

**Twentieth Plenary Session
Harvard Electricity Policy Group
Newport Marriott
Newport, Rhode Island
September 23-24, 1999**

Rapporteur's Summary^{*}

Session One: New Restructuring Legislation in the States: What Is It? How Will It Affect, Or Be Affected By, Federal Legislation?

Two large states, Ohio and Texas, have now joined the list of those who have enacted electricity restructuring legislation. Some parts of each state's new legislation reflect actions taken by other states, but other aspects are unique. How did these enactments evolve? Who were the key players and how did they position themselves? How did the ultimate legislation deviate from what was originally proposed? What led to the key changes? Both states acted against the backdrop of potential federal legislation. How did that prospect, if at all, affect the actions of the states? How will these two state enactments, plus those of their predecessor states, impact the thinking of Congress and the Clinton Administration? Will they make federal legislation less likely? How will they, to the extent they do, influence the thinking of federal policy makers?

Speaker One

The Texas restructuring law shifts the burden of risk from consumers to utilities; saves residential consumers money; gives people a choice; and helps to clean up the environment.

Beginning September 1, 1999, rates will be frozen for all customer classes served by IOUs. The start date for retail choice is January 1, 2002, although the PUC can delay competition in parts of the state in which market conditions do not meet

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certain criteria. Affiliate rates will be reduced at least six percent for residential and small commercial customers. Electricity service will automatically be provided by the affiliated retail electric provider of the former utility at a six percent discount off of rates charged directly before competition. This is known as the price to beat. Customers can shop for better rates and services from competing providers.

The price to beat includes the price of energy and the cost of delivery. The cost of delivery includes distribution services, transmission services, any competitive transition charges and a systems benefits charge used to finance low-income assistance, customer education and school funding loss programs. The price to beat will be available for five years, and the affiliated electric provider cannot charge a price that is higher or lower in the residential/small commercial market for either three years or until the time when 40 percent of the respective market is served by competitors.

The legislation includes numerous provisions to protect against market power. Ownership or control of more than 20 percent of generation capacity is prohibited. There is a strong affiliate code of conduct. There are numerous requirements to ensure system reliability, a strong consumer education program, and a low-income program. Consumer education is critical, and a low-income program can be helpful for bringing on board parties that are suspicious of utilities.

We need to have much better consumer education materials in terms of how to shop, when to shop. We need better labeling of electrons, green and black.

In dealing with the issue of stranded cost recovery, the threshold question is not whether to securitize, but whether to allow stranded cost recovery at all. You have to look at the consumers' interest first. The Texas law provides that a utility may recover 100 percent of the difference between the market value and the regulatory book value of power generation assets presently being recovered in regulated rates. The PUC will use market-based methods to determine stranded cost recovery for non-nuclear assets, and an administrative method for nuclear.

As for environmental protections, electric providers are required to have an additional combined 2000 MW of renewable capacity statewide by January, 2009. There is an emissions cap for grandfathered units, and statewide reductions required by May, 2003 of 50 percent NOx and 25 percent SO2. The costs of retrofitting some older plants are allowed to be recouped as stranded costs. There is an energy efficiency program, and a requirement that 50 percent of new generating capacity be fueled by natural gas.

So, what is my advice to other state legislators working on electricity restructuring?

- Visit other states that have done it, and learn from their experience.
- Start early; you won't be able to

wrap it up in one legislative session. Bills get a good or bad reputation, and need to percolate.

- Get both Houses involved. In our case, an interim committee studied the issues. A bill has more credibility when it is supported by members of different parties.
- Put down an agenda. Trust is important; this is not the place to get back at someone you don't like, e.g., utilities.

Question: During the period in which utilities can't compete, is the same true for affiliates?

Answer: Yes, this is an idea we got from Pennsylvania, and which was hotly contested.

Speaker Two

I was very involved in the Ohio legislation, which came about after years and years of incredibly contentious debate. At first, and for a long time, it was basically a legislative endeavor; the legislature tried to set all the parameters and rules. But very few legislators truly understand all of this. The debate went on, and went nowhere. These types of bills are easy to kill because they're very complex. I tried to pull the parties together prior to the end of the legislative session; with Ohio's new term limits policy, we would have been faced with losing one-third of the legislators and starting all over again.

Getting people together was incredibly difficult. There were good sponsors, one from the House and one from the

Senate. One thought that what was most appropriate was a real period of shopping and education, that it was more important to acclimate the consumers to the idea of shopping and choosing than it was to get to competition quickly. The other wanted competition more quickly. So there was an obvious conflict.

The law will take effect on January 1, 2001. As Texas did, in Ohio, we mandated an immediate rate reduction, of five percent. I felt uncomfortable with this; if we are trying to reduce competition, why reduce rates five percent, which has the effect of lowering rates as the competitive market might do? Transition plans will be filed by each utility.

One of my main issues is stranded costs. I have trouble thinking of them as costs; I prefer to think in terms of stranded investments. The bill contains certain criteria by which we identify these transition costs. The main one is that they are not recoverable in a competitive market. Originally, the bill never contemplated what would happen if, in the course of a transition period, the power plant was sold. But as time went by, legislators did understand that if they sell a plant, they make a big profit, and since the ratepayers pay for it, they should get the money. This tended to work its way into the bill. Every company will evaluate its power plants, and they will be netted book value versus market value, which translates into a portfolio of power plants. At the end of the day, you have a company that is entitled to transition

costs if in fact market value exceeds book, or not if book exceeds the costs.

The other issue was regulatory assets. A covenant was established many years ago between government commissions and companies, where there were certain unavoidable costs or investments that became regulatory assets, and there is a provision for recovery of these assets. That is a little bit different from the recovery of stranded costs. And that leads me to the transition period, because we began to realize that if we really want to get competition, we don't want to screw around for seven, eight, nine years to give companies the opportunity to recover certain stranded assets. In fact, in many cases, some of these companies won't have any. But they will have regulatory assets.

So we decided to give them up to five years to recover stranded costs associated with generation, and up to 10 years to recover regulatory assets. That doesn't mean they would recover all regulatory assets; it means that if a regulatory asset was on the books and amortized for 30 years, then they could get 10 of that 30 years. In other words, we would begin with the amortization schedule as it is today. The market development period could terminate early by a finding of the Commission that there is competition.

Well, how do you measure competition? In some cases you can't, because prices in some parts of Ohio are so low that it would be virtually impossible to determine if there is

much competition. But upon a determination of competition, the shopping period would be over and competition for each entity could exist. Ohio is a little unusual; it is a bifurcated state with high costs in the north and low costs in the south.

In addition to getting to the competitive market, people need to be acclimated to the idea of choosing alternate suppliers of electricity. We believe that the shopping credit should be tied to the market price of electricity. It is the one that makes the most sense, because the market price of electricity varies. We proposed that this be done by an index to the price of electricity, and perhaps change every quarter. Initially, the shopping credit would be the market price. On the other hand, we are mandated by the bill to reduce at least 20 percent of the load shopping within two years of the bill. We propose to do that by using an adder. So you take the shopping credit, which would otherwise be the market price, add so many mills, and you induce people to shop. The CTC falls as the shopping credit rises.

In some situations, there may be no CTC; if you have a company where the book value is well below the market value of the power plant, there would be no transition costs. This leads to the idea that companies have to figure out how to get some value from their power plants. In some cases, there is a negative transition cost, or transition benefits. In those cases, what do we do? I have no answer to that at this point, because again, it tends to impose upon the covenant that created those

regulatory assets.

Finally, we are evaluating transition plans that the companies would be filing. There will be backup with cash flow analysis; ultimately a third party will be doing this. We don't want to put anybody out of business. But we also know that the regulatory books look a lot different, and accounting books look a lot different, from cash flow.

Speaker Three

In Texas, there has been lots of substance. In D.C., there has been much less substance and lots of gridlock. The legislative issues involved in electricity restructuring are the most complicated ever for one package. Also, the current Congress is the most partisan ever. The issues do cross party lines, though—for example, public power tax issues and low- versus high-cost states.

There are 30 separate bills. Only two are viewed as real vehicles—the Administration bill and the Barton bill. On the Republican side, there is little agreement on what they want in a bill. On the Democratic side, there is little consultation with the majority. The Senate is dominated by Western, rural members. They have less sense of urgency, and are leery of environmental riders.

What are the issues? The main issues:

- Should Congress legislate a date certain for states?
- Should it be prescriptive?
- Should states with legislation be

grandfathered? (The Administration bill contains a flexible mandate.)

- Stranded costs—should Congress mandate their recovery or encourage PUCs to act responsibly?

Secondary issues:

- Should legislation increase or codify FERC's authority under Order 888 regarding transmission?
- Should legislation include a requirement to join an RTO? (This would give FERC more direct authority in mandating RTOs.)
- Should state authority on the wires side be pre-empted? (This has been given impetus by the Eighth Circuit Court of Appeals decision; FERC has to decide whether to appeal to the Supreme Court.)
- FERC jurisdiction re: mergers and market power. (One proposal would move authority to deal with market power to the Federal Trade Commission.)
- Reliability; the FERC/NERC relationship.
- PUHCA reform. (Most agree on this, but it is hard to get through as a stand-alone issue because it is leverage for trading on other issues.)
- PURPA reform. (Same—seen more as a trading issue.)
- Public power tax benefits. (General consensus: Wouldn't let them use tax benefits for generation, but would for transmission and distribution since they are still regulated. Public power could kill legislation if it doesn't meet their requirements.)

- TVA: Should it be subject to FERC jurisdiction, to anti-trust laws? Should it be allowed to sell outside the fence?
- Public benefit trust: a vehicle to create a non-bypassable wires charge to fund energy conservation and efficiency programs.
- Renewable portfolio standards. (The Administration bill has a hard mandate; the Barton bill has incentives.)
- Emissions: Use a restructuring law to require older plants to meet standards? Impose Nox/SO2 caps? Use new mechanisms for market trading?
- Consumer protections—what to include? (Need better consumer education and labeling. FTC be authorized to enforce minimum trading practices?)
- Aggregation

We probably won't see legislation this session. Congressional inaction may be a license for FERC (and the states) to push the process ahead. Congress is clearly trying to catch up with the marketplace, rather than vice versa.

Discussion

Question: There has been a lack of penetration in the California mass market by competitive retailers. What would the conditions in your states look like if they met your definition of success for restructuring?

Response: In Texas, we would expect utilities to lose 40 percent of their business before we would free them up. And there are some inducements

for them to do that. If they don't lose the 40 percent, there is a fee or an assessment for each customer they retain. If, three or four years from now, 90 percent of the business is with the incumbent utility, I won't feel that we've been successful.

Response: In some parts of Ohio, it won't happen—because the price of the incumbent, or its affiliate, may simply be lower than that which is obtainable elsewhere. So if we do see in three or four years that only five percent have switched, that doesn't tell me necessarily there hasn't been competition. It simply says it can't be beat. In parts of Ohio, that will be the case. In other cases the legislation sets a threshold of 20 percent of customer class load. And we do that by giving consumers an incentive via the shopping credit.

Question: I disagree with the argument that if you don't have a lot of people switching, that you don't have competition and it's failed. I would endorse the argument that as long as the entry potential is there and people choose not to switch, then that's not a problem, particularly if the reason they're switching is because the price is low. But you could argue that the subsidies, the adders, the 40 percent threshold, the penalties and so forth make sense as a transition mechanism. But commonly there would be a termination of this transition period. Once the 40 percent threshold is pierced, is the market open for people to do whatever they want? And if they fall back to 10 percent, do you just live with that? In other words, is this really

a temporary thing? Or are we building in all kinds of adders that are going to be there for a long time?

Response: In Ohio, the longest period will be five years. And we don't expect most companies to have a market development period that lasts that long. Again, if there is a finding by the Commission that either competition exists or there is a certain percentage of switching, the market development period for that customer class for that utility would end. The role of the Commission after these market development periods is to make sure that yes, the affiliate maintains 95 percent of its load because of its low cost and nature. And we have to make sure there are no barriers to entry and that the market is free to operate. But if you can't beat the incumbent, I don't know what more you can do. Given those constraints, I think there will be some findings that the market is competitive and they will be free of their market development period.

Response: I think that at some point it's irreversible. If you want to contend that a company could come back from having lost 40 percent to regain most of that, I suppose that could happen. But that's why the legislature meets every two years and why you have a PUC. I emphasize that the 40 percent in Texas is at the low end. The high end users, I think, can take care of themselves. As I look at the HMO and telephone industries, I don't see anybody going from 100 percent down to 50-60, then back up to 90. But I'll deal with that when it occurs.

Response: There are arguments being made that the Feds ought to mandate some form of competitive yardstick for purposes of determining whether there is retail competition. The desire to put in place special subsidies on an interim basis to encourage market entry is somewhat akin to what we did in 1978 with PURPA. Perhaps the best thing Congress can do is simply remove the barriers to entry and get out of the way.

Comment: I wonder if the complexity of the issues is being used as an excuse for inaction. The Clean Air Act in 1990 was much more complex intellectually and even politically, and the 1978 EPCRA was more complex on both scores. I would argue that it is getting easier for Congress, not harder, to act now since state mandates are off the table.

Response: I was referring to the political complexity, not the substantive complexity, of the bill. I think if you strip away some of the more contested provisions, like public power, the difficult ones will be the environmental ones. I think that the Vice President feels strongly that he needs that particular constituency on board and will try to insist from the administration point of view that any bill the president will sign must have those environmental protection measures. This could be difficult because there are some hard lines drawn in the sand about minimum portfolio requirements and emissions.

Question: We have spent a lot of time

on vertical market power. But I am concerned that we are not really dealing with the horizontal market power issue or even grappling with who deals with that issue. Is it a federal or state issue? There is a parallel with the airlines. I can fly to Chicago Midway for \$49, but to Minneapolis it's \$1,000. There is no vertical market power, Northwest doesn't own the air traffic controllers, and the airport is seemingly independent. But there clearly is market power in setting the price.

Response: Surprisingly, a number of states have taken on this issue directly. On the retail level, a good illustration is Nevada. As part of the merger of Sierra Pacific Power and Nevada Power, the companies decided they wanted to divest generation and get out of the merchant side of the business. Selling all the generation in a single portfolio to a single buyer would have maximized the value, from the perspective of the investment bankers. But the state took the perspective that then you have simply recreated the monopoly in the hands of a new owner, with no potential for a competitive market. So the utility's generation portfolio was broken into four or five separate packets and auctioned off separately to independent owners. On the wholesale level, in a larger regional context, the high level of divestiture occurring is doing a lot of what FERC otherwise would have had to do in terms of mandating divestiture and mergers. The Administration bill would give FERC the ability for the first time of its own volition to take on the issue of

existing market power which FERC has explicitly said at this point they don't feel they have the legal authority to deal with outside of a conditioning ability in a merger deal or market power rate situation. And the states have adequate authority to condition their transactions, whether it be restructuring or otherwise, to get the level of ownership down. A prescriptive, single federal solution is probably not the best way of getting it done because the trading value of divestiture is a very important tool for state regulators. States can condition other actions that utilities want to participate in in the new market based on taking certain actions.

Comment: A concern expressed in the Congressional hearings on market power is of a reaggregation of utility horizontal market power—but in the form of the unregulated merchant generators who are acquiring the utility plants.

Response: We said no entity will own or control more than 20 percent of the generating capacity within ERCOT.

Response: There is a tendency to deal with rather simplistic measures of ownership of megawatts per se, which I think misses the point. The real market power concern, particularly in this transitional market phase, is control over generation at certain segments in the supply curve and the ability basically to control generation that is needed for certain ancillary services or for certain types of services in the deregulated marketplace. That is where we have to develop better

tools for measuring market power in micro rather than macro situations.

Question: How did you disburse stranded benefits? The fear in our state was that the PUC, which was actually not prescribed to do anything except make the decision one way or the other, would write the check back to the ratepayers. Was this dealt with in your restructuring?

Response: No, not explicitly, although the regulatory assets are considered a transition cost. I agree that this will be very contentious. It will be something that we will take up in our own proceedings. And it will probably lead to a range of solutions.

Response: It was in our bill for a while to recoup the stranded benefits, but it fell out because of political considerations.

Question: You said that you saw conflicting goals between inducing shopping and getting quickly to competition. And there is the question of how you measure whether you have competition: Is it the number of customers who have switched or the number of competitors? In Massachusetts, there is not a lot of switching or a lot of competitors, except in very limited areas. But I wonder if we are looking at a textbook definition of what is required for competition. Can we conclude that we might have competition, even without a lot of competitors?

Response: To me, it's a function of price. There will be companies whose

unbundled generation rate could conceivably be below market, what we might ultimately decide is market. There is by law a constraint that says the shopping credit cannot exceed the unbundled generation rate. So we can keep adding to try to induce shopping. But that rate cannot exceed the unbundled generation rate. Why should the utility pay somebody to shop? So if you don't have significant switching, and let it ride, then reach the end of the transition period, that's it.

Question: What about factors other than price, like inertia?

Response: It has been said that the industrials, the big boys will take care of themselves. They already are. But for the residential consumer, a lot has to be said for inertia and a lot has to be said for name recognition. Even with separate affiliates and corporate separation, people are going to know. And there has to be a significant price difference. Ohio has set aside \$33 million for advertising, mass consumer education. But let's face it, this has not been driven by residential consumers.

Question: What about unbundling metering and customer care functions in the retail market? What do competitors have to do?

Response: There will be considerable unbundling with a high degree of scrutiny. Unbundling is a significant portion of all of this. It will be highly litigated, and the marketers will be looking for headroom.

Question: Did the amount or lack of education in California contribute to the failure so far of opening up that market to competition?

Response: No, I think it's a function of price. If there's nothing to be gained, why would I want to change and go through the hassle? I think it's a function purely of price, and I'll be curious to see what happens in that market when their CTC gets resolved.

Comment: I just want to reinforce that there really is a possibility of doing something on federal legislation. After four years of work, Congress is within shouting distance of resolving many of the issues. On reliability, the commission at DOE and subsequently NERC have essentially described how that problem needs to be solved. The public benefits trust and renewable portfolio standard will be resolved by putting them under a clear cost cap, keeping them out of the federal treasury, and making sure that those funds are going back to match deserving efforts at the state and local level. And the emissions issue will be resolved because the industry itself wants a clear Congressional trajectory as an alternative to piecemeal regulation. There are the ingredients of a successful outcome. And the driver for it, the reason to want to vote on it, is the reliability issue. Congress has been clearly told that if it doesn't act to deal with obsolete reliability assurance institutions, the entire grid is at unacceptable risk. And then we all can hope that the rest of the elements of the package will come together.

Comment: I have a few more comments on competition. The entry issue is very important. Recently FERC has dealt with a bunch of interconnection rules. And so you get ISO-approved governance interconnection rules that look pretty squirrely, in not just one but in a couple of different areas. Ancillary services could be fixed by redesigning markets, making them more robust along the lines of the power market.

Comment: In terms of the market power problem, there should be more discussion of aggregation. When you use your hotel phone, the purchaser or the decisionmaker is separate from the person who actually pays for it. This hotel decides who your long distance carrier is going to be. And you find a lot of disparities there. Most long-distance companies make money on prisons because they make deals with prisons and then the prisoners make collect calls. They're paying two bucks a minute for their phone calls. The telephone companies make huge hidden profits on that, and so do the aggregators, off the backs of the poor. These problems are real and in some ways more real than slamming and cramming.

Response: This hotel decides who your default supplier will be, but if you dial five digits you have your choice of any supplier.

Response: Analogies between electric and telephony are so remote. Telecommunications is so technology-driven it's unbelievable, and we have no choice. It's this freight train rolling

down the track and we've got to get out of the way.

Comment: While I agree that price is the most important factor in switching, there are other factors that customers think about. In Pennsylvania there has been success in the green market where price parity products are offered. So customers are not necessarily seeing savings, but they are switching.

Question: Regarding adders to the shopping credit, are you thinking about the generation credit in terms of a retail generation credit or a wholesale credit? I think that if regulators and legislators think about the shopping credit as a wholesale passthrough price, that's when you need these subsidies. If it's actually a retail price that is reflected in the shopping credit, then subsidies and adders aren't needed and shouldn't be thought of in that way, because what the customer is getting is a retail product at the shopping credit level for generation.

Response: Texas has the price to beat mechanism, and I think it will be easy for a competitor to get below that. If you don't have enough headroom, competitors won't come in.

Question: Do you impose a spot market?

Response: In Texas, we looked at that and decided not to do that. I think it's happening already. There is a vigorous spot market without us doing anything at all. A couple of the power exchanges have said they are coming

to Texas.

Response: Ohio is not far enough along yet to be in the position to address that. We will identify a market price but it could be an index. There are enough transactions right now, for example, on the forward market that we routinely contract on indices built around the inter synergy index. They are bilateral transactions, but they are a sufficient number and sufficiently frequently updated that it's becoming a proxy for a spot market.

Afternoon Session: Information Disclosure and Support of Competitive Electricity Markets

It has been a traditional part of regulating monopolies that, with few, specifically enumerated exceptions, the terms and conditions of all transactions are in the public domain. Almost all information has been assumed to be public information. Should competition change that assumption? What degree of transparency in market information is required for the evolution and maintenance of efficient markets? Does secrecy regarding transactions enhance or detract from the efficiency of markets? Does disclosure of transaction information increase the likelihood of collusion, or does it make collusion more evident? What does the likelihood of disclosure do to the negotiating positions and strategies of buyers and sellers in the markets? Does the focus of the debate over transparency in electricity markets overlook possibly profound effects on the competitive position of a buyer in its own market (e.g. steel, aluminum, chemical)? To what extent should concerns over other markets drive policy in the electricity market? What lessons, if any, can be derived from the treatment of fuel contracts in the heretofore monopoly electric markets? What other impacts does disclosure or lack of same have on electric markets? Does the disclosure issue play out differently in wholesale markets than it does in retail markets?

Speaker One

The general perspective on disclosure of confidential information from a collusion perspective is expressed in the merger guidelines that the FTC and DOJ put together. The concern is that when there is easy and quick disclosure of information, it may be easier for people to collude in the sense that you can detect deviations from the collusive agreement and you can identify the best and most efficient way to punish those who deviate.

A second perspective is one which comes from a unilateral market power perspective and is reflected in the FERC's settlement of the *Pacific Peabody* merger case, in which the accent was on disclosure of

confidential information as a kind of insider trading issue, with the idea that if you had information about your competitors' cost situation that you might be able to bid less aggressively than you would otherwise because you would have a better idea of what they were going to bid.

I would like to suggest a cost-benefit framework for consideration of this issue. On the cost side is the possibility that disclosure of information may assist in collusive agreements. There is also a market dynamics argument, that part of the incentive for people to provide better products and lower prices is that people can't or don't follow them immediately. So there's some transition period when that advantage is available to the person who

innovates. If the government intervenes and cuts that lag time, there is a diminishment of the incentives to innovative and potentially to lower prices.

I think there is also a potential collusion question outside of electricity markets. And that is that if electricity is a large component of the costs of a particular firm and other firms in that same industry, if there is public disclosure of the deals which are made with individual customers, then there is a lot more information about the costs of all the members of that industry. And potentially when there is more information about each member's costs, it may be easier to reach an agreement.

Turning to the benefits side, the primary benefits I have heard discussed have to do with checking up on what the market power monitoring groups are doing. There is another potential argument which has to do with making it easier for entrants to decide whether it is a good investment opportunity. I think the first of those arguments--in terms of the ability of researchers to be able to make reasonable judgements about whether market power is being exercised--are probably the stronger ones. And I haven't seen the entrant argument developed very fully.

There is another alternative besides disclosure/no disclosure, which is to have disclosure to the agency, FERC in this case, with an access provision

by which academics and other people who are interested in doing research can get access to that data by becoming employees of that agency on a temporary basis. The Federal Trade Commission undertook a program of this sort with its line of business program in the 1970s.

To summarize, it seems to me that on a cost-benefit basis there is a strong tradition that says that disclosure of information can assist collusive agreements or potentially lead to inside trading effectively, and that this would make us worry a bit about disclosure of this type of confidential information. But that isn't the right trade-off question. That is that there may be other institutional arrangements which give access but don't lead to these collusion questions.

These arguments about the costs and benefits of disclosing confidential information are based on the idea that such information really does disclose something about costs or firm strategies. But that may not actually be true if firms are engaged in extensive hedging contracts. There is an interesting paper by Frank Wolak, "An Empirical Analysis of the Impact of Hedge Contracts on Bidding Behavior in a Competitive Electricity Market." Part of the insight from that paper is that bids may not mean anything about what the firm is up to if you don't also know what their hedging position is. So if the point of disclosure is really to make sure that somebody is able to assess market

power, then probably that disclosure has to include the bids and the hedging positions. And I haven't seen anybody come forward yet to suggest that all the hedging positions have to be simultaneously disclosed on an ongoing basis. And if somebody did come up with that suggestion, I suspect that outside of the type of suggestion I made about having an institution which allows that information to be disclosed, but not to competitors, it's sort of dead in the water.

Speaker Two

I represent about 20 sellers of electricity. As a practical matter, at least as to transmission, information dominance is still a very real issue and effectively a barrier to entry in many cases. The question is, how do we solve problems like that through transparency?

This brings up two memories for me. First, Section 133 of PURPA included a provision that required all utilities to file at FERC documents containing pretty much everything they know--an enormous amount of information, substations, everything. So instead of spending my first year as a lawyer learning the law, I spent my first year learning how to carry boxes over to the FERC. I have yet to talk to anybody who as a practical matter derived a lot of meaningful information from those voluminous files.

The second memory is related to that.

A couple of years later I was talking to a client who was a NEPOOL member. I asked him how NEPOOL works, at least whether there was something I could read. And he said, you really can't learn this stuff by reading. That shed some light on how much transparency can help.

Transparency does not necessarily mean compiling mountains of information. What it means is compiling accurate information in a usable enough form to achieve whatever purpose you're trying to achieve. And that raises four questions that we have to ask when we're looking at transparency as to any particular body of information. First, what is the purpose of transparency? What exactly are you trying to do with this data? Second, can that purpose really be achieved? Third, in some cases, is putting this information in the public domain counterproductive? And fourth--and I think this is the most important question--is trying to achieve that level of transparency the best use of resources, either in the private sector or in government?

There has to be transparency in the transmission area. Competition would be impossible without meaningful access to transmission. FERC has laid down exactly the right program. But it has now been three years since Order 888, and we're still a long way from having the level of transparency in transmission that we need. In my opinion, RTOs are probably not going to solve that problem quickly enough,

but there are some additional near-term fixes that can help.

To highlight the problem, a client of mine did a study of several OASIS postings and found that in real life the compliance was woefully inadequate for the purpose of studying the system. In one of the three he studied, there was almost no price information. In others, the price information was hard to dig up. It was sometimes embedded into the labor cost deal. There was insufficient data to determine whether utilities were engaging in practices which limited the amount of ATC available. And it was even difficult to determine delivery and receipt points because different utilities classify things different ways.

None of this is FERC's fault. It's a product of the ingenuity of the utilities combined with a manpower problem. I believe that transparency is achievable in that all it takes is some tinkering with the existing OASIS rules to have a transition to RTOs and then enforcing the rules as they exist. I see no reason why transparency in transmission would be counterproductive, and I haven't heard anybody argue that it would be. And it is, I believe, the best use of the government's resources on the transparency issue.

The second area of transparency I want to talk about involves transparency in power sales, particularly price transparency. We need to ask the purpose of having price transparency

in the wholesale market. If the purpose is to encourage real time market responses by participants, my feeling is that that's going to be very difficult to achieve. If FERC really wants everybody to file their prices, and to make them public, even on a confidential basis, and if you're looking just at the wholesale market, you're probably talking about a half a million new filings every year. Whatever regime you put in place, the information is not going to be filed until the transaction is done. And it's too late for anybody to respond to it. If you are talking about near-term or long-term ability to survey a market and get price profiles out of it, my feeling is that there are better ways to do that than by requiring confirms to be filed. And in the quarterly reports, there is sufficient information to review each quarter and determine what the price profile of particular markets is.

Compiling price information could be counterproductive; we could imagine situations in which disclosure would harm competition. But the main point is, what are you trying to use the price information for? Is it possible to sort through a half million filings a year and get that information in a form that's suitable for that purpose? And more importantly, is it the best use of the government's resources? And I think, again, that the best use of this is in transmission, not in pricing.

A third area is transparency of terms and conditions. In response to the

Southern case at FERC and other cases, it is fairly clear that the buyers don't want to have to file terms and conditions of their contracts at FERC. The sellers don't want to have to file it. Again, I return to the four questions. What is the purpose of requiring terms and conditions to be filed at FERC? I'm not sure. The original purpose of the filing requirements was to protect captive customers. That doesn't apply in a truly market-driven environment. Is it achievable, can you in fact force people to file their terms and conditions in a meaningful way? Probably no. If you got what you wanted, you'd have a hard time sorting through it to find out what it is you need to know; and if you actually sorted through all that material and found out the truth, the truth would probably be misleading.

If the Commission required all marketers to file all contracts, there would be resistance. It is important to recognize the difference between rebellion and resistance. Rebellion is where you give somebody an order and he says no, I'm not going to do that. Resistance is where you give him an order and he says yeah, right, and then what he actually does looks like compliance but is far enough from what you want that it effectively frustrates the purpose of the order. When FERC began requiring utilities to file contracts that were in excess of one year, suddenly a lot of ten-month deals turned up.

Marketers tend to work with a tariff

that says almost nothing that's on file at FERC and an umbrella service agreement which may or may not be filed at FERC. So if you require the contracts to be filed, everybody will take the important and meaningful terms and conditions and squish them down into the confirms or into whatever document is the first one that doesn't have to be filed at the Commission. That also creates a separate legal question as to whether the on-file confirms are enforceable.

FERC knows that information dominance in the transmission sector is still a barrier to entry and still works to the advantage of the incumbent. There is a temptation to wait for RTOs to solve the problem, but I don't think they will. The Commission could improve the situation greatly by tinkering with the rules, but mainly by enforcing the rules that they already have. FERC could get a meaningful level of price transparency for the purpose of examining markets in retrospect but probably not for the purpose of influencing market behavior on a real time basis. And as to transparency for filing terms and conditions, I don't know what the purpose is and it is counterproductive.

Speaker Three

It is true that you have to do all of this in the context of the information systems that are now available. Bringing boxes to FERC and paying associates a small fortune to rummage through the information doesn't seem

to be a very fruitful way to approach this problem. But it is very important that we don't forget that FERC needs information, and it needs information for two very specific reasons: To do good regulation, and to monitor the competition. And the competition needs good information just to have good competition.

And there is a lot of discussion about incentive and performance programs, but a corollary is that you have to have a measurement system. Otherwise, incentive designs become guesses and incentive programs become lotteries. And this is not good either for the regulator or the regulated. If an incentive program is in place and the company does well, an intervenor will come in and say they're making too much money. How do you figure out that they've done well? You look at their cost relative to other entities in the industry. A good measurement system verifies why some companies are making money and others aren't.

One school of thought assumes that if you have the information, everything works. Another school says that markets will provide all of the necessary information. The market socialism model has a planner providing all of the information. But this debate has pretty much been debunked in the modern literature. The simple fact about information is that it has the characteristics of a public good. Additionally, the electric market has virtually no institutional memory with respect to competition.

Most of the people in the business came out of some other business—oil trading, etc. And we know that free markets undersupply public goods if they're left to the free market.

So there are all kinds of problems, especially with a market just getting off the ground. There are information asymmetries, the ability to discriminate. If there are information problems, there are incentives to get larger. There are higher transactions costs, and performance is harder to measure.

What do we need information for? We need information for market design. If we are going to do performance-based rates and don't have a good information system, the game becomes rigged. Just having lots of information doesn't do you much good. You have to have information that makes sense and that's easy to manipulate. FERC's quality measures have been shallow. Its Uniform System Accounts, the Form One, gives lots of quantities, lots of cost, but no quality information whatsoever. There is a debate about whether to collect idiosyncratic or systematic information. Information in formal trials is costly, idiosyncratic, and difficult to use. So it's very important to decide what to get and to get it, and then to pay attention to it.

A new line of business for FERC is market monitoring. With today's computing systems, getting real time information and acting on it immediately is a possibility. In market

power analysis at FERC and as a general matter, you first do a screen, which tells you which companies you want to look further at and which you don't care about.

Should we worry about collusion? Information can both help you detect and facilitate collusion. But I come down on the side of information. The institutional rules can change the balance of whether or not information leads you to collusion or not, but certainly treble damages is a deterrent. If in fact we didn't have information, the market design issues would be much more complicated, and the information to date has really helped FERC to figure out where the problems are that it needs to address and to triage these problems.

It is interesting to ask, now that we've had two summers in a row of prices that got to \$7500, is the market working? You could ask a simple question: At \$7500, was there anybody who would prefer to have not consumed at that price and was there anybody in the market who would have preferred to generate at that price? And if the answer is, no one would prefer to have not consumed, no one would prefer to have generated or gotten into the market one way or the other at \$7500, then maybe the market's working. If that's not the case I don't know how you declare the market to be working in any sense that people are trading. And of course the retail access issue sort of looms constantly. Many people tend to look

at the supply side of the market for competition and don't understand that when you supply the supply side of the market you have a vertical demand curve. You're just begging for the exercise of market power.

The issue boils down to the who, what, where and why. Some would favor, because of the collusion issues, pushing some of this information back in time because the value of information to support a collusion story decreases over time. So we have to start asking questions now that we didn't ask to any great extent before: What information do we want to have in real time? What information do we want to have at various time intervals? We can have systems set up where people can get information in some specific conditions.

Speaker Four

Look at the information issue in the context of the traditional utilities that are subject to FERC's Form One and various other forms, and also of some of the decisions of the Commission, like the *Southern* and *AES* cases, where even the non-traditional players are increasingly being required to disclose a lot of information. One of the problems is that a lot of the current information requirements are based on the traditional public utility ratemaking laws. We need to go back and ask, what is the purpose that regulation is now serving and does this information disclosure help or hinder the process of trying to promote

competitive markets? A lot of the current requirements ignore the practical realities of an increasingly competitive marketplace.

Rates are no longer based entirely on cost of service. They're market-based rates at which both traditional utilities and non-traditional suppliers compete in the wholesale market. Increasingly at the state level we see alternative forms of regulation or PBR, with the emphasis shifting from cost of service to operational efficiency and how well one performs. Also, we're starting to see utility generation being sold to non-traditional owners who don't have obligations to serve captive retail native load. And increasingly with retail access, the notion of requiring information disclosure for purposes of protection of those customers served at cost-based rates is becoming something of the past.

So there is a situation where the markets are evolving but the responses from the regulators aren't. For example, last year a coalition of investor-owned utilities filed an extensive pleading on whether or not Form One's requirements should be extended for another three years. FERC chose to go ahead and maintain Form One as it stands and extend it three more years. OMB, with some conditions, approved that. FERC has in a number of instances denied requests for confidential treatment of Form One data with a boilerplate "no".

This leads to two interesting questions.

First, what, given the contemporary realities, still needs to be disclosed? What do regulators really need to fulfill their statutory obligations? And second, what of that information needs to be publicly disclosed versus filed subject to confidentiality and then, in limited instances, access granted subject to some form of protective order?

How does disclosure harm regulated entities? With the asymmetry--Form One data is being filed primarily by investor owned utilities, not by munis or co-ops or by the federal utilities—and a lot of information is being filed that in other industries would be considered confidential business information with competitive value. What are the competitor disadvantages resulting from the Form One data? The petition discussed problems with data pertaining to sales, purchases and transmission of electricity, as well as company assets, capital expenditure strategies, research and development efforts. For a utility required to disclose future taxing plans, or looking at generating sites, where does that put you relative to non-utility generators who may be looking at those same sites, and things of that nature?

In the *Pennzoil* test, the Fifth Circuit said the agency must determine that disclosure will significantly aid the agency in fulfilling its mandates. I would suggest that the Commission hasn't convincingly shown this, at least not with respect to Form One. The Commission is required to consider

potential harm to the public as well. And here also, there are arguments that speak to the harm to the market itself. And finally, consider alternatives to disclosure, and whether they balance the public's need for the information with the interests of confidentiality? And we haven't seen any real consideration of that to date.

You have to ask whether there is a way to achieve a balance where regulators have what they need but you don't do violence to companies' ability to compete in the wholesale market. For example, you could find information to be confidential, but to the extent that regulators need it, or a wholesale customer needs it, have it be available subject to protective order.

The Commission addressed the symmetry issue in the *Southern Company* service order, requiring all jurisdictional market participants to disclose wholesale contracts, but not really articulating their reason. One rationale is in one of the OASIS orders, where the Commission relied on an old D.C. Circuit Court decision dealing with Alabama Power, drawing on a footnote in that decision that articulated a vision of a perfectly competitive market with perfect information. But the real finding of the report was that the utilities had not carried the burden with respect to demonstrating why their fuel purchasing contracts should be kept confidential. In *Southern Company Services*, the Commission said nothing about why the pre-existing standard

was applied to marketers.

Disclosure is likely to lead to competitive harm, both to the competitors and in terms of overall competition. The asymmetrical reporting requirements require that utilities disclose their costs. What would Ford or GM say if they had to disclose their costs or their supplier contracts? It is an interesting irony with the *Southern* case, because up until now, marketers and non-utility generators and others didn't view this as their issue, and maybe even benefited from the required disclosure. But now it's everybody's problem.

Finally is the question of what makes sense in terms of the amount of information that you want. In any market in our economy, information is a very important commodity. It is what gives one the competitive advantage. And I think that the Commission needs to think long and hard about the notion of requiring information to be disclosed and the negative impact that it may have on the development on these markets and the incentives to lower costs, to compete, and to integrate.

Discussion

Comment: As a regulator doing performance-based ratemaking, to determine efficiency, productive or operational, you really do need cost information. And you're suggesting that that's not the case.

Response: I think it depends where you go with your PBR. I would argue that if you have an earnings sharing mechanism on your PBR, maybe the consumer benefits just come from the case of sharing those earnings, and you need to get deeply into the cost structure while the PBR is operational. Are you talking about a PBR on the wires company side where you're not in a competitive market? In that case, disclosure of the data probably is less troubling from a utility perspective. In a hybrid situation, where in your retail function, you're still subject to some form of cost-based regulation, but are competing in a competitive market on the wholesale side, you need some balance. Maybe you could have the information filed with the regulators, who could use it for purposes of monitoring but don't disclose it to the market at large.

Question: This discussion has primarily focused on FERC requirements. But I would like to hear more about disclosure of price information for purposes of having an efficient competitive market. I go back to the analogy of the stock exchange: The stock exchange wouldn't work very well, and consumers wouldn't make very informed decisions of which stocks to buy, if you picked up the *Wall Street Journal* and there were no prices in it.

Response: I think there are two distinct issues here. One is price; do you have price transparency? The other is, Do you disclose cost and

other information that in a competitive market would be considered to be confidential and proprietary? Price information, whether through a PX or some other means, is very important for the market, but I draw the line at requiring market participants to publicly disclose cost or other information indicative of their business strategies.

Response: It is still very difficult for FERC, even with all the information that's available, to get the confirmations of whether a price was real or just rumored. It is a noisy and difficult system. FERC has not declared these markets competitive. There are still services being rendered from generators that are not done at market-based rates. The cost information is available to the public because they need to understand how those rates are developed and have the ability to challenge them. There is an avenue where you don't have to file Form One, which is to become an independent power producer, that is, divest. You need to track cost information over time, and you need to compare it to the other players in the industry so that you can benchmark the performance and rationalize what to do. The Commission has been very liberal with its market-based rates. But these markets still have the strictures of just and reasonable and non-discriminatory rates, so that there is some responsibility of the Commission over and above anti-trust.

Comment: It is not true that these

markets are competitive, and we're off and running onto other things. There have been problems of one type or another in all of the markets, here and in other countries. In order to understand what we've done right and what we've done wrong, and to learn from the mistakes, we need information. California provides a lot of information—especially from the PX and ISO, information that wasn't being released at the beginning—which enables you to learn a lot about that market. The airline industry still has a 10 percent ticket sample; every ticket written in the U.S. is sampled and is publicly available. You can tell where each flight started, where they changed planes, where they ended, what the fare was, whether it was a published fare.

Question: Every time I turn on my computer, I can get every transaction that crosses the New York Stock Exchange, the American Stock Exchange, and NASDAQ's electronic trading systems on a real time basis, and that's very useful information, and we expect it to be provided. I'm dealing with a real time electricity market. Why shouldn't you have real time price information?

Response: If X is selling to Y for a certain amount, that deal is concluded before he actually files the information. There's no opportunity to go back and sell that same increment of power to Y over the same time period. So, you couldn't use it for that purpose the way that you could use

stock information to buy more shares of stock.

Response: But if I'm a consumer, and we have a co-generator, and buy and sell electricity, I hope that some day we can be completely hooked in with the regional market. Real time market price information may be an important key to fixing some of the problems in these markets by enabling retailers to enter into arrangements and provide energy management services that exploit that information.

Comment: This should be looked at in a cost-benefit framework. You ought to think about the collusion impacts of some of the disclosures and, to the extent that you can aggregate information rather than disclose individual transactions, and to the extent that still does the job in terms of monitoring, that may be a better solution.

Comment: A little bit of knowledge can be dangerous, and knowledge without a purpose is useless. When prices were going through the roof this summer, we were on the phone with the FERC enforcement hotline talking about interpretations of TLRs, because we had power we wanted to move. And all the FERC people wanted to know was the price—not, Why are we getting these prices. So, when you get data, think about what you're going to do with it. Unless you're interested in the causes, and in dealing with them, all you're doing is reporting flashy tabloid headlines about \$7500 prices.

Question: You have to have a decent market in order to even justify the dissemination of information. This is a really basic question: What is the market for wholesale electricity?

Response: The markets change on an hourly basis. But there are relationships you can check. We have a reasonably well-developed theory of how congestion should work on the grid, how competition should and shouldn't work, and how the relation shifts between congestion pricing. And you can spot anomalies. But it's hard. If the interfaces are congested and the prices are significantly different on either side of it, you have to start asking questions. Of course, the answer we got is called capacity benefit margin.

Question: What problem are we trying to solve? There's a difference between, for instance, making bid prices available versus making costs available. With bidding, New England optimizes its dispatch, PJM optimizes its, New York its, and you can't bid into both simultaneously. You have to make a decision; there is an opportunity cost issue. For someone after the fact to look at what I did and ask, did I use market power, or was it scarcity, or opportunity cost, they have to have an enormous amount of information for each individual circumstance. So there is first this complex question of what information is disclosed—bid or cost? Second, is it disclosed to just the regulator, kept

confidential, whether it be the ISO acting as a proxy for the regulator, or the regulator, FERC? Third, what powers do they have, retrospectively or prospectively, to go back and do something? This creates concern, because once you have powers in place for someone to do something, you ask what they are going to do to me if, in fact, I'm not acting with market power, but am just trying to optimize?

Response: I'm aware of the problem, and I think it's real. If the market design rules require you to bid a convex function, and your marginal costs are non-convex, fitting a non-convex function to a convex function is tricky at best, and is a great first defense against the market power inquiry. The conclusion I reached in regard to California was that the solution that I had to work toward was demand elasticity, so that there truly is a defense. I believe that demand reduction and price-sensitive demand reduction says you have a market that clears and that stops the high price.

Response: I agree; if I had one wish for redesign, it would be to have more demand elasticity. Right now we have demand participating as vertical demand curves, which is not very satisfying and basically invites the generators to play games and to try to finesse it.

Question: How much of the current burden of information reporting and disclosure debate are we creating simply by market design and by

regulatory paradigms that bear no relationship to reality? For example, if we were to be able to go directly to large regionalized ISOs with locational marginal pricing, would that mitigate to some degree the debate and the contested issues of what has to get disclosed on ATC, capacity benefit margin, etc.?

Response: I think that that would rationalize the ATC. And I would prefer to have a market closer to the physical realities, rather than having the construct of ATC. The ATC is a third or fourth best approach to this problem, because you don't have enough information to figure it out. And you don't have a system to do it simultaneously.

Question: You can define as a threshold level for competitive harm that using cost data in an asymmetrical fashion allows some market participants to bid in a strategic fashion that is lower than the optimal competitive outcome would be. It seems that we can take steps through this quagmire and start with an assertion that cost data is probably harmful. And then the question becomes, what on the bid side needs to be disclosed that currently isn't?

Response: A public discussion of questions like what is the information you need, what is the purpose you're going to use it for, and what are the costs and the benefits associated with it has not taken place at the Commission. These issues aren't

going to go away. In fact, the RTO NOPR, with its proposal that RTOs have some market monitoring function, highlights them. The debate that needs to take place on a clean slate of going back to the basic questions of what the regulators need to fulfill their obligations.

Question: I want to return to another kind of information disclosure. The objective of the environmental community is to get the equivalent of nutrition food labels on all retail electric products, showing their emissions characteristics. We are at or close to a regime in which every generator, regardless of ownership, above a certain minimum size has to annually report its emissions of nitrogen oxide, sulfur dioxide, carbon dioxide, mercury, and also report fuel inputs as a basic check on the reasonableness of those data. Does anyone have a general problem with that, with the movement toward that form of disclosure, uniformly? It is obviously critical that that information be maintained on an annual rather than hourly basis, because there's no obvious value to hourly information of that kind.

Response: No, but additional seasonal data might be useful. There are very different pollution conditions at different times of year in different locations.

Question: I don't have a problem with it, but how are you going to get from the generator, maybe through a couple

of marketers, to that piece of paper which tells the consumer the environmental effects of what he's buying?

Response: It can be done. It's being done in Illinois on a quarterly basis with a one-year rolling average, so you get the seasonal data you referred to. Most of the utilities are producing about 90 percent of the generation data. There's a certain amount that is simply unknown. The Illinois Commerce Commission rule says, in effect, take a hard look; work hard at getting it, but if there's some information that is truly unknown, fine. Most of these disclosure requirements don't prevent somebody from making additional truthful disclosures in their promotional materials. So to the extent that you want to promote yourself as, for example, distinct from coal plants, that is a possibility.

Comment: In some of the 1998 Energy Information Administration data, they have lost some of the fuel input and electricity production in the electric power industry, and a lot of petroleum products, leading to an underestimate of carbon emissions for the year. They didn't have a mechanism to pick up sales by electric service providers, lost the divested generators, and the oil industry, with all of the mergers, didn't file some of the forms for the refineries. To the extent that we're going to rely on fuel data to benchmark carbon emissions and other greenhouse gases, we have

to have accurate data, and that requires symmetry—reporting from all sources, not just the traditional utility sources.

Question: Given that electricity is in many cases bought, sold, retraded, repackaged, and rebundled, how do you keep track of that?

Response: The market manages to send dollars back to original sources, despite all the constant re-trading. But if you're not interested in doing the work of discerning where the dollars went, from the individual generation, you could simply report a default value, which would be the system average. If you want to distinguish yourself and report a uniquely clean source of energy, you enter into verifiable contracts with suppliers, and verify the kilowatt hours produced.

Comment: This discussion breaks down into the regulators and academics on one side, and the business community on the other. One side says, Give it to me, I'll use it in the right way. The other side says, Tell me what you want it for, and I'll give it to you. It is a burden of proof question.

Comment: I would make a distinction between screening, which Frank Wolak has been looking at, asking whether there is evidence that something is wrong in this market as opposed to evidence that this particular company is doing something wrong, and treatment. There would be a different threshold for each of those. It

would be consistent with the burden of proof argument that for market information—market clearing prices, congestion in the system, etc., which is more or less not able to be identified as particular individual data—the burden of proof would favor disclosure. But when you get around to individual company data, bids and cost information, where you can identify who it is, then you might argue that you have to demonstrate why you need it. Some of the information can only be produced by RTOs or ISOs. I would put that in the category of market data, where the burden of proof ought to be in favor of disclosure, so that you assume that they should be releasing that information as much as possible. Everyone on the panel seems to embrace a cost-benefit test in which you don't just collect information willy-nilly, but have to be using it in some way.

is needed.

Response: You have to have some information so you can have screens. For example, an RTO should probably know the capacity of the generators. If the market price is very high, if you find generators not running at or near capacity with the obvious caveat that they may be used for reserve margin, there may be room to look further. So you don't have to have cost information in that sense. There is an intelligent way to do this.

Comment: The FERC has the perfect laboratory to determine whether transparency is achievable and the extent of government involvement that

Session 3: Market Incentives and Monopoly Services

After unbundling and opening to competition, there will remain components of the electricity system that will require oversight and appropriate incentives. Familiar functions such as providing for wire services or addressing externalities, and new functions such as system operations, must work under regulation in the new structure that requires continued support of a competitive market. The analysis of incentive regulation, light- or heavy-handed, should be revisited to reflect the new environment. What changes in the structure of the industry dictate new approaches to regulation of the residual monopolies? How should modern incentive regulation apply?

Speaker One

I am going to limit myself to distribution companies. The trend is away from traditional cost-of-service rate making for the distribution company. Traditional regulation has been seen as overly complex. General rate cases are very resource intensive. They can require dozens of witnesses from the utility and intervening parties, and can take months to litigate, if not years. There are also significant negative incentives involved. Incentive to seek efficiencies is limited to those that can be gained in the short term. The bottom line is, shareholder and customer incentives are at odds. And the pace of change in the industry is such that the regulatory lag associated with traditional regulation is simply too much to keep up with.

So there is a growing preference for incentive regulation, popularly called performance based regulation (PBR), because it's simpler. Instead of the massive general rate case, you have an administrative formula that can be used every year. It's less resource intensive.

The dozens of witnesses and months of process are replaced by an audit of whether the calculations and mechanism have been performed accurately. There are positive incentives. The length of time gives management incentive to seek efficiency improvements that could not be paid back in the shorter rate case cycle. And the focus on desired results is available, because the commission can reward or penalize the utility for specific measures, such as customer service, safety and reliability.

The PBR equation is significantly different than traditional regulation. Traditional regulation looks at the cost the utility will incur and the profit it's allowed to have, and derives the revenues. The focus is on justifying cost. PBR regulation looks more like a competitive market model, where the revenues you can bring in to the company minus the costs you incur determine your profits.

PBR regulation can take many forms. I am going to focus on the base rate performance mechanism, for a

distribution company. This mechanism has the choice of revenue or rate indexing, an earnings sharing approach, and performance measures that can look at specific activities within the utility. A model formula PBR determines the rates you're going to set in the next period by the current rate times escalation and productivity.

Escalation can be measured on a state specific, in some cases even a utility specific, basis; you don't need to use a broad national index like the CPI. Productivity, I would suggest, should be based on an industry-wide survey: What is the electric industry producing in terms of productivity? I don't think we want to get firm-specific with this because you would end up, for a firm that has a low productivity measure, adopting a low productivity factor; for a firm that has been active and produced a good rate of productivity savings, we might produce a higher factor. That would be counter to what we're trying to accomplish.

Performance measures are a key factor in a PBR mechanism because they are the opportunity to provide an alternate form of earnings and to focus on what you want the utility to accomplish. Typical measures include rewards and penalties for customer satisfaction, which can be measured through customer surveys, where you can look at things like phone center response times. There could be rewards and penalties for reliability; system average interruptions and duration index is one method that has been used. Employee safety can be

measured through OSHA's standards. And then there may be unique issues with respect to the specific utility.

There is a simple rationale for including customer service performance in a PBR mechanism: the PBR mechanism itself gives a strong incentive to cut costs. And the quality of customer service can decline if costs for customer service are cut. If you're looking at customer satisfaction, I would suggest that you need to look at specific interactions of the utility and the customer rather than some broad overview. A simple survey which asks what you think of the utility may be affected by things like market prices of energy, outages, the general economy. You want to look at specific functions: Are they timely in meeting the customer on the premises when a service call is set up? Do they answer the phones within a reasonable period of time? How do they handle emergency calls? And you don't want to be too narrow and pick a single measure. Our company used eight specific customer contacts, and measured those.

Performance measures can be designed to deal with emerging industry issues, like encouraging a utility to treat competitive retailers as a new class of customers. They rely on the utility; there is data that has to flow back and forth. If you want the utility to be welcoming of competition, then provide a performance measure that provides incentive.

What is the future distribution company? In many areas the traditional monopoly model has ceased to exist, while in other areas it has a long life left. Certainly PBR regulation can prepare that kind of utility for potential for competition in the future. In a default service provider model, like in California and many other restructuring states, customers have the option to acquire services from third party providers, but not the obligation to switch. The utility continues to provide those services for customers who do not switch, on a cost-of-service basis. A monopoly provider of delivery services is perhaps the most extreme model, in the sense that it would strip the utility of any potentially competitive services. This sort of pure wires utility can still be affected positively by PBR, with the focus on reliability, customer service, and getting the costs right. And finally is the regulated competitor, where you take the costs of performing competitive service out of rates, but allow the utility to provide those services through some market-based approach. They would be dependent on revenue recovery from their actual sales to the market rather than on their bundled regulated tariffs.

As for distributed competition, I think the competition already exists and will only accelerate. And that competition can take several forms. Customers can seek to build their own substation and move from distribution to transmission level services. If the pricing is not correct between the transmission and

distribution systems, there can be uneconomic signals to do exactly that. So the issue of getting the prices right at the distribution company becomes an issue. As more of the energy services become unbundled, municipalities will look at the approach of Las Cruces, New Mexico, for instance, and say, we can provide the infrastructure more cheaply than what the utility was providing. And I've heard of a developer who, with a large subdivision project, is considering installing distributed generation and never hooking up to the utility.

An issue is that distribution utilities have traditionally been a source of funding for public purpose programs. This presents a dilemma for regulators. And there are going to be some significant moves for non-bypassable charges to recover these social program costs.

Speaker Two

Since there is still a natural monopoly, and we should have price regulation of distribution functions, then the critical issue is what kind of price regulation we want, what kind of incentives we want to give the distribution company. If we want price regulation of the distribution system, I will make two arguments. First, a core element of price regulation in the future of our distribution companies is that distribution company revenue should be independent of electricity that you put over the wires. Second, at least in

the near term, the distribution company should have targeted incentives to integrate distributed resources effectively, including load center generation and energy efficient design.

As these technologies emerge, as their value to the grid increases, the distribution company ought to have an incentive to be an effective integrator. That means I don't think these are natural monopoly functions.

I am responding in part to two negative trends. The first has to do with externalities associated with the generation sector, the extraordinary environmental significance of electric generation, not only in terms of the U.S, but internationally. The United States is responsible for a huge proportion of the emissions from electric generation—one- to two-thirds of the emissions of nitrogen oxides, mercury, carbon dioxide and others.

Consider also the emissions record of the generation sector over the first three years of fairly aggressive competition in generation, 1996-1998. In some respects, tracking trends over that time is difficult because of problems with the statistical record. But as best as we can determine, use of coal in the electric setting over those three years is up a full 10 percent. Natural gas, which was supposed to be the big winner as we opened up competition in generation, was up only three percent over that period. Total electrical consumption was up about eight percent over those three years.

Because coal has done so well in competition, states like those in New England are seeing double-digit increases in power plant emissions.

The second disturbing trend is the emergence of a zero-sum mentality regarding environmental and economic goals. Many leaders in those sectors see the other as the enemy. This attitude is troubling and wholly unnecessary; distributive resources are best understood as distribution grid enhancements, not as distribution grid replacements. These sectors are not in competition with each other in a zero-sum sense for customer dollars. They ought to be effectively integrating to deliver more value to customers.

Not nearly enough of this is happening now. This is partly that the incentives that current regulation gives distribution companies are almost perfectly perverse. Every time someone hooks up on the customer side of the meter, every time someone introduces energy efficiency methods, they're taking money out of distribution company shareholder's pocket.

It is worth reminding ourselves of what distribution utilities have contributed in terms of environmental solutions. If you look, for example, at refrigerators, from 1947 to the present they have gotten steadily bigger; they have added many other amenities; they have become self-defrosting. They have gotten rid of the chlorofluorocarbons as part of the

cooling process that are a critical part of ozone depletion. And yet, average electricity consumption of the average refrigerator declined by more than two-thirds between the mid-1970's and the present. Hometown utilities were critical to this decline by changing the way refrigerators were produced over a 20-year period through financial incentives to improve performance. The motivation was not government requirements, but real money. This story of extraordinary improvement in efficiency and reductions in consumption needs to be repeated throughout the economy. We are at risk, if we do the wrong kind of price regulation of our distribution companies, of depriving them of the ability to contribute to that.

What do we need to do? The fundamental thing is to divorce distributed price requirements from through-put. Among the objections to making distribution revenues independent is that doing this requires high fixed charges for distribution. Oregon has shown that you can have a system that's completely usage-based in terms of its revenue recovery initially for distribution, but which uses small annual adjustments to break the length between through-put and revenues. You do not have to use high fixed charges to do it.

Another objection is that breaking the link between distribution and revenues in through-put reduces incentives to maintain a reliable system. But you can design incentives for reliability

tied to objective measures. And there is the objection that we will make distribution companies indifferent to advances from grid competitors. There's something to that; if your distribution revenues are guaranteed, will you be a less aggressive competitor against fuel cells?

But I don't want a distribution company thinking of itself fundamentally as a competitor with other providers of service that might be deemed distribution services; we don't want it complacent either. Indeed, I don't want the distribution company thinking of itself as a partner or an integrator. I want it identifying the best places on the grid where congestion can be minimized with the right distributive sources, and providing some financial incentives for the distribution resources to go there.

Speaker Three

I'd like to discuss the regulation of transmission companies. The challenge is that, as markets expand, we need a more robust transmission system to deal with congestion, minimize the need for system operators to put their thumbs on the system because of congestion, and deal with the inherent conservatism that network operators have for liability reasons when the network gets congested.

But at the same time, the resources we devote to transmission in the United States relative to demand is in decline. The reasons are clear. Most major

upgrades in transmission capacity occur in conjunction with development of new generating resources. We're seeing enormous interest in entry of new generating capacity. The uncertainty of the future regulatory framework further erodes incentives to invest in transmission.

Underinvestment in transmission is a much more serious problem than overinvestment. The costs of building too much are very small. The costs of building too little will be very large. And traditional FERC regulatory policies have focused on the wrong targets. FERC does not have the institutional capabilities or framework in place to take a broader view on transmission. There's been too much focus on the direct costs of transmission, that is, what the operating costs are and what the rate of return will be on investment, and too little focus on the indirect objectives of transmission—congestion, interconnection, local load pocket problems and the cost of dealing with those.

Both direct and indirect costs are associated with the transmission network. The direct costs you know about—the capital costs of the system and the costs of operating and maintaining the physical network. But in a competitive electricity market the indirect costs are also transmission-related, and these include congestion, ancillary services, and local market power problems—not just the direct costs of the market power problem, but

more importantly of mitigation.

In terms of conceptualizing transmission enhancements, it also is the case that people tend to think of building major new lines. But we have to have a broader conceptualization, thinking more about getting more from the assets we already have in place. This means changes in operating protocol, changes in minor pieces of equipment on the line, equipment upgrades and lots of small things that can be done to the network using current technology, new technologies, to deepen and increase the capabilities of the basic structure.

We want a regulatory system that is focused on giving incentives to transmission owners to operate their networks in an efficient way that takes account of both the direct and indirect costs of transmission. We want the system to meet a supply side efficiency goal. We want these systems to be able to attract capital for new investment but also to maintain the existing stock, and we need financial incentives to do that. We want a regulatory system that passes along most of the benefits of improvements in efficiency and operation to consumers in the form of lower prices. It's often easier to design a simple mechanism if you don't care about the consumers getting the benefit. We have to recognize that that's a reality.

In designing incentive regulations, the most important thing to bring to the table is common sense, and the

common sense here is that these goals and constraints will generally not be satisfied simultaneously or perfectly. Academics will continue to search for a perfect incentive regulatory mechanism, but it is fruitless. A basic notion is that the rat needs to smell the cheese; the rat here is the transmission owner and the cheese is money. The idea is to design a system that pursues these goals so that you put the cheese in the places where you want the rat to go, and while the rat has to get the cheese sometimes, you don't want the rat to get all the cheese.

We might think of certain factors in a transmission company's revenues. C might be a projection of costs and productivity growth over a period of time. There may be a mechanism, G , that shares the difference between actual and target costs. I add a quality dimension called M . There is sharing between actual M and target M , which is D . If a transmission owner can beat its targets, it can make more money. If it doesn't beat its targets, it's penalized. The power of the incentive scheme depends on how you choose G and D . If you set G and D equal to zero, and say that you just get C over the next five years, that provides a powerful incentive to the company to reduce its cost.

Why wouldn't you just do that? You don't know what C really is. What if you set it too high and the customers are now not getting the benefits of these cost reductions? Or maybe you set it too low, and the company can't

make any money at it, and stop investing in upgrading their transmission network. These sharing mechanisms can help to balance the incentive effects and the rent extraction effects, and have the inevitable consequence of softening incentives.

The simple price cap is the wrong incentive regulatory mechanism on its own for a transmission network if it is based only on direct cost, since it fails to take into account the costs of congestion, ancillary services and related network constraints. More importantly, it may have the opposite effect; you may end up increasing congestion because it is easier to run your system cheaply if you're not confronted with that type of broader incentive. A simple price cap mechanism without service quality dimensions can lead to deterioration in service quality. We may need a multifaceted incentive regulation program that has different mechanisms to deal with different components of cost.

Ratchets are considered bad in the economics literature when prices are reset based on actual performance. But as a practical matter, ratchets have been put in place in almost every jurisdiction with incentive mechanisms. The trick is not to ratchet too often, and to have it be forward looking.

The National Grid Company in England and Wales has a set of

interrelated regulatory schemes. The first is a conventional price cap mechanism that covers the bulk of direct transmission system charges. The second component, the transition services scheme, applies to the cost of congestion, losses, and ancillary services. Basically, there is a budget for what these costs should be going forward. There is a separate regulatory mechanism for interconnections. It has a generous rate of return, but also encourages negotiations with the generators, who have the option of building their own interconnection. Since the transmission services scheme has been introduced, there has been a dramatic reduction in upward costs directly attributable to it. There have been substantial new investments in England, without the controversies over interconnections that have emerged in the U.S. with new generators, because of the financial incentive in the system for the National Grid Company to make those happen.

Speaker Four

I want to introduce a mechanism that I tried to design specifically for transmission companies. Objectives include optimal expansion of the transmission network, which would lead to reduction in congestion prices. Transmission companies are, to a large extent, big fixed-cost machines.

You want to express that in your regulatory scheme. The mechanism should be specific to transmission.

There are generally two parts to price regulation: the revenue requirement and rate design. The main tools for the revenue requirement would either be price caps or profit sharing or a combination of the two. In rate design, we have the price structure, which deals with the rent distribution between different customers and types of customers. It deals with short-term efficiency, but I will argue that it also deals with capacity expansion.

The way we deal with rate design is an incentive mechanism, usually by using a price index. You give the firm a freedom in rate design by imposing a price index. At any moment in time, the services differ depending on congestion. In order to keep all these different prices under one umbrella, you form a price index. You have the prices and weights. The weights are quantity-based. They are normally quantities that are traded under this price index. The firm would have freedom of restructuring its prices under the umbrella of this price index. In some regulatory mechanisms this freedom is restricted, but I wouldn't impose any restrictions right now.

You might think of the fixed charges as access charges. In this case the weights for fixed charges would, for example, mean the number of customers. The variable part of the charge could deal with the congestion in the system; it could also deal with things like ancillary services. They could all be variable. The fixed fees would have to have the objective of

dealing with capacity. So in a way you have a division of labor between variable and fixed fees, and the question is how would they work together.

The punchline of my approach is that the congestion charges are going to vary, and will depend on the capacity of the firm. If the capacity of the firm is low, you're going to have high congestion charges. If the capacity is large, you're going to have low congestion charges.

You start off with the revenue requirement, at some point in time, that would cover all the costs. Let's say you have a price cap mechanism, and assume that you're starting off with a cost covering situation. Now you want expansion. Therefore, your congestion charges go up. You would have to reduce your access charge automatically in order to be under the umbrella of the price index. So, as your congestion charges go up, your access charges go down accordingly. That gives you an incentive to invest. But you would also have larger through-put. So you would earn more in total.

The simplest weights you can use for a price cap mechanism or for the price index are the quantities that are traded. That is the most practical option, but it has some drawbacks. I assume that the congestion charges in the initial period were actually cost covered. So we have a situation where the average congestion charge is P_{t-1} , and the total

through-put is Q_{t-1} . The assumption for simplicity is that that equals the total capacity available, but if you have fluctuations that wouldn't be the case.

At the same time, we have a cost of expanding the system. That's the other marginal cost of capacity. So in this case it would be optimal to expand because the congestion costs are higher than the cost of expansion. If you had a simple price cap, without the fixed fee, you would actually have no incentive to go down in price or to expand capacity because you would earn less money. So if you just reduce your price, you would lose this amount. However, if you have this fixed fee option, then the weight of the fixed fee is the quantity traded in the past period, F_{t-1} times N . So if you expand capacity, you're going to earn the same amount on the old quantity that you earned before, because the reduction and congestion charge is substituted for by an increase in the fixed fee. At the same time, you're earning money on your expansion. So, you have an incentive to expand.

In the case of a price cap, the weight is better. Congestion pricing and normal pricing would be feasible under this regulatory approach. There is an emphasis on the indirect cost of the system. But you could also use this approach with less sophisticated mechanisms. You are effectively using an average revenue constraint. That has the advantage that you're averaging over all the periods and you

therefore have an arithmetic solution. Its disadvantage is that every revenue constraint has some kind of distortive effects.

The way to deal with that is to have an ISO perform the congestion process. Therefore, it might be a good idea to have an ISO as a kind of impartial body do this. The problem I see with the ISO approach and any kind of combination of ISO and gridco is that you make the incentive problem much more complicated because an ISO needs an incentive mechanism too to be efficient. If you have a gridco that does the investment and owns the grid and an ISO that runs the market, you have to think about how these incentives interact.

Speaker One, Redux

An issue of debate is whether distribution company rates should be subject to revenue balancing. For instance, is a revenue index or a rate index preferable? It depends on what the situation is with the utility involved. The distribution company is not a sales promoter. Increases in electric sales comes from competitive generators who are trying to make deals to get their energy sold and get their capacity value. New technologies may be the single biggest influence on why electricity sales would increase. Distribution companies pass through a market price. The distribution company is not in the business of increasing sales. In fact, it is actively in the business of creating energy

efficiency. The paradigm is that the way for the disco to profit is to make its customers more efficient, to make our customers more profitable so that they will stay with us, expand and grow.

Discussion

Question: Do you have to have a through-put incentive for the transmission owner in order to have an efficient transmission system?

Response: I think the incentive regulation mechanism should focus on cost causality. If there are additional cost through-puts, that ought to be reflected in it. If there aren't, that component of the mechanism can be fixed. But it also has to focus on reliability, on being able to make the connections that are required. The cost causality principle also means that distribution rate design should change for retail customers. If the costs are primarily customer related, rather than kilowatt hour related, those costs ought to be in the customer charge. If they're are kilowatt and kilowatt hour related, they ought to be in the kilowatt and kilowatt hour charges.

Response: In both transmission and distribution, it is important that prices reflect the cost of using the system. If you have new wires or expand the size of existing wires, or if you build new generation on new load facilities, they are all very long run relative to the length of a regulatory cycle. One of the major properties of any kind

regulatory mechanism has to be that it has a long run component in it. Complementary to any regulatory mechanism is the dependency of the regulatory governing structure.

Comment: Other areas of dissonance when talking about a PBR mechanism are the inability to let go, to have a PBR mechanism that is somewhat self-sustaining; and averaged rates.

Response: The environmental consequences of this system are profound and are growing in visibility and political importance. To the extent that the electric distribution system can be seen as an instrumental solution, we should reward it for doing good things. If it is systematically rewarded for doing things that have tangible and demonstrable environmental benefit, it will make the incentive mechanisms more durable.

Response: What we've seen so far is that at the end of a five-year mechanism, you go back to a rate case. So you have somewhat extended the ability to go after productivity, but you haven't broken the issue of investment ultimately earning you money. That is key; the link between cost and price needs to be broken so that performance becomes much more a source of revenue than investment. We need to keep looking at making these mechanisms longer.

Response: I see rate averaging being the next battlefield. People will say, I'm going to build my own distribution

system, so why should I pay your rates? De-averaging rates does create a political problem because you are increasing some people's rates and reducing others. But there is no choice but to bring it onto the table and fight it out.

Question: If some commissioners were to go to the reliability analysis you're suggesting, it would proceed very much like the traditional rate cases we're trying to escape from. How do you reconcile that?

Response: I think the distinction is looking at results vs. looking at programs. When we measure whether you've achieved reliability, you might perform well on the broader measure and yet, in a certain portion of your territory, not be reliable at all. It is okay to have measures that go into more detail, because they are looking at the end result. They are telling you that this is what we think a reliable company looks like, but we're not going to tell you how to do it.

Response: If Oregon, with its small regulatory staff, can do it with its service quality mechanism, then it must be doable.

Comment: There are a lot of ways to include indirect costs, and some are better than others. I'm not sure the National Grid proposal is the best example; it has had its own problems with the incentives it gives. I would propose applying the mechanism described by Speaker Four, but instead

of applying it to actual system operations, we would apply it to the auction of transmission capacity. Part of this idea is to extend what England does, which is that anybody who walks in and wants to build an addition to the transmission system, and is prepared to pay for it, can do so. So they can invest in these things, and you have both mechanisms going on simultaneously. It's not obvious that these are inherently incompatible or impractical. That system has the indirect cost talked about in the way that we want, and it has this price index character in terms of the incentive for investment.

Question: How do you design a performance-based rate or incentive structure to provide incentives for RTO formation, other than FERC's approach, which is essentially to punish those who don't buy, not giving them incentive rates?

Response: The basic philosophy has to be there are efficiency benefits; we're going to split the gain between the parties, and that will be the incentive. The practical problem is that at the present time, transmission revenues are largely determined by state regulation. The rates of return they are getting now are quite high compared to what FERC is requesting. I think it would be better to make it in the positive financial interest of the parties to create independent transmission companies and to consolidate them and move in that direction.

Question: In most markets, quality and reliability incentives are provided for by liability for, for example, reliability of the product to the customer, or damages when it isn't reliable. Do you see that exposure to liability on the part of distribution and transmission owners as part of the reliability package over time, or do you see us sticking with the explicit regulatory incentives as part of the rate structure?

Response: I think there is a natural way of including reliability considerations in incentive regulatory mechanisms for both transmission and distribution companies, including the costs of outages, in the framework. I prefer to go about it that way than to have litigation going on in 50 states and local courts with local juries and all of the expenses and rent-seeking behavior that goes along with that.

Response: I think we're likely to see regulators very reluctant to not have a direct finger on the pulse of reliability, and performance measures within a PBR mechanism are a way to do that. I also think price caps or price indexes reinforce those measures, because if your system is unreliable and you're therefore losing sales, you're going to be directly affected by that.

Response: That was one of the reasons telecomm companies wanted to be regulated. I think that will happen with electricity companies as well. They will want to be deregulated to the

extent that they're free to price and to do other things, but they also want to be free of the liability that comes with free markets.

Question: The philosophy in PJM was that the system operator should be in the position of pricing, not relieving, congestion, and then any competitor could take those signals and perform whatever actions they need to relieve congestion. But if the ISO relieves congestion, which implies that they can also create it, and you couple that with the notion that we need to give them incentives and perhaps make them a for-profit transco—how does that all work together to create competition among all three sectors?

Response: The ISO doesn't relieve congestion, it prices congestion. The question is, what incentives does your company have to relieve congestion on your or some other part of the network? And how do those incentives, in your case, conflict with the fact that you may still own generating capacity and have an incentive to keep the congestion in your region high? Those are the issues that need to be addressed. Separation of ownership and control of a network of any asset is an extremely unusual organizational form.

Response: It's not that ISOs are not for profit; it's that they have no equity at stake, that their costs have to be passed through to the constituent utilities that creates the dilemma of how you set up an incentive scheme. If you are going

to set one up, it's going to have to come through the incentive compensation arrangements that are made with the senior management, and somebody has to make sure those arrangements are properly aligned with the performance objectives.

Response: That was tried in California, and it was extremely difficult to develop the metrics of how to say whether or not management did a good job. I think you can do it, perhaps, with either an ISO not-for-profit through incentive compensation, or through a transco. But you have to recognize that you get what you incent, and if you do something broad, then you may have unintended consequences. If you try to get too detailed, you get into micromanagement.

Response: There are two constraints with incentive compensation arrangements. First is the public perception of people getting paid too much money, or too little money. More importantly, as these turn into more rigid public bureaucracies with rigid salary structures, it becomes more difficult to implement them. Look at the challenges of introducing even modest incentive schemes for teachers in public school systems based on their performance. It's been almost impossible.