

Harvard Electricity Policy Group
Twenty-Fourth Plenary Session: Moving Towards
Markets in the Face of Surprises and Mistakes
Coronado Island Marriott Resort
San Diego, California
February 1-2, 2001

RAPPORTEUR'S SUMMARY*

Session One: California: Weathering the Storm

The events in the electricity market of our largest state have riveted everyone's attention. There has been extensive analysis and debate about causes and effects. Solutions are either in place or proposed. The progress of these solutions, and the magnitude of the problems, inevitably create precedents that will affect the process of electricity restructuring throughout the rest of the country, even throughout the rest of the world. What lessons are to be learned from this important experience? Is California sui generis, or can that state's experience be expected elsewhere? How should we assess both the regulatory and political response to the California electricity crisis? In hindsight, what might regulators, state and federal, have done differently to avoid the current circumstances? What are the implications for the development of the regional market in the West?

Speaker One

This is the face of the evil generator. I will try to dispel all of those rumors.

It is unprecedented, the thought of two potentially bankrupt utilities and the economic harm that could create. We're still in the middle of the crisis, and I believe it will not be resolved

quickly. It will not be one or two pieces of legislation out of Sacramento. We have many challenges to just keeping the lights on in the next two years.

The first issue I will reflect upon from a historical basis goes to the way the California market was restructured. We weren't sure and it continues to be

* HEPG sessions are "off the record." The Rapporteur's Summary captures the ideas of the session without identifying the speakers.

debated in Sacramento about what was the bet the utilities took in Assembly Bill 1890. I don't believe that in AB1890 there was any thought to what would happen if things got upside down and what remedy would apply. So, for those of you who are looking at restructuring I would say that, whatever organization or structure you put in place, you must envision both the positive and the negative.

The second well-treaded historical issue deals with how the markets were opened. The markets in California were really only half opened. The wholesale market was opened. The retail market for the majority of the consumers, they saw a fixed rate. That does not mean that retail access was not available to all consumers day one. Indeed it was, but under the mechanisms with the fixed rate, at first the high CTC did not allow ESPs to come forth and bloom in a proper manner. Then by the time the market went upside down, no ESP or third party provider could compete with the fixed rate. Even few industrial customers really ventured out.

Working wholesale markets must be in place before retail competition works. True consumer good could be gained by just restructuring the wholesale competitive market. Wholesale competition must be done and be functioning before retail competition will work and work effectively.

Let me turn to several future issues that I see as critical in this marketplace. First is the issue of how consumers are serviced. Default service is not an accident. Nor does it

happen by default. And by default service I mean how consumers will be provided for if, in the transition to competition, retail providers do not come forth or come forth in a slow manner. The real quagmire in retail access is metering and billing. If we look at the experiences of gas retail access in Georgia, 95 percent of the issues dealt with getting bills out the door. Writing software is not magic. Consumers, though, cannot live off of spot markets. Spot markets are not for the faint of heart or the weak of credit. There is a real role for default service in regulation.

Consumers who do not wish to choose or to whom the market does not offer sufficient choice should be brought together in buying groups that are auctioned. This is a role for regulators. This does not mean that the price should be regulated. It means that the process should be overseen. If we believe that we have good working markets, then consumers should be joined together. You can almost think of it as a Costco buying group. Certainly all of us buying together get a better bargain on toilet paper at Costco than if we all individually bought it ourselves.

There are many ways in which buying groups can be managed and handled. They can be amassed by commercial industrial, commercial residential. There are many ways that individual buyers could buy *en masse*, but that must be addressed. It does not need to be and, in my opinion, should not be, except in a very transitional role, done by the wires company. You should separate those out if for no other

reason than to protect the basis of your T&D company. It is in no one's best interest for a T&D company to get into trouble because of issues related to default supply.

The second issue is supply and the environmental balance. Someone must keep score on our supply/demand balance. While we have tracked supply/demand balances for years, we have not done so recently with any credibility, nor with any real concepts of the impacts of ever-increasing environmental restrictions.

In California, there is capacity that is idle or is not running at full capacity due to environmental restrictions and, with each coming year, this will increase. There is increased scrutiny on planned outages to put in environmental equipment mandated by law, and even talk of denying outages to install the equipment. This spells disaster in the very near future as NOx restrictions continue to ratchet down each year in response to the SIPS provisions of the Clean Air Act. Someone must have the total picture.

We need to eliminate the surprise element in the supply side of the equation by factoring in the environmental constraints. I have some combustion turbines that are running as base load generators of the city of San Francisco today. This is now February 1, and one of those units is already halfway through the hours it can run in one annual year. When the hours are up, it is a criminal violation to run the unit. We can seek exceptions; we will need to work with both state and federal officials to get

these processed. This is only one example, and it is very, very real.

My final comment. California chose a unique market structure quite different from the Eastern power pool. The element I would like to highlight is the use of the schedule coordinator and the balanced load and resource concepts. Each market participant brings a balanced schedule of loads and resources to be executed by the system operator. Each schedule coordinator maximizes the economics of their own bundles and the system operator is limited in how much of the system he can then optimize over. If the bundles are big enough, the economies of scale this provides in theory can approximate the diversity of all loads and resources in total. Still, it is impossible for the system operator to rebalance the system in real time, as they don't see everything as they would in a pool model. Also, the volumes become very small compared to the overall volumes of the market, which can lead to overall lack of transparency in pricing.

Speaker Two

I see a four-pronged approach as necessary to resolving these problems. First, we need reasonably priced long-term contracts, either with the utilities or the State of California if that legislation passes. It doesn't necessarily have to be at the prices that existed in the 1999-2000 time frame, but they can't be anything close to the \$220 to \$250 levels we see today in the Power Exchange. There must be compromises reached between buyers and sellers. If voluntary negotiation

doesn't work, we will need a stick, such as a hard cap, cost-based rates, etc.

Second, the State of California has to bite the bullet with respect to retail rates. That's what's really frustrating states like Oregon, Idaho, Washington and Montana, which are passing through 50 to 60 percent increases, while California isn't. There are no basic rate increases taking place in California.

Third, the state, working with the federal government, has to develop a cooperative working relationship to allow power plants, electric transmission facilities and gas transmission facilities to be built in a timely fashion without violating California or federal environmental laws. The problem right now is that the process is very sequential and drawn out, tailored for every project even though the projects are all fairly similar. And the NIMBY issue has to be dealt with.

Finally, when it comes to conservation, California used to be a leader, but hasn't done enough. There needs to be a more concerted effort. Increased prices are in themselves a way to get conservation. For example, in San Diego Gas & Electric's service territory, when there weren't price caps, conservation was at nine percent, or 300 MW. But once the price caps went on, conservation went away.

There are a number of issues in terms of how we got to where we are. Divestiture shouldn't have been done without allowing long-term buy-back

contracts. Decentralization of ISO and PX, and expensive infrastructure for them. Lack of a true regional transmission organization. Capping of retail rates. Failure to build more generation and transmission. Over-reliance on natural gas. Not enough gas pipeline capacity. Failure to deal with emissions credits. Not enough demand-side management. Stranded cost recovery. Better management of plant outages.

The real issue is whether the utilities will get out from their obligation to serve. What is the true obligation to serve of the local distribution company in the future?

Speaker Three

A FERC Staff Report following the Midwest price spikes characterized them as an unusual confluence of circumstances unlikely to recur, "the Perfect Storm". That was a naive statement, but I think there was a desire to calm markets. But these perfect storms are happening regularly. It may be spreading to the Pacific Northwest.

A number of state commissioners have said they are frightened of markets now. They say there has to be a bargain; FERC has to ensure there won't be runaway prices and do a better job of regulating the transmission grid. So all this rhetoric about a hands-off approach is not realistic, particularly since the Federal Power Act gives FERC these jurisdictional responsibilities.

The responsibility for siting electric

transmission ought to be transferred to the federal government because, otherwise, it's never going to get sited. There is a compelling argument that the responsibility for siting the facilities necessary for interstate commerce should be held by an interstate agency.

Reliance on the spot market in real time markets was a mistake. The concern now is that we will flip from overreliance on the spot market to overreliance on long-term forward contracts. Sounds like QFs. But forward contracts are necessary. The purchasing utilities have to have the flexibility in a well-designed market to have a well-balanced foreclosure of long-term and short-term supply. Generation should not have been sold without the buy-back contracts.

Separate ISO and PX markets were a mistake. They allow for gaming and arbitrage by both sellers and purchasers.

Long-term, there needs to be a reserve requirement or some sort of market-based approach such as a well-functioning ICAP market. You can't snap your fingers and get that in California; there's not enough generation to meet requirements. But long term, that needs to be the goal. The congestion management system is extremely flawed. FERC has been pushing California toward the PJM market design, which is the best market in the nation.

There is little opportunity for a demand response to price. ISOs and RTOs that operate spot markets should

allow those who were willing not to consume to bid MW back into the market. New York ISO is working on such a market design now.

There ought to be, for the country, a single set of intergenerational rules for distributed generation. We ought to move in that direction, at the federal level.

In summary, the market has to be better designed, there must be forward contracts, obviously more generation, and more transmission. The perfect storm virus is spreading. Runaway markets should not be permitted to destroy the Western economy. Without price relief, the wealth transfer serves absolutely no public purpose and is simply intolerable. Markets for a basic necessity, like electricity, must produce prices that, over time, are politically acceptable. We all have to come to grips with that, because we're not talking about pork bellies. This is not a problem to be solved solely by California. This is not simply a Western problem. It can occur anywhere. It means that attention to market structure, to market design, in electricity markets is critical.

FERC should not defer to the implementation of a poorly designed market. Regardless of all the rhetoric about deregulation and regulators getting out of the way to let the market work, FERC is legally prohibited from doing that, and cannot. It cannot take the hands-off approach.

Speaker Four

It's still the market structure, stupid.

And a major problem is market abuse. California rushed the restructuring legislation through with no real opportunity for dialogue, Clara in Blunderland rather than Alice in Wonderland. So the lesson from California is, Ask questions, let there be a full debate. There's no need to reinvent the wheel if it's working in PJM and New York.

Wealth transfer has had a disastrous effect on the economy. The 1999 California wholesale electric cost was \$7.5 billion. For 2000, it was \$28 billion. For this January, it may be \$4 billion, and \$28 billion or more for 2001. Where is the money going? Out of state. We need immediate and comprehensive reform.

We need six changes to market structure. One, we should declare a statewide emergency. Require all generators with participating generator agreements to operate as determined by the California ISO. Make plants available subject to penalties, e.g., a penalty of three times the market price for the period in question.

Two, we need plant bid caps. Impose resource-specific cost-based bid caps for generators with participating generator agreements. Apply bidcaps on an automated basis, triggered by market conditions. They could be cost plus, 10 to 20 percent. We should convene a Western-wide forum to adopt plant bid caps outside California.

Three, demand-side resources. We should implement broad-scale demand response. Create collaboration between the ISO, CPUC, UDCs, munis and the

Legislature. Provide RFPs for 1000-2000 MW. And remove other market barriers to demand-side response.

Four, we should develop plant availability standards. Schedule for planned generation outages, and require compliance with that schedule, subject to penalties. Convene a Western-wide forum to coordinate planned outage schedules.

Five, we should develop detailed forced outage reporting and standards, and penalties for outage-based violations. Ideally, these won't be intrusive, but we want to be looking over their shoulders.

Six, we should take steps towards comprehensive reform: Centralized dispatch to enable bilateral contracts; LMP pricing; integration of the day-ahead market from PX; loop flow included in day-ahead market; ancillary services and congestion integrated; and point-to-point financial transmission rights.

Discussion

Question: You consider the California market structure flawed, with the separation of the ISO and PX. Does FERC have the authority to combine the two given that state legislation separates them?

Response: I think if FERC pressed the point, a court would side with it because these are fundamentally interstate institutions. They are set out in state law, which raises a conflict, but I think the federal government would win that fight.

Question: Regarding the loss of 300 MW of demand-side response when price caps went away, what conservation took place?

Response: Basically, people had been cutting back on usage--air conditioners, lights, etc.--because their bills were high. This was over and above the state's interruptible programs. I think there would be a big difference if they had real-time meters, where they could actually see what it's costing them. But there's been resistance due to cost. Programs to increase efficiency of end-use appliances could be enhanced. But there has to be a concerted effort. Over the past 15 years, there has been a battle over utilities as vendors of conservation services. But when the utility does it, there is more DSM.

Question: If we're looking to a model that can work places other than the three tight pools in the Northeast, where you have the ability to have a central dispatch, what do you do in places where you have 10 or 20 control areas that are attempting to integrate? If they're not able to fully arrive at that central dispatch, you have a model with the equivalent of a scheduling coordinator.

Response: The RTO rules say clearly that control areas need to merge. But FERC didn't feel like it could force them. But the Commission is concerned about that issue and would like to push mergers of control areas soon.

Question: Can California purchase the

PJM software?

Response: The difficulty is that, even within PJM, it uses a lot of legacy systems and computer systems where it's not just a simple package that you can take and plop into California or anywhere else. In trying to do that in New England, there's been great difficulty. We need to figure out a way, even where you have 10 or 20 control areas, to still make it work. You may not be able to get all of them combined at once.

Question: I would measure political acceptance not by rates, but by public confidence that the market is working. The public looks to agencies or entities, sometimes on the state level and sometimes federal, for confidence that the markets are working the way agencies told them they're supposed to work, in order for them to accept the changes we're asking them to make. Another problem with last summer's price spikes was not being able to give information in a timely manner in order to either assure the public good or determine that there's something wrong with the market. How would you feel about a national policy that establishes what information is required for reliability purposes, requires everybody using the system to submit that information, and sets up a way to monitor the markets so the public is provided some assurance that the market is working the way it's supposed to?

Response: You make an important point. FERC is sorely behind the times in gathering the data it needs.

Question: In California, a lot of

decisions got put into a political sausage grinder, where various interest groups opined, often changing over time, about what was good and what was bad. What came out of that was the mess we have now. How do we make decisions in a way that leads to more sensible outcomes? Is there a way to de-politicize this?

First Response: It has been difficult, primarily because of all the rhetoric coming from the federal government, the state legislature, and state policymakers, to sit down and try to find a common ground about solutions. And FERC rules make it almost impossible to do that because if they sit down and talk with one party, they have to do the same with every one of them. And then there is a lot of posturing.

Second Response: One of the problems was to allow the legislature to get involved, although they had to on some issues. If you let regulators do their job, and if they do their job, things get done, and it's somewhat of a sausage-making process, but not as much as the legislative process is. But you have to have regulators who are willing to step up to the plate.

Question: There are two problems with the bid cap mechanism for mitigating the effects of market power. One is that we don't have the full coverage of the region, so the theory of the case would say you shouldn't bid more than your opportunity cost. But in this case your opportunity cost could be selling to Nevada, so how do we deal with that and, knowing what that opportunity cost is, how do we

put it into the bid caps? A second example of the same kind of problem is sales across different periods of time for the types of turbines we were talking about, that are cumulatively restricted over the year. You have the option of selling it in January or in June, and we have to consider that because you can't sell more than a certain volume over the whole year. And you get similar problems associated with hydro, which have cumulative limits. What does a real generator think about the efficacy of this kind of bid cap proposal?

Response: Bid caps are very different from price caps, and a lot of people erroneously use them interchangeably. If a party has a need, and I have generation, we will come together in a private transaction. Then I will still have to bid in a dutch auction or where the highest price clears in a bid auction. I may have a lower bid cap than another party, but I will be paid the highest clearing price bid cap. In that scenario I believe bid caps work very functionally.

There are three problems related to bid caps. Number one is the opportunity cost. The thing we have to be careful of is what happened in California, where everything started dumping into real time. But there are ways to get around that too. The second is the issue of the rationing of a scarce resource. These units are very important to the local reliability. There is a difficult problem of how to assign a pay me now, pay me later kind of optimization. The third issue goes to acquisition premiums. In any calculation of bid caps, it would be fair

to include the acquisition premium.

Question: Why does it make sense to have an annual limit on running a turbine for reasons of NOX emissions? You don't annualize them; they're a concern during certain times of the year. Wouldn't it be better to have a flexible permit system that would allow you to reflect in your cost the price of buying the permits?

Response: Yes, but that's not the way my program is set up. We have to figure out the incremental cost of pollution versus the cost of a blackout. We do need both the state and the federal government's weigh-in on this.

Question: Two questions. So far, none of the regions' regulatory authority extends the opportunity to impose sanctions in the face of truly egregious behavior, and yet virtually every other exchange or financial market does have that authority in severe conditions. I'd like to hear more discussion in that vein. Second, what do we do in terms of this summer?

First Response: On penalties, I think that over time that will come into the marketplace. We have coming up a 60-day review of the first filing of documentation of bids greater than the \$150 soft cap. I look to that as coming out with some definition and guidance to provide the market with a definition of just and reasonable. As to short-term fixes, I suggest bid caps in addition to some form of long-term contracts. On the issue of the shortage of supply, it's incumbent to face our environmental problems immediately; it must be cheaper than blackouts.

And there has to be real communication to consumers as to how and when to conserve, and when the crisis is really upon us. If we keep calling stage three, people don't even know anymore when it's really the time to respond.

Second Response: There need to be sanctions, but the question is whether it's FERC or the market operator. I agree that towards summer we need bid caps in place. Eight of the 11 Western governors have negotiated some form of a regional wholesale price cap. The question is whether something like that ought to be regionalized. I also think that the best minds ought to put their heads together and see if we can figure out how to do better on demand response.

Comment: In siting generation, there are two red flags. One is that you have to assume the worst about the surrounding plants and systems in order to have a default set of environmental parameters that's okay for everyone who's listed in the site application. Two, in choosing those parameters, not all the turbine developers or vendors have the same performance record; some might be really good on NOx or ammonia and really bad on CO. There are competitive market implications here and implications for adding capacity. On the transmission side, I love the suggestion that we bring the Federal government into the review as an antidote to the states' parochialism.

Response: One way would be to have a Federal siting law that left siting to the states, as long as they moved to

make a decision within a certain period of time on the environmental issues. And if the siting was for interstate commerce, the decision could say no, but the state could be trumped by a Federal siting law. I've heard that discussed on Capitol Hill and believe this issue is ripe for a legislative fix.

Comment: In terms of demand side, smart meters and other forms of demand-side bidding are independent of whether we have a regulated or deregulated system. For example, in the State of Washington, which is completely regulated, one utility has 400,000 customers on smart meters. The PUC expects to get a time-of-day rate proposal from the utility. Washington also has approved tariffs for all of the regulated utilities that allow the utility to put up a bid on any given day, saying if you agree to curtail, let's share the profits.

Comment: I want to make an appeal to some of the creative and thoughtful people in this room to give more thought to how we can bring this concern about load participation to reality. In PJM, New England and New York, a lot of thought is now being given to the creation of programs that go beyond simply emergency load response to economic response in real time as well as day ahead, and we need a lot of creative assistance in making those kinds of things work.

Comment: Let me try this to wrap up. What are the broad themes? I see six: Price information, long term contracts for retail price flexibility, competition on both the wholesale and retail level,

more cooperation between federal and state government, the importance of regional approaches and regional solutions, and conservation. If we have institutions that work properly, we can respond more effectively. FERC needs to be more active and aggressive. Eventually we need electricity competition legislation on a national basis that gives FERC more authority. The Department of Energy needs a stronger capacity to predict long-range some of these crises. We at least need legislation that has mandatory reliability standards, PUHCA reform--although it has to be part of comprehensive legislation--more energy efficiency programs and more funds for those. FERC should have more authority over market power. We've got to encourage regional transmission systems. We need regulation to prevent prices from skyrocketing. What is clear from the California experience is that you can't snap fingers and create a deregulated market.

Comment: The emergency in California is very serious, and there's a series of things that have to be done. The "Manifesto" summarizes some of the things we should be doing. The hard fact is that when this process moved forward, questions could not be raised. There was a politically correct language that was used to describe what was going on, and people were told not to point out when the arguments being made were internally inconsistent and didn't work. And that was fatal. Other parts of the country aren't perfect, but PJM does have a process where people look at these things in the clear light of day and try

to analyze what's going on.

Session Two: Re-regulating Retail Competition

Many consumers were persuaded to accept competition in retail markets because of representations that a competitive market would lead to lower prices. As long as prices continued in a downward direction, customers were accepting of the change in market structure. However, dramatic price increases in recent months, particularly in California and parts of the Northeast, have led to consumer fury and political backlash. Consumers, seeing no market relief from high prices are demanding that regulators and politicians take immediate action to protect them from escalating prices. Utilities with default service obligations are no happier. They face the real prospect of having to pay more for energy than they are permitted to pass on with no assurance as to the ultimate recovery of the difference. The current state of affairs poses a real conundrum. On one hand, it is highly improbable that many, if any, new entrants will appear in the market when they face substantial likelihood of having their downsides uncovered and the upside potential capped by either regulation or law. On the other hand, there are the twin issues of who ought to be eligible to exercise retail choice, and the design of the default service product for small consumers should they be eligible to choose from competing suppliers. If the product is a fixed price with no restrictions on switching, is it simply a free call option that is not economically viable? If it is a fixed price product with restricted switching, will sufficient, reliable market forces ever materialize, or will we forever be subject to some sort of regulation of the commodity? If the product is simply a pass-through of the unhedged wholesale market clearing price, will the body politic remain silent in the face of dramatic price escalation? Where does this leave us? Is retail competition really sustainable over the long run, or will standard offers, default service, and regulation have to be redesigned for some or all customers?

Speaker One

Gas and electricity prices have been high in New York, although not as spectacularly high as in California, and caused enough concern that there were Assembly hearings and *New York Times* articles questioning whether deregulation was working. Prices, in my assessment, are high due to normal market circumstances. I want to jump right into the retail question that we've been struggling with for at least two years now, which is, are retail markets working?

Many people think not. Initially, there was a lot of grumbling that this wasn't working because prices didn't go down, especially for small customers. Now we've seen increases and very few mass market customers have switched suppliers. Default service has properly emerged as the single issue that will drive the evolution of competition at the retail level.

There are many legitimate business issues around default service, but the great lesson from the Northeast over

the past year is that it's the product design that is the public policy issue that we really need to focus on. Regardless of who supplies it, how you design default service has an impact on retail competition.

I want to focus on two designs I think of as opposite ends of a spectrum. Option one is "throw them in the pool"--any customer who buys from the utility gets served at the spot market price. The idea is that the invisible hand of the market will offer price hedging services that customers can evaluate. The customers essentially choose whether to switch or swim.

This model has a large number of attractive economic features. You get a more efficient price to put in front of customers. It provides a really good benchmark. It eliminates the need to worry about restrictions on switching, as customers can leave or come back at any time. We need at least some customers who see spot market prices in order to have well-functioning wholesale markets. This model does have the disadvantage that if prices become high or volatile, it may not be sustainable for small customers.

Option two, which is what most states have done, I call "throw them in the slammer." This is fixed price service with restricted switching--because if you don't restrict switching, you can't control the gaming. The utility doesn't have to stay in the generation business; it can outsource the commodity or bid

out customers. The concept is that the visible hand of regulation needs to provide the price hedge, then customers essentially choose whether to switch or get slammed.

When you combine this with unrestricted switching, it functions as a free call option which allows marketers to slam customers back onto the utility when the price is above the regulated price. Then in turn you have either huge deferrals and cost shifting to other customers down the road or huge financial losses for the default provider. There hasn't been very much attention in the press about the losses some of the Northeast utilities have incurred, but they are large enough to, in a matter of three, four, five years, bankrupt some of the utilities on the losing end. So you have to substantially restrict switching if you allow a fixed price default service, or the price you pay for it is going to be astronomically higher.

The anecdotal evidence on volatility is that it may be a problem, even when it averages out over longer periods of time. Residential customers will say, this is hard work, I never had to do this before, and I'm not getting anything for it. So both volatility and price levels are an issue.

As for restrictions on switching, there are two common ways to do it. One is minimum term--you get one free switch, so if you come back you have to stay for, say, 12 months. The other is to make a distinction between

standard offer service, which is regulated customers who haven't switched, and those who switch. If they do switch and want to come back, or if they are new customers, they would be put on default service, which would be priced closer to market.

The minimum terms don't completely solve the arbitrage opportunities. The service distinctions are also problematic; it's difficult to deal with customers and tell them why they can't have something, especially when they have neighbors who might be paying 20 percent less because they're on a different class of service. And I don't know how, if you have a fixed price default service, a utility can adequately inform customers about what will happen if they try to come back and not scare the hell out of the customer who wants to switch.

Problems in wholesale markets are, for the moment, overshadowing concerns about the retail markets. We've also concluded that getting workably competitive markets is going to take longer than we thought. I still believe that markets are the right answer and that passing through the spot market, for large customers, works. But for mass market customers, the picture is less clear as a result of the experience in the Northeast last summer. I question whether the benefits are really there for small customers. The potential benefits are known, but the customer search and hassle costs are large.

And if we do conclude the benefits outweigh the costs, then we have this thorny implementation question of how, if you have a regulated default offering, to design it so that the market continues to work. If you have the question of how much volatility is too much, there has to be a fixed price alternative. I don't know how to do that without interfering with a well-functioning retail market.

Speaker Two

I'm going to use the term standard offer service, or SOS, to describe this generic family of rate freezes that are possibly indexed, possibly stepping up over time, but that are in no way tied to the spot price of power.

Of course, California is now the poster child for the downside to this, and we've seen where unhedged obligations can cost a lot of money. That financial problem aggravated the supply problem. It would have been a lot of money to solve this problem even if you had solved it *ex ante* and even if there hadn't been a market meltdown. It's expensive *ex ante*, and not working very well elsewhere. Pennsylvania, New Jersey, Massachusetts, Connecticut, Rhode Island all are revisiting how to provide this service or are in contentious hearings over the way it's been done so far. There has been a lot of slamming, of suppliers returning their customers to the utilities, because they anticipated that they would be better

able to profit from reselling their power in the spot market.

What makes these things complicated is that when they are fixed, and when customers have flexibility in when and how to use them, they are like call options. Call options are asymmetric opportunities to take advantage of a price relative to a market price that is exercised opportunistically by the customer, so these are *per se* valuable services. This feature of call options is not widely understood, or not widely considered at the time they are designed, so there's a tendency in the political discussion to believe that if you create the option at or above expected market prices that it's worthless. This is a huge fallacy.

Almost all wholesale traded contracts are fairly flat, large-scale bulk contracts with fixed volumes. On top of that, there is occasionally market power leverage from the available suppliers, particularly if you're one of the utilities in a region that divests, and you try to cover your obligation and find that the only party that has slack to help you out is the one you just sold your power to. Is there any way to cover this with impunity? Unfortunately, this issue also is rarely discussed at the time these obligations are created.

The cleanest way is to divest your generation and transfer the liability for the coverage with the assets. That makes the stranded costs of the utility reflect the cost of that obligation. In

effect, the customers will have paid for the option of having the right to come back to this fixed price because their CTC is higher. If you don't do that, the customers are getting it for free. That has happened in several places, including California and Pennsylvania.

If you buy hedges, and they prove more costly than the spot market after the fact, are those costs recoverable? Maybe you want to have some portion of the spot price flow through, so that you only dampen the exposure. Or if you hedge in January, say, for the summer, and then it could have been cheaper to hedge in March because forward prices went down. You have to sort all this out with your regulators, and this requires them to address something they're not very comfortable addressing, which is the quality of service they want to see in their area. Absent that clarification, utilities don't know what to do.

The irony of these services is that, while they are ostensibly transmission mechanisms, in fact they really aren't; they tend to be barriers to transition. Customers see a fixed price which inoculates them from the market, so they have no interest in cultivating a demand management technology. Forward markets that would otherwise be created for customer hedging don't emerge because there's a standing hedge that's already available in an uncompensated way through the regulated offering. Retail entrants can't offer value-added service of extra risk management, so they are blocked from

one of the most valuable services they can provide.

What can be done? One idea is to think about other markets that are essential. Food is an essential commodity, and we don't want the indigent to be unable to buy food. But we don't put the burden on the grocery store to subsidize prices to poor people. Instead, we have food stamps. So it doesn't distort the food industry, it is simply a social service.

A second possibility is to think about this as a kind of insurance problem. In the banking and savings and loan industries, we have insurance corporations which step in if the balance sheets of those industries become too weak. That gives a third party some oversight of those folks; they have to report their financial condition, it's audited on a regular basis, and if certain thresholds of impaired solvency are reached, the government can step in to reorganize those companies or force them to change their operating practices. We should do something like this for distribution companies.

Can we rethink what we ought to be doing for customers? One possibility is to say, let's treat this more like a default service than like a price insurance that's just there to give customers a cheap alternative to the market. You would restrict eligibility to small customers on the theory that large ones can afford to manage their own coverage. To the extent you want

to provide large customers some continuity of service, you give them a facilitating access to the wholesale market but nothing more. If we're trying to make sure that the average bill doesn't get above a certain amount for some class of vulnerable customers, we could set it with that in mind and work backwards to prices. It needs to be seasonalized, tied to fuel indices. The whole program should have a sunset, although that's proving to be difficult.

In terms of outsourcing the liability for this type of service, I think the way to do it is via two-part auctions. The idea of doing this through auctioning off the customers is that you get utilities out of the risk management business and regulators out of the prudence review business. My sense is that you need to auction this off for only about six to 24 months at a time. The advantage of not going out many years is that it's possible to forecast with reasonable confidence what the costs of bearing this risk are likely to be. Once you get out more than about two years, it's hard to guess what the structural character of the power market will be, as rules could change.

Since we're auctioning off the customer, the quantity risk is taken by the bidder. So the bids are not in fixed MW blocks; they are for a total portion of the slice of the standard offer service, and this is good for retail competition because it puts the names of these generators in front of customers.

So far, SOS auctions have mostly failed, partly because they have usually required one-part bids or services at or below the price of the SOS that was already in place. But you could hold a two-part auction that would correct this problem.

Unfortunately, there were a lot of politically correct constraints on the discussion of how to do market structure, and it turns out there are a lot of politically correct constraints on how to think about SOS as well. That should be one of the lessons of the California experience--not to do that in the other arena as well.

Speaker Three

There are three dimensions to the default service issue that I want to look at: How the utilities procure this service, the retail rate structures they use, and what the default service looks like when it is not a regulated price.

In this model, the utilities do have the obligation to serve all customers should they care to have it. There is also a standard offer service in which customers have, at the commencement of the restructuring process, an opportunity to get a fixed price. They get that fixed price as long as they choose to stay there, but once they leave they cannot come back. New customers coming into the utility service territory are not allowed to get that service; they automatically become default service customers and

face the equivalent of a market price.

Let me note some of the important differences around supply procurements between California and Massachusetts. In Massachusetts, long-term contracts were allowed. Indeed, in one instance generation was divested along with a long-term purchased power contract obligation to the buyer. That has provided the smoothest and lowest price path for customers on standard offer service in Massachusetts. However, spot market purchases were allowed for default service customers, and distribution companies were put in a cost-neutral position, essentially being told they would have to refund overcollections but could recover excess costs.

Because this sort of model was followed in a number of New England states, it's contributed to substantial hedging in the New England markets. In the summer of 2000 in the California ISO, there was very modest hedging through either contracts or use of owned generation, as compared to New England and PJM, where most utilities divested their power plants and there are bilateral contracts of anywhere from one year to a few years, and a modest amount of trading in the spot market. For New England, that has contributed to a smoother wholesale price path and less difficulty in finding ways to match retail rates with wholesale costs.

While Boston Edison has a temporary undercollection problem, the higher

rate that were recently approved will presumably help them over time to avoid that problem. Retail customers aren't happy about having standard offer prices go up, but that grumbling has been so far modest compared to the kind of unhappiness people have experienced in California. Western Massachusetts Electric Company has shown their customers a price reflective of the wholesale market. In this case, these prices are procured over a one year period, so they're not a real-time spot price but are reflective of the risks inherent in the market over 12 months. They have a steady pattern of some overcollections, some undercollections, but essentially recovering its wholesale costs over time.

What are the issues for Massachusetts in trying to improve its market design? First, we have almost negligible retail competition, and it's actually shrinking over time. Any reform strategy for the retail market must find ways to create demand/response. Second, we may see the use of the spot market increasing. I wonder if part of what's happening is concern by utilities as to whether they will be able to get recovery for their procurement costs. If there is no well-established understanding with public utility commissions as to what is prudent behavior in procurement of supply, it's going to make utilities risk-averse. And if there's anything California tells us, it's that we want to avoid that kind of risk-averse behavior leading to a highly socialized form of risk avoidance.

In Massachusetts, we have seen a growing migration of customers toward default service, and they're coming from two sources. We see a steady attrition of standard offer customers--so more customers are moving from there to default service. They are initially going to competitive supply and then coming back to default service. I think this is driven by the considerable surge in gas prices over the last year or so in which large customers that had been able to get highly competitive contracts from competitive suppliers at the outset of restructuring saw those contracts coming to an end, went into the market, and could not find anyone who would give them a contract even equal to the standard offer. So they went to default service. This is a disturbing phenomenon and not a sustainable situation in the long run.

On demand response, last May 8 Massachusetts had a price explosion, from \$5 or 10/MWh to \$6,000/MWh for four hours. There was absolutely no response from load to that tremendous surge in wholesale prices. But to look at how helpful demand response could be, the impact of energy efficiency investments over the last few years has easily helped Massachusetts avoid 150 MW at peak demand. In New England, that's about one percent of load at a peak time. That has the potential to bring the market clearing price down from \$1,000 to \$600.

To sum up, what do we have to do? First, we must have a competitive wholesale market, sparing no effort in that regard. Second, we need to encourage utility supply procurements that stabilize wholesale prices. The design of the current default service procurement requires it to be purchased over a six-month period. It's worth looking at whether that should be extended, at least at whether a one-year procurement would be a better arrangement. We don't want the utility to provide so much hedging that there's no room for competitive suppliers to come in and do better. But there's evidence that for such risks as weather and fuel, it's not necessarily bad to give utilities room to hedge. Finally, at the retail level we need new incentives for load management and energy efficiency.

Speaker Four

The overarching question is whether the re-regulation of retail competition is in order. It's difficult for me to say at this point, because Ohio has just implemented its restructuring plan. But I can say this: We've learned absolutely nothing from the California experience. Fortunately, Ohio copied nothing from California.

Along with the Ohio legislature, the PUC promised that everyone was going to win. This is how they sold it. We knew better; there are some fairly predictable outcomes taking place. One was that our retail success would be nil unless we improved the

wholesale market. Ohio sits in the middle of three ISOs, so it has a lot of seams issues, not to mention the physical issues. You can't expect residential competition to be a success until you take care of wholesale and transmission issues.

The legislature has provided for aggregation, specifically municipal aggregation, be it a city, township, county, etc. Once that takes place, you have to opt out in order to not be a part of the aggregated body. This took off like crazy--a lot of communities in Ohio, particularly northern Ohio, chose to go this way. Some communities have arranged for electricity through suppliers, others through marketers. But we're not getting any bids from suppliers, maybe because there will be a high default rate for customers not paying their bills.

What are you going to do in that situation? Aggregate these communities and say you can't vote because you defaulted on your bills? Or we're going to force you to opt out because you're in arrears for the last 90 days? Upon who does the burden fall for financial responsibility--the community, the aggregator, or the supplier?

We approved a lot of tariffs, but we have to decide how this is going to stretch itself out. If 20% of the load shifts in each customer class, the economy could end its market development period with that

particular box of customers. It became apparent that there was some movement among the utilities to do certain things within their commercial industrial classes to move that 20% into the marketplace quickly. This is where we learn from the California experience. We were determined not to cut loose the customer class through the market. So we do have a market development period, and I continue to tell people that this is a five-year transition. Hopefully the wholesale market will improve, and at the same time we will bring more generation online.

There are a lot of issues that we continue to work on. One of the tariffs we've not approved yet would speak to the standard offer and what happens when people can't get into the system. What we've done so far is say people can go back and forth twice within the first year. After that all bets are off until we finish our rule. People will have to be consistent. Rates should go to market rates after a customer moves back and forth a lot.

Discussion

Question: If there were an effective wholesale market, what would you expect to be the value-added of a retail system?

Response: The theoretical answer is because if you have a competitive market, you unleash the ability of suppliers to provide lower prices, innovative products, product

differentiation, and so on. The problem we're having is moving from theory to practice. There are two ways to do retail procurement, having the utility take competitive bids, offering a range of portfolios; and forcing the customers to go into the market, with the utility having no responsibility except default service. The challenge is everything in between. In the middle, we're going to be in a lot of trouble because a regulatory agency takes six months just to figure out what the allowed rate of return equity is going to be. To have them doing complex options models seems impractical. The Oregon model is the best one. In it, residential and small commercial customers are not given the freedom to go out to ESPs for the time being. The utility has an obligation to engage in competitive procurement for them. There are alternative portfolios customers can choose--spot portfolio, contract portfolio with a mix of two, three, four and five-year contracts, green power. Larger customers go into the market and deal through an ESP. If they want to stay as a default service customer, they get spot prices, which gives them incentives to find an ESP that will hedge those prices and provide them with other value-added services.

Comment: But it's hard for regulation to not create a menu which can be gamed. Regulators, by virtue of the political pressure they're under, almost always open the opportunity for customers to switch in a way that ultimately is going to include some

adverse selection. So you're almost sure to have somebody jumping back later on to the wholesale average.

Comment: On the retail side, there are a couple of lessons learned. One, we expected convergence of telecommunications, cable, and Internet, real-time metering, pricing, direct load control, monitoring, aggregation, and playing in the wholesale market with a set of ESPs that have customers they can dispatch on demand at certain times. It was a disaster because the utilities didn't want to do it. They left things so complicated that there was no way you could break out metering and billing and allow those to be comparable services. Two, you need regulatory buy-in. A performance-based rate-making approach that would have given San Diego Gas & Electric an ability to hedge was opposed by Enron and a whole set of other people who said it would let UDCs play in the market and would undercut them. So the PUC struck it down. That would have allowed SDG&E to prepare for May of this year. We need to think about the structure, and somebody has to break it out.

Response: The notion of taking away competition and saying, You're going to have these three options to choose from, and if you pick one you've got to say with it for a year, two years--this will not succeed. People feel they paid for more choice.

Comment: Even with metering and

billing, customer care, convergence kinds of questions, we're polluting that area with the same problem by making it ambiguous as to whether utilities are going to have to stay in the business of being care providers of last resort. As a result, they're stuck not having clear answers to whether they do have incremental costs of getting out of that business as they lose customers or incremental costs of having to care for a much riskier and more uncertain base as they lose customers. That's made the question of shopping credits hard to clarify as to what is avoided and whether that creates an incentive for entrants. So again, this having it both ways turns out to make it hard to have it either way.

Question: What's the "there" that we're trying to get to? What troubles me is that we seem to be bunting about something where we're probably not going to get much in the way of customer responsiveness, although we may have forced very efficient carbon copies of each other as the intermediary for load service. There are important issues regarding how does that get factored in, who gets the control and supplies so that it's fair in terms of encouraging the technological evolution. What are steps one could take to get there?

Response: It would be a mistake for any of us to underestimate the potential of suppliers to improve the efficiency overall. There are costs to moving to this new system, and we should not be reluctant to let certain

people cover this cost. For example, residential choice: The cost of the transition of taking that customer from an IOU T&D company to somebody else is so high that it has defeated virtually every effort so far to have retail choice. If we pay for it, the utility is going to have to pay and we're going to have to pay.

Comment. When customers have no options for their central services, not just power, but a whole lot of other things, they will turn to politicians for a fix. Politicians are interfering because consumers are acting rationally. They can't tolerate the level of price increases. It all flows out of the fact that we need a market alternative. In the past, there were a lot of retail options for those with market leverage. And there are real prices to be paid in both the old and new regimes for not having retail choice.

Comment: We should question this idea that Congress knows better what's good for our consumers than they do themselves, where at least historically we have had low prices, reliable service and a system that worked well. Why can't we, despite the realities that were just described, find some second-best choices that are better than the kind of first-best choice that is creating chaos of letting states make their own choices about retail competition? I don't see that it's an obvious choice for the tremendous diversity of economics, culture and political structure in this country that some

model is the only way, to be imposed top down, particularly from Congress.

Comment: There's been the assumption with the Oregon model, for example, that big customers are sophisticated and can take care of themselves. In Washington, large customers weren't very sophisticated, or at least didn't make choices that turned out to be the right ones. With price spikes, very few of them hedged. If they make big mistakes, the community can suffer. What happens when they make these kinds of mistakes? Businesses fold all the time, but with electricity, is that desirable? One of the interesting things is to have had on the stand as witnesses the actual people who are making these choices. It's not the big

business, it's a guy who runs the plant who doesn't know a lot about electricity. One of the values of public interest regulation is that you get to make a judgment about what is in the public interest.

Session Three: Absorbing Shocks to the System

The principles of electricity restructuring have emphasized a need for flexibility. An explicit motivation has been the recognition that no design would be perfect. There would have to be mid-course corrections. The experience in some regions has been just that: relatively modest mid-course corrections continue to be identified, debated and implemented. The experience in other cases, however, has been more like a shock to the system, calling for more than minor corrections. Here the fundamental assumptions and goals of electricity restructuring have been called into question. Along the way, the pressure is enormous to make major decisions. The goals can be forgotten, or rejected. The rationale for the original design may be lost. What should be learned about how to respond to major surprises, react to the real pressures, but stay on course? Policies under constant discussion include price caps, circuit breakers, forward contracts, prudence reviews, regulated investments, and more. Some quick fixes may complicate or halt real restructuring. Others changes may be made part of a transition that truly transits to where we want to go. What guidance can we glean from the developing experience? How big a shock can the system bear? When do mistakes cause us to reverse course? Can we put the toothpaste back in the tube?

Speaker One

Electricity sector reform in this country is at a crossroads. I divide the states into three groups: The states that are pretty far down the path, and there are almost a dozen of those, California, Massachusetts, Maine, Rhode Island, New York, Connecticut, New Jersey,

Pennsylvania, and Illinois; a group of states that have passed restructuring laws but haven't really begun yet or are in the process of beginning; and 24 or 25 states that have done nothing.

Each of these groups of states is trying to learn lessons from the California experience. Those that are far down the road are trying to learn what mid-

course corrections, if any, are necessary. In many of the rest of the states, however, they're asking even deeper questions, including why should we do this at all? Shouldn't we wait until people figure out how to do it right?

We have to recognize that restructuring has often been done for the wrong reasons, and the challenges of doing it well have been oversimplified. The political sales pitch given in the pioneer states focused on short-run consumer benefits, in a regime in which there was excess capacity and cheap natural gas, which some people thought would exist forever. Restructuring was depicted as easy to do. Legislators passed bills without really knowing what they were voting on in many cases. And many legislators have been surprised about the events that have transpired.

Reliance on competitive markets has both benefits and costs. If one is going to go into this process, one cannot assume it has only benefits. To me, the benefits of electricity restructuring were not the short-run benefits, which were largely reallocations of rents associated with stranded costs, but rather the long-run benefits in terms of investments in new clean and efficient generating facilities, performance improvements in existing generating facilities, retirements of old generating facilities, and provision of value-added services, especially energy management services, to retail

customers.

But creating a system that achieves these goals in a satisfactory way is a major technical and institutional challenge. The need for flexibility with mid-course corrections has to be built into the system. And the potential costs have to be understood. A failure to build in for contingencies such as very high natural gas prices or other unanticipated increases in demand is a major mistake. Partly, people didn't want to think about these bad contingencies, because it would have undermined a lot of the rhetoric about the short-run gains that were going to be achieved. In moving forward, I think we're going to see a lot more contingency analysis that looks not only at the good outcomes but also at the potentially bad outcomes. Systems need to be built that are robust to both good and bad shocks on the supply and demand side.

The second general point is that the spot markets for electricity work very poorly when supplies are tight. It's difficult to design and implement spot markets for energy and ancillary services that perform well after a wide range of contingencies. The price volatility in spot markets derives from the basic fact that electricity cannot be stored economically and that supply and demand must clear continuously, leading to just-in-time production. The short-run demand for electricity is almost perfectly elastic. These conditions also create unusual

opportunities for exercise of unilateral market power. What we've learned from the California experience is that these problems can be largely mitigated if a large fraction of demand is covered by fixed-price contracts and if we can build demand or price responsiveness into the real-time or day-ahead market. Better market designs and effective market power mitigation programs can further help to reduce the problems associated with the performance of spot markets.

A third point we should learn is that the focus of restructuring has to be reoriented more towards the long run. In particular, it has to emphasize creating an environment that encourages investment in generation and transmission facilities. The fixation of restructuring programs on short-run price reductions and the debates over stranded cost recovery led to reforms that paid inadequate attention to creating an institutional environment that would support timely investments in new generating and transmission capacity. There's been little new generating capacity added anywhere in the U.S. in the last decade. It isn't just California; there's been almost no new generating capacity anywhere in the Western Systems Coordinating Council during the last half of the 1990s. Investment in transmission capacity has also continued to fall.

What do we make of this? Once the rules of the game were set up in California, a lot of plants went into the

permitting and production cycle. Long transition periods need to take into account matching supply and demand conditions between the old world and the new world, when there's a substantial gap in time between the two. On the transmission front, we don't have an adequate framework to encourage enhancements to the transmission network. I continue to believe that there are substantial social benefits to supporting what some might characterize as over-investment in transmission, because the markets don't work well when there is a substantial amount of congestion on the system.

A fourth point: I believe it was a mistake to thrust all retail customers into the competitive retail market at the outset and all at once. Retail competition is widely viewed around the country by residential and small commercial customers as a failure. A few have chosen to be served by ESPs. A growing number of those who switched have been sent back to their utilities, and prices began to rise. Even in Pennsylvania, the poster child for success for retail competition, there's significantly less load being served by ESPs in January 2001 as opposed to January 2000.

The California Blue Book issued in April 1994 expressed substantial caution about customer choice and proposed a transition scheme which involved the largest customers going first, evaluating how retail competition was working, making mid-course

corrections, and gradually expanding the system over a period of five to six years to all customers. It recognized that there was a need to create an environment in which there were a significant number of competing ESPs. And it provided for a procurement program in the interim that would assure that utilities had procurement portfolios of generating contracts to support the customers who remained during the transition.

I think we need to set as a goal a period of time in which all customers will eventually go into the competitive market, as they have in England. I don't think you can have a system that's half competitive and half regulated. It's unstable.

My final point. Success of reforms to create well-functioning competitive markets requires cooperation between federal and state governments, and rapid and decisive action to fix market problems. This may be the most important lesson from the California experience. In this country, we have a peculiar mix of state and federal jurisdiction over electric utilities, in a world where electric power networks in large regions make it essential that state and federal regulators work together to create market and regulatory institutions and support well-functioning competitive markets.

Betsy Moler's approach, which she often referred to as cooperative federalism, makes a lot of sense. My primary criticism of FERC during this

period, especially in the last two years, is a little too much of letting 1,000 flowers bloom. I would like to have seen FERC crack the whip a bit more and sooner, rather than giving each of the regions more rope than they needed to hang themselves with. One problem for FERC and state regulatory agencies is lack of adequate staffing. If you look through FERC's December 15 order on California and the West, it is filled with factual errors. If we're going to rely on regulatory agencies to help set up this system and monitor it, they need to be adequately staffed.

I attribute much of the most serious aspects of this mess to a failure of government, a failure of the California regulators to act quickly and decisively when this became an obvious problem in August and September, the failure of FERC to continuously try to work with the California regulators, and a general breakdown in cooperation between the federal government and the state government.

However, this is not just a California crisis. It's a regional problem. Going back to the 1960s, the federal government and the state governments have encouraged the states in the West to coordinate electricity supply and consumption decisions. The long transmission lines up to the Northwest were all facilitated by help from the federal government. The PX, the ISO, and all the market institutions that everybody now thinks were failures were all approved by FERC.

I don't believe that it is either fair or in the long-term interests of the country for the federal government to now be taking the position that this is entirely a California problem. It behooves the federal government to restore its position as a partner in reform that cares about sky-high prices, rolling blackouts, and related problems, and has something to offer to the states in the spirit of partnership. If not, and if the new Administration doesn't take a more cooperative approach to the problems, they are likely to kill the golden goose before it has laid too many golden eggs.

Speaker Two

I would like to make a plea for linguistic clarity. It seems to me that there are a number of errors in common usage. We need to purge the following terms:

Ancillary services. Think about this from the customer's point of view. They don't want "watts," they want electric power when they turn on the switch. How these services are priced will affect the way they are produced. It is terribly important to price all those services in markets, and not just deal with energy and then say, oh, we'll take care of the rest administratively, as they have largely in California.

Generator or supplier bids. We're striving to get demand back into the market. So, what are demand bids going to turn in? Demand offers to

buy? We don't leave ourselves with much in the way of options.

Market power abuse. Yes, there is market power. But if it's there, we would expect people to try to abuse it. That's the whole point of market power. Our real concern ought to be how prolonged is that exercise of market power, whether it is sustained rather than periodic.

Gaming. We hope market participants game, because that's how we learn new things. That's what they are supposed to do to innovate and to figure out where corrections need to be made.

Circuit Breakers. That's a kinder word for caps. Perhaps the right term is "shock absorbers," to moderate huge swings. But we need to have flashing lights so everyone sees that they are in place and signal an extraordinary circumstance.

My favorite oxymoron, the free market. No market was ever free. Markets require a minimum level of government rules, regulations and enforcement. It's not a totally automated business.

And stranded costs, which are road kill. Stranded costs are the point of a market. The objective of a market is for one supplier to strand another supplier's stranded costs. I distinguish between regulatory stranded costs, which come about through changes in accounting rules, and costs that get stranded because the markets

demonstrate that those assets are uneconomic or inefficient.

What problems need to be solved if we want to continue to move forward?

One is the question of how many suppliers it takes to make an effective market. New York allows the market to separate into up to 11 separate markets when there is congestion on the transmission system, but that means there are fewer effective suppliers in each zone. So there's a market design issue. The New York Public Service Commission says you need at least four suppliers. We're doing experiments, and after about 40 iterations of bidding various weeks, participants can figure out what's going on with the other participants. There's some indication that even with just six participants, there begins to be some implicit collusion.

The second problem is the role of excess capacity in the market. When there are extreme events like outages or unusually high temperatures, it is the amount of capacity and suppliers not selected that dictates how competitive the market will be. This is why it's essential to include the demand side of the market. Demand side, at those critical points when supply is short, introduces additional supplier and additional capacity that may get stifled in the market place. So it disciplines price.

Three, the biggest problem in my experience is the culture change for

staff members in the industry. We've taken the old, centrally planned system and substituted competitive offers. But we still have a centrally planned system, i.e., a sophisticated optimization routine. We all know electricity has turned into an entitlement.

Four, how do we strengthen and build new transmission? That goes from nuclear and coal-fired plants to wind farms, which, after all, are a centralized kind of entity remote from load centers. They, too, rely on transmission, so it works against any centralized kind of generation, whether based on renewable or conventional means. It'll give a tremendous impetus towards distributed generation that can be done smaller and more locally.

Five is the issue of expectations, in terms of clarity of rules versus innovation. There's a tension between the desire to know what's going to happen and the beauty of markets, which is to create surprises. We want innovation, yet resist it.

Six, federal/state issues. One of the biggest questions is regional markets and the role of the government in pushing them. FERC's biggest problems with RTOs/ISOs are in single-state markets like California and New York. As the three regions of the Northeast converge, one of the big impediments is software. It would be great to not have each small region investing in its own software.

Finally, what it really boils down to is our lack of capacity to decide how to decide where we're going to site and place new facilities. It is a failure of government, because these siting decisions deal with a range of issues affecting the public good. It's not an answer to have federal siting; if you try to ram something down the public's throat, it just isn't going to work. California has provided a wake-up call as to the need to explain the options, the needs, and to let people make those choices. My guess is we won't have the political courage to do it on a large scale, so ultimately this will result in a push towards decentralized kinds of generation, where every customer weighs the benefits of having the capacity in their neighborhood or basement against the environmental effects.

Speaker Three

Why are we doing this? I would suggest people go back and look at the reasons given in the Blue Book. This was well-constructed and thoughtful. We find considerable merit in calls for direct access. Choice will decentralize decisionmaking and give consumers direct influence over development, delivery, consumption and price.

California must opt for a strategy that fosters economic growth. I think the rates that were honed down over the last three or four years probably did stimulate growth. California must resist the tendency to drape outmoded regulatory approaches onto new and

dynamic circumstances. This is where California failed the most. California didn't revisit siting issues. It needs to properly construct the default service role. Failure to get restructuring right can have tremendous and mostly negative impacts, like the financial distress of utilities and customers. We've created a situation where people are going to constantly run back to the regulators and say "help me", instead of taking it upon themselves.

What won't work? Bankruptcy is a very bad idea; it provides no financial certainty. Repeated calls for the "good old days" of heavy-handed regulation just delay the necessary fixes. Price controls in the wholesale market lead to real shortages. Government shouldn't become the portfolio manager for large amounts of electricity purchases. Government is not the right party to invest large sums in new generation. And it doesn't help to try to place blame, which has been the focus of the first few months of the California crisis.

What will work? We need to implement Order 2000, with real access and well-structured rules; don't let incumbents drive the process. FERC, not the ISOs, needs to monitor the markets. Risk management is very complex in the power business and not the same as making a bet. Retail access is still the solution. Customers need to see price signals. Any restructuring needs to deal with entry for new generation. We need to look forward to solutions--there are no

answers in placing blame.

Other thoughts: Knowledge is power; we need to warn participants that problems can occur. Don't let the urgent get in the way of the important, e.g., put RTOs in place quickly. Stay focused on implementing key elements. There are no other workable options; going back to regulation is not the way. Supply and demand still trump; sooner or later reasonable prices come down to more supply or less demand or both.

Discussion

Question: Why is it necessary to start with big customers and work down to residential? Why is it unstable to have a system that's half competitive and half regulated? And can you go back when you've already given everyone choice?

First Response: As long as the utility and regulators are in a substantial way in the power procurement business, you're always going to have customers out in the market, coming back and asking for special protection when adverse events hit. And whenever you have some customers in the market and others not, there will always be a portfolio to serve those not in the market. The long-run goal should be to get out of the position where customers are continuously looking to regulators for help. Consumer groups wanted choice because they feared they'd get screwed; they felt they got screwed by telephone and natural gas

deregulation. I think it was their way of insuring, in their minds, that they would share in the "benefits" of lower prices. In states where very few customers have exercised choice, very few would know if it were taken away from them. But I would recommend, not taking choice away, but educating and forcing consumers to start thinking about choice. That would involve starting by having them choose which utility portfolio they want to have and get a sense for whether it's worth it to them to do that.

Second Response: You can think of it as giving the consumer the "right to fire" their utility supplier that's not providing adequate service.

Third Response: One of the things we've missed with residential and small commercial costs is, if you look at distribution bills, I'm always stunned at how many customers consume 300 kilowatt hours a month or less and are in systems where the monthly customer charge is \$2 or \$3. I'm not sure anyone wants those customers unless they can pay more money, and I think rate re-balancing and transitioning those customers to a point where there really is an economical opportunity for ESPs to compete for them is going to take some time. And those are the customer groups that tend to be represented in an organized fashion and want protection.

Question: How do we avoid further shocks?

First Response: Get RTOs functioning even more quickly, and revisit siting requirements.

Second Response: What could have been done in California that would have kept a difficult situation from turning into a catastrophe are two things. One, we could have, as part of the restructuring program, facilitated the licensing and completion of new generating capacity. There's a long queue of generating capacity that wanted to get into this market very early. Two, the utilities could have taken back contracts, when they sold their power plants, that covered some significant fraction of their default service load, even if it had adjustment in it for gas prices and so on. That would have mitigated some of the economic damage.

Third Response: There is an extra cost to having a competitive market--you need an extra margin of capacity in order to discipline the market. We should be endeavoring for slightly excess capacity all the time; it's important to socialize the cost of inducing some excess.

Question: A comment: The drive to include all customers leads you to some very political situations, and one consequence may be the imposition of a rate freeze that complicates everything. A question: How do you get adequate generation without the price signals sent by a spot market, which doesn't work well when it's

tight?

First Response: We were able to get this going, and the way it got going in a lot of other countries was, there was excess capacity or at least substantial capacity. The interaction between markets and investment is complex. The incentives of a generator during tight supply situations are dramatically different. Contracts provide an important discipline to the market during those tight supply situations so that prices can go up to clear supply and demand, assuming demand is adequately represented in the market. In England, there's no month since 1990 when the average price in the pool was as high as the price this year in California. Yet there's been substantial entry of new generating capacity into the system in England and Wales.

Comment: I think the experience in England actually is more general. The general problem in restructured markets in other countries has been excess entry, the prices are too low, we can't make any money, etc., so the California experience is unusual in that regard.

Question: Do you believe that senior leaders in the industry have discharged their public interest obligations in a responsible manner and, if not, what are the obstacles that keep these senior thought leaders from unifying around a coherent message?

First Response: There isn't agreement

among the intelligentsia about how best to organize these markets, and perhaps one of the things that was wrong was in not communicating the uncertainties about all of the moving parts and how they fit together. So the design took a little bit from different models.

Second Response: I feel a deep regret about what's happened. California got into a politically correct mode where you just couldn't say certain things. When people presented problems, they were just swept under the table. There was the same kind of process in New England, but then it was opened up, with problems being something to resolve rather than just saying that the market will take care of it. That also happened in PJM, New York, other countries--it is a critical difference.

Comment: In other countries, there's been political leadership to move in this direction. They decide to proceed, they hire experts, they do it.

Response: But in most other countries, restructuring was done in the context of the privatization of state-owned enterprises. So the issues associated with incumbent property rights could be avoided. They had more freedom. A lot of what was problematic in this country had to do with stranded cost issues. And parliamentary democracies are different.

Question: What are the early warning systems that regulators should pay attention to?

Response: It's important for market participants to identify to policymakers when there's an important change ahead that could significantly affect prices, so there aren't surprises--like we knew in advance about this winter's gas prices from looking at NYMEX. Price is pretty much the only early warning system that should be relied upon.

Question: We may be underestimating the effect of the California experience on the other states. Is there anything we can do collectively to address this problem? We need a coherent statement about what can be achieved in the wholesale market.

First Response: The best way of convincing other states that it makes sense to go down this path is to demonstrate that there are benefits from doing it. If we can't make it work properly in the states that are committed to this, it's going to be a tough sell. The events of the summer are actually moving us backwards because they led to an increased interest in each state having its own power supplies and controlling them. Overcoming that is going to be a challenge.

Second Response: States where it's easy to site plants are likely to do so. Electricity is just one example--airports are another--of a shortage of infrastructure investment.

Question: We should be able to rely more on market monitoring groups.

Do they need more penalty authority?
How do we get uniform standards?

First Response: There's great ambivalence on this. It gets down to a philosophical debate as to the role of the ISO. What about doing it like we enforce speed limits--set them low, and we may penalize you.

Second Response: You have to divide the problems into different categories, and responsibility between FERC and ISOs. The Justice Department or Federal Trade Commission are not the proper place because these are not generally anti-trust violations. For market monitoring, asking did people cheat on the rules, the ISO should do that and they should whack offenders. For behavior that cheats on the spirit of the rules, where someone's found some hole that they can make a lot of money at, that too should be the responsibility of the ISO; it should tell them not to do it again, and fix the rule. When we get to general issues of market power and how to mitigate them, that should be at FERC. But FERC needs the staff, resources and will to do that. And we have to create a framework for Market Surveillance Committees to interact with FERC in more productive ways than has been the case up until now.

Comment: In terms of governance, New York works not just because of the design, but because of the proactive efforts of the board of the ISO. To me, it goes back to the issue of leadership. How it's operated, its

accessibility, its willingness to meet with market participants stands in striking contrast to New England. We need to cast ourselves as chefs rather than just food critics. This is an inherently political process, and it's incumbent upon all of us to look back at our collective and individual successes and engage ourselves actively in that process. That's where the public policy is going to be made.

Question: Now that we see major flaws in certain market rules, is it better to go down a road with a flawed structure or an uncertain structure?

First Response: Over the past year, the market in California would dry up every day ahead of a decision of the ISO board as to whether or not there would be a cap. Markets work where there are private decisionmakers coming to the table with the same kinds of private motivations. That's more predictable than a stakeholder board like the California ISO board.

Second Response: I was once told, as a regulator, that every time a regulator changes a rule, there are a thousand lightbulbs that go on to figure out how to game the new rule. PJM's approach was to figure out how to get one market right, then move on to shaping another market. Maybe that's a really good idea, but the longer you have a set of rules for some market, the harder it is to modify. I would bet PJM will never get all of the markets in place because there are too many entrenched interests in the current design.

Certainty versus innovation is a big tension.