of regulation versus deregulation. I must say that I find the term "liberalization" much more appropriate than deregulation. If the recent events in California have demonstrated anything, it is that regulators still have a significant role to play in the transition to markets as a way to discipline price and provide good service. Thus, I tend to think of the transition in terms of liberalization of regulatory oversight, not deregulation.

My agency, the Federal Energy Regulatory Commission, has jurisdiction over the rates, terms, and conditions of transmission service and wholesale sales of electricity. The recent California experience has brought home three important lessons for us that I would like to share with you today. First, we need to be more insistent on good market design. Second, regional grid operation and planning in the hands of independent Regional Transmission Organizations is essential to good market operation. And third, the Commission must sharpen its regulatory intervention tools and use them quickly and decisively when markets are dysfunctional. I will discuss these lessons in turn.

II. Market design lessons

We have learned that we must insist on a good market structure if we are to have reasonable prices. A well functioning wholesale market is also needed for a well functioning retail market. Over the last year in the U.S., we have become painfully aware of what works and what does not in terms of market structure and design.

A. Appropriate hedging

The California electricity market was defined by a state policy that promoted an over reliance on the volatile spot market. California state policy required suppliers to sell, and purchasers to buy, on the hourly markets. Yet, spot markets are almost by nature volatile. Imagine the chaos and high prices if the market for airline tickets was limited to purchasing your ticket at the gate as you board the plane. Substantial reliance on purchasing in advance, relying on long term contracts, and using other hedging instruments such as futures and forward contracts, are key to good market structure. Regulators must insist that this market design element is in place. Purchasers must have the opportunity to assemble a balanced portfolio of supply instruments.

B. Assurance of adequate generating capacity

Another element of good market structure is an *ex ante* assurance of adequate generating capacity, including a reserve margin requirement. The California market design did not call for any capacity obligations. Presumably, it was expected that the invisible hand of the market would ensure that capacity would show up when needed. Yet, given that electricity cannot be stored, relying solely on market signals for capacity could mean significant fluctuations of price and capacity availability as supply and demand adjust. The fundamental role that electricity plays in the social, economic, health and public safety fabric of society, however, argues that substantial fluctuations in availability and price should be minimized. One way of guarding against these fluctuations is to place an *ex ante* reserve requirement on the load serving entities that they could meet however they see fit. This is the current practice in the Pennsylvania-New Jersey-Maryland Interconnection ISO market, PJM, and, given the abundance of generation capacity additions planned there, suppliers seem to have confidence in that market design.

In the U.S., each of the 50 states is responsible for the environmental siting approval of new generation. States must site necessary new generation in a timely manner, so that supply and demand stay in reasonable equilibrium.

C. Uniform interconnection standards

Market players must be able to respond to price signals, and increasing supply is a critical response that must be made as easy as possible. For that, we need uniform standards and processes across markets for connecting new generators to the grid. New generators should make their location decisions based on market economics, not on which regions have the easiest interconnection process. In the U.S., because of a

patchwork of interconnection processes and standards, generators wanting interconnection face unnecessary obstacles. This problem must be solved, and the process must be sharply streamlined.

D. Congestion management

I believe recent events have also driven home both the reliability and price signal value of a good market based congestion management regime. While the Commission does not require a specific congestion management method, I find great value in the locational marginal pricing, or LMP, model. By recognizing the incremental cost of generating power at various points on the grid, LMP sends the correct price signals needed for optimal use of existing generation and transmission resources and also encourages efficient siting of future generation and transmission expansion. We have a real world success story of LMP implementation in the PJM ISO. I've heard very few complaints about the PJM market, and there are many new generation projects queued up to participate in that market. In my book, that's a strong indication of success. The PJM congestion methodology works. My agency should aggressively promote this methodology across the U.S.

E. Demand responsiveness

So far, all of the market design elements I've mentioned have focused on the supply side of the market. But markets also need demand responsiveness to price. This is a standard means of moderating prices in well-functioning markets, but it is generally absent from electricity markets. When prices for other commodities get high, consumers can usually respond by buying less, thereby acting as a brake on price run-ups. If the price, say, for a head of cabbage spikes to $50, consumers simply do not purchase it. Without the ability of end use electricity consumers to respond to price, there is virtually no limit on the price suppliers can fetch in shortage conditions. Consumers see the exorbitant bill only after the fact. This does not make for a well functioning market.

Instilling demand responsiveness into electricity markets requires two conditions: first, significant numbers of customers must be able to see prices *before* they consume, and second, they must have reasonable means to adjust consumption in response to those prices. Accomplishing both of these on a widespread scale will require technical innovation. A modest demand response, however, can make a significant difference in moderating price where the supply curve is steep.

And once there is a significant degree of demand responsiveness in a market, customers should be allowed to bid demand reductions, or so called "negawatts," into

organized markets along with the megawatts of the traditional suppliers. The principle here is that a one MW reduction in demand is as valuable as a one MW increase in supply, and should be compensated accordingly. This direct bidding would be the most efficient way to include the demand side in the market. But however it is accomplished, the important point is that market design simply cannot ignore the demand half of the market without suffering painful consequences, especially during shortage periods. There was virtually no demand responsiveness in the California market. Customers had no effective means to reduce demand when prices soared.

F. Ex ante price mitigation

California has shown us that electricity markets can be very volatile and prices can increase by orders of magnitude in the blink of an eye. There must be some mechanism in place to help prevent, or at least mitigate, such a price run up, especially those due to market power exercises. The most common type of mechanism in some U.S. markets is for bids to be mitigated to some pre-defined reference price if certain conditions exist. Those conditions can be structural, such as locational market power, or based on percentage increases in bids compared to a reference price, which is often based upon some average of past bids. But it is critical that some type of circuit breaker be in place. Such a device protects consumers best and avoids the unwieldy processes needed for after the fact price mitigation and refunds. The Commission recently approved such a device for the New York ISO.

III. The Importance of Regional Transmission Organizations

There is one additional and absolutely critical element needed for well functioning electricity markets, and that is a reliable, efficiently managed transmission grid to which all players can gain access on a fair basis. The grid is the highway over which all electricity commerce must travel. Yet in the U.S., problems in the way the grid is organized and managed are presenting major impediments to good market performance.

The U.S. industry remains mostly vertically integrated; that is, the utilities that own the transmission grid also have merchant interests in generation facilities to protect. Those utilities thus have a conflict of interest in providing access to the grid and there are constant allegations of market power and discriminatory conduct against those grid operators. A sharp separation of transmission from generation is necessary.

A second problem is the fractured nature of grid management. The operation and planning of the U.S. grid is splintered among well over a hundred operators. Yet, the

grid is now being used to support broad regional markets and must accommodate an increase in the number and complexity of transactions. Reliability and efficiency suffer due to this fractured grid management, which also keeps wholesale power markets artificially small because traders must pay multiple transmission rates to move power over systems owned by separate corporations. These multiple rates make the power too expensive and deals become uneconomic.

The current grid management in the U.S. is not conducive to an adequate reliable supply of energy or to reasonable consumer prices. The FERC's strategy for addressing these grid inadequacies is Regional Transmission Organizations or RTOs. The Commission's goal is to have a functioning RTO in every region of the U.S. by December 15 of this year.

An RTO is a grid manager for a large geographic region, operated independently of merchant generation interests, responsible for short term reliability, regional planning and market monitoring. RTOs are absolutely essential for the smooth functioning of electricity markets. RTOs will eliminate the conflicting incentives vertically integrated firms now have in providing access. RTOs will streamline interconnection standards and help get new generation into the market. And RTOs will ensure access to regional power markets, improve transmission pricing, regional planning, and congestion management, and will produce consistent market rules across a region. Resources will trade into the market that is most favorable to them. Trade should be based on true economics, not the idiosyncracies of differing market rules across the region.

One of the most critical RTO issues is scope and configuration. To realize their many potential benefits, RTOs must be truly regional in scope – large and well shaped. Markets are regional in scope. This has been well demonstrated over the last year as prices over the entire eleven state Western Interconnection rose and fell with events in California.

Unfortunately, the voluntary RTO proposals made in the U.S. have been off the mark. [See slide.] While the proposal for RTO West is an excellent start, the remaining proposals are far too small in scope. Although these organizations promise to smooth the market and operational seams between them in an effort to expand the markets, the fact remains that boundaries among RTOs are an unnecessary bump in the trading road. Thus, the larger the RTO the better.

I would adopt as a target a maximum of six RTOs for the United States. [See slide.] This set of possible consolidated RTOs better represents trading realities than what has been proposed by the transmission owners. Better trading, and the improved

means of planning and access, will greatly help the United States meet its current energy challenges successfully. But the FERC must take bold and decisive action soon if we are to realize the full RTO potential. We must insist upon well designed RTOs.

There is one additional challenge to ensuring the grid facilities needed to support efficient and reliable electricity markets in the U.S., and that is transferring the authority to site new transmission lines to the federal level. Siting authority is now splintered among many state and local authorities. An adequate transmission grid is essential to supporting the regional, interstate electricity markets, yet needed new facilities are often blocked or delayed due to parochial local interests. The U.S. Congress must pass legislation that moves transmission siting authority to the federal level. This change would make it much more likely that the transmission facilities necessary for large interstate power markets are actually built.

IV. Regulatory intervention

Even with our best efforts to put in place well structured electricity markets, there may be times when those markets fail to do their job. When markets fail, regulators must be aggressive in stepping in to ensure that market flaws are corrected and that consumers see reasonable prices. After all, the whole point of liberalization is to benefit electricity consumers.

The task of ensuring reasonable prices must be addressed far differently in liberalized markets than under the old regime. It is much harder now. The basic nature of our regulatory task is quickly moving from reviewing cost-based prices charged by individual sellers to ensuring good performance by markets. Our focus is shifting, and our analytical tools must track this new responsibility. Our tools must also account for the unique complexities of electricity markets. Supply and demand must be balanced simultaneously, market conditions vary significantly over relatively short time intervals, and some aspects of supply can come only from generators with certain technical characteristics.

Market performance is heavily affected by these characteristics and must be measured using a sophisticated analysis. While we surely cannot expect electricity markets to attain the ideal of perfect competition, I believe that the concept of workable competition might prove useful to market analysis. Workable competition has been defined as competition that leads to a reasonable or socially acceptable performance in the circumstances of a particular industry. Thus, it is a pragmatic standard that takes into account the unique conditions of an industry. Let me suggest the kinds of things that might be appropriate to consider in deciding whether a market is workably competitive.

First, I would look at supplier concentration, but this must be defined accurately by considering energy prices, transmission capacity and transmission prices, all factors that can affect the scope of trade. We must also take account of the time dimension of supply and demand. By that, I mean analyzing horizontal slices of the supply curve at various load levels – such as peak, super peak, off peak and shoulder periods – to measure supplier concentration. Even more sophisticated approaches may be needed for assessing concentration in today's electricity markets.

While concentration is a very useful statistic, I would not limit market power analysis merely to suppler concentration issues. We should also determine if market rules create any perverse incentives or obstacles to competitive and efficient behavior by market participants. We must look to see if the rules in the market promote the elements of a well functioning market I've discussed earlier.

Computer simulation modeling is becoming essential to determining if markets are workably competitive. Such models can take into account the interaction of market structure, market rules and other market conditions such as demand responsiveness, to estimate supplier and customer behavior and the result on consumer prices.

In addition to sophisticated market analyses, regulators need to develop clear standards of acceptable market behavior. We cannot expect players to follow rules that have not been posted. We must also ensure that markets are adequately monitored, and that the monitoring and policing task is equipped with the right data, and with sufficient manpower, to do the job. And when market monitors in California and elsewhere tell us that market power is being exercised, we must not ignore their pleas for interconnection.

Indeed, the Commission must aggressively intervene when the markets are not producing reasonable prices. That is the law of the land in the U.S. New electricity markets need a lot of attention. They are just emerging from almost a century of monopoly regulation. Moreover, the unique characteristics of electricity make the markets exceptionally vulnerable to market power and to the potential for breathtaking price run-ups when supply is short. Billions of consumer dollars are at stake, so we must conduct tough-minded investigations and correct market flaws. We have to be willing to impose a time out on markets that are not functioning. All of the world's most sophisticated commodity markets have time outs to prohibit market meltdowns.

V. Conclusion

The past year in the California electricity market has indeed been painfully instructive. We must heed the many lessons learned and apply them going forward.

Electricity consumers will insist that market liberalization benefits them. Without such benefits, there is simply no point to it.

Thank you, and I look forward to the discussion.