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HARVARD ELECTRICITY POLICY GROUP SPECIAL SEMINAR:

Competition in Electricity Generation, Market Power and Market Pricing

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MEETING SUMMARY

All the major issues arising in the process of restructuring electricity markets interact with the concerns over market power. The EPAct builds from [an] assumed potential for a competitive electricity generation market However, in previous sessions participants have argued that "it is one thing to authorize a competitive wholesale market; it is another thing to create one. " Where market power exists, access to essential facilities will be necessary but not sufficient to achieve the objectives of reform. Market power issues must be addressed in regional generation markets. No simple design can overcome a fundamental concentration of ownership of generation, barriers to entry, or cross subsidies. Any new market model for generation needs to recognize the conditions of market power and provide mechanisms to prevent abuse. The two ends of the policy spectrum for dealing with market power are regulation and divestiture. In the middle of the spectrum are many plausible options that could be implemented to monitor or mitigate any abuse of market power. Policy options must balance imperfections in markets and in regulation on a path consistent with the broader. goals of restructuring.

Setting the Stage: Objectives, Theory, and Experience

Moderator:

In discussing the restructuring of the electricity industry in the United States, some of us have a tendency to suppose a competitive generation market and structure the rest of the system around the ideal working of that market. But that's a big assumption to make. Even if there were a truly competitive generation market, regional differences exist, new markets differ from old markets, and so on. We've talked for many years about the

need to deal with market power problems that go beyond the large-scale and immediate problem of vertical integration and providing open access to the transmission grid. Those other issues are the ones we're trying to turn our attention to for this special seminar. Our first speaker is from the Federal Energy Regulatory Commission.

First Speaker:

Let me outline this issue from the point of view of the U.S. FERC, and, in particular, from the point of view of an individual member of the Commission. The real next frontier facing us regulators is the problem of market power in generation and the question of whether generation is competitive. There are three reasons for this. One is the economic argument that competition is to be preferred to regulation. The second is that recent congressional policy (the EPAct and so on) favors competition as a general basis for the industry over a strictly cost-based regulatory regime. Finally, the empirical evidence of the past fifteen or seventeen years points to the benefits that can be produced by competition in generation, even if that competition is at times somewhat imperfect.

There has certainly been a great deal of interest in this issue of late, due to the emergence of open access for transmission, which begs the question of how we can prevent market power from becoming a stumbling block for true competition in generation. There's also the Kansas City Power and Light proceeding, in which the Commission announced that it was no longer going to investigate market power in generation when it came to new unbilled generating capacity. If we've made that finding for unbilled capacity in the long-term market, should we extend it to the short- and medium-term markets for existing capacity? This leads to two threshold questions, the first one being: Is open access enough to mitigate market power in generation? And if not, if the concentration of ownership with respect to installed capacity does result in market power in the short- and medium-term markets, how ought generation to be regulated?

The approach the Commission has taken to date in its analysis of market power has been to utilize the Department of Justice-Federal Trade Commission horizontal merger guidelines. We've used these with respect to gas pipelines and their related storage services, oil pipeline transmission rates, and even wholesale power generation on a case-by-case basis. It's a three-step process. First we have to define the product in question, which includes among other things deciding whether there's a difference between the product in the short-, medium-, or long-term markets. Then we need to define the market, geographically speaking -- the area within which a monopolist could impose and sustain significant price increases. How is it affected by transmission rate design and so on? Finally, the third step is to measure market concentration, using the HHI [Herfindahl-Hirschman Index]. How much capacity should we look at? And how accurate is the HHI anyhow? There are a thousand questions surrounding each of these steps.

The commission has generally taken as an initial screen an HHI of .18, which as I understand it equates to about five or six equal-sized competitors in the market. Is that enough competition? Might there be a competitive market with fewer companies? And is it a worthwhile use of resources for us to be applying this kind of intensive analysis

anyhow, or should we just let it go and rely on a type of complaint and monitoring process? Another issue is the recognition of market dynamics. Can a snapshot view of a market really be used for a test of whether or not the market is competitive, especially in the case of the generation market, which is relatively dynamic?

The real question, of course, remains what is the role of regulation in all this? If we assume that after implementation of open access, there still exists some level of market concentration in generation such that you cannot go straight to market-based rates, how should the regulation be handled in order to steer the industry toward the eventual goal of substituting market-based rates for cost-of-service rates? One course of action would be simply to take deliberate action to structure the market for competition. A second, less invasive option would be to create some type of market mechanism to insure that the bidding for power would be fair, and to monitor that mechanism and rely on complaints. A third approach would be just to declare that open access transmission is sufficient to prevent market power; let's let it go and monitor the results to see what happens. Finally, we could just stick with the status quo and deal with market power on a case-by-case basis.

What principles should guide the Commission in coming up with a regulatory approach? First, we should ensure that regulation mimics competition to the greatest extent possible. Second, we need to strike an appropriate balance between effective regulation and freedom for innovation in the market. And third, we need to be sure that the regulatory response to a given case of market power is commensurate with the level of the threat to competition. A clear threat to competition should of course be proscribed, but a more remote or speculative case ought to be treated with a more light-handed approach.

Should we deliberately structure the market for competition? If it turns out that market power in generation is so intractable that we need to step in and alter the structure of the market, do something to encourage vertical disaggregation, we need to ask whether that course of action even falls within our authority under the Federal Power Act. Or alternatively, is it the kind of thing we could induce the utilities to do with a sort of carrot-and-stick approach? Perhaps it is just not a matter for federal regulation. To the extent that it involves the way utilities purchase power, it may be a matter for the states to decide. Some might contend that a truly competitive market needs a maximum number of buyers and sellers, which gets into the issue of direct access or retail wheeling, which has clearly been left to the states. And is it worthwhile? Finally, we may discover that what we really need is a transitional approach, especially for the short- and medium-term markets. Perhaps with an increasing number of entrants into these markets, the problems of market power will solve themselves, and we need merely nudge the market in the direction we want it to go.

_: I think you've outlined a five-year research agenda right there.

Second Speaker:

First, what do we mean by market power? The standard legal definition is that market power is the ability profitably to maintain prices above competitive levels for a sustained period of time. The question is, what exactly is a competitive price level?

Most of us have a sort of Economics 101 model of perfect competition in the back of our minds, which is a perfectly sensible point of departure. The problem is that from a public policy perspective, most markets are in fact imperfectly competitive in one way or another. And we don't subject imperfectly competitive markets to price regulation because price regulation is costly and imperfect, and in situations where there is not a significant amount of market power, it can do more harm than good. It's necessary to balance the significance of market power against the costs and imperfections of different kinds of interventions.

As the previous speaker observed, there are two generic types of potential market power. The first involves exclusionary or discriminatory behavior arising from vertical control. The other source is horizontal monopoly or oligopoly behavior, potentially at each level of the vertical chain from generation through transmission down through distribution. We've so far focussed our energies in promoting adequate competition in generation services to satisfy public policy objectives.

The way we go about measuring the significance of market power follows a fairly standard empirical framework. Although some might argue that such an empirical index cannot adequately represent the situation, it's very useful to have clear guidelines and bright lines wherever possible in this. The first step in the analysis is to define the relevant product market. The reason this can be a problem is that opinions can differ about what constitutes an adequate substitute for a certain product, such that it provides competitive constraints on suppliers of that product, and which products are sufficiently imperfect substitutes that customers would only turn to them if prices rose by a very large amount. This is where we ask the question, could a hypothetical monopolist of this group of products raise prices significantly for a sustained period of time -- say a year or two? If so, that's market power.

In applying these kinds of standards, we're going to have to think carefully about some of the special characteristics of electricity before we can properly define the markets. Electricity can't be easily stored, stockpiled, or inventoried in the usual way. It may turn out eventually that electricity markets are defined more by time, load characteristics, season and so on. Another thing to take into account is the existing institutions of electricity supply. If some of the PUHCA reform proposals are put into effect, the way electricity is traded and the kinds of products that are supplied are likely to be somewhat different, and the definition of the product market may be different as well. Finally, opportunities for price discrimination may also affect the way we define and analyze markets.

The second part of the analysis involves defining the geographic market. Here vertical control issues are going to be intimately tied in with the definition. The most critical element has to do with physical and institutional constraints on the transmission system and the nature of institutional arrangements that exist to relieve those constraints. Moreover, the geographic market may vary over time. And I would argue that the existence of significant transmission constraints is likely to be the first variable that one will use to try to identify where geographic separations exist in these markets. But I don't think that will be the major source of conflict in litigation over this issue.

Having defined the markets, we must look at indices of market power in generation. Seller market shares and concentration ratios are imperfect indices at best, but they do provide a starting point from which to expand our understanding with a consideration of things like ownership in generation and long-term contracts. Entry conditions are also very important. We normally think of them in terms of generation, but there can also be entry conditions, in a sense, into transmission. The ability of the grid access operating and investment rules to make it possible for constraints on the network to be relieved in a timely and economical manner will also be an important index of the ultimate competitiveness of the market. And market institutions do matter -- the flow of information and the way in which trades are made have implications for how competitive markets are.

How much market power is too much to deregulate markets? I don't agree that we should be using the DOJ-FTC horizontal merger guidelines, because they aren't designed to answer the question we're asking here. We want to know how much market power is enough to make it desirable to subject the industry to costly and inefficient price regulation. We are choosing the lesser of two evils. The criterion of *absence* of market power, a phrase that appears in many FERC documents and filings, is not to my perspective an appropriate criterion. Under such a criterion, we'd be regulating many more industries in the U.S. today than we currently do. For example, neither the turbine generator industry nor industrial gases are regulated, even though they show high levels of market concentration.

In the long run we're looking at new generating facilities and associated contractual arrangements that will be based on a competitive bidding program. Experience with this type of arrangement suggests that as long as barriers associated with access to the network are removed, that that's likely to provide a competitive market.

How many incumbent suppliers do we need to provide adequate competition in the marketplace? As usual, there area number of different sources of empirical evidence for this: cross-sectional studies across industries and across markets providing the same product, simulations involving oligopoly models, and so-called "controlled environment experiments," where you put students in rooms with computers and you have them play market games. This is the only area of experimental economics. You can change the number of buyers or sellers, the information structure, and so on. And what kinds of results do we have? Two is too few, without quick and easy entry. Ten is more than enough. Five is likely to be quite competitive, in many circumstances. And the HHI of 2,500 that the Justice Department has used in a number of pipeline proceedings, seems to me to be about right as a benchmark standard.

The thing we ought to think about is what to do if there are too few competitors. First, we need to try to remove physical and institutional impediments on the grid that are keeping geographic markets to be closely defined. If you look at broad markets, there's almost none that lack a sufficient quorum of competitors. Horizontal separation of generation is obviously a policy option. That's not vertical separation of transmission from generation but rather a situation in which some

generation owned by an incumbent is sold off or spun off to a separate owner.

One transition device that may be useful for the mitigation of horizontal market power is a kind of contractual arrangement similar to the vesting contracts that were used in the U.K. in 1990. After all, the exercise of market power in a homogeneous product market is based on the restriction of supply. Contracts can be used essentially to force incumbent suppliers to meet output goals and to protect buyers from sudden jumps in price. Designing the contracts can be tricky, but not impossible.

It's going to be important, I think, if we do feel that generation market power problems are so serious that we need to continue to subject them to regulation, to develop new regulatory arrangements that don't distort the market by setting prices too high or too low. And we have some lessons to learn from the continuing regulation of some of AT&T's prices.

Third Speaker:

Based on the evidence in the U.K., my message is that the contract is absolutely essential for introducing competition into a market where it may be difficult. It operates directly in the short-term market, but it also has an enormous influence by enabling entry, which has had a very restraining influence on the average prices charged.

I don't think I need to labor the point that competition is desirable. What we want obviously to achieve is prices which assess it at an efficient level and are not set by the firm in question. And if that's the case, then the only way they can make profits is by driving costs down, not by pushing them up. And that requires adequate numbers without collusion or contestable entry. There's a misperception that contestability is not feasible because power stations are immovable or durable. But if you can't have competition you are stuck with regulation, and the problem there is that it's very difficult to detach the problem from the cost. And that reduces incentives for efficiency.

The evidence from the U.K. shows a clear sixty percent increase in efficiency since privatization, not merely in the privatized generating companies, but right down to nuclear power, which remains state-owned. The critical point was that nuclear-generated electric power had to sell into the same open, transparent and very visible spot market as everyone else, and its performance could then be readily assessed. That performance has increased substantially.

There are three markets that are of interest. The spot market or the pool in England and Wales is a sealed-bid auction market. System marginal prices are based on bids submitted the day before. Now, if you're a small player, your best strategy is to bid in at short-run, avoided cost, because you're not going to affect the price, and if you bid in above that, you may not be dispatched. This system gives rise to very volatile prices. That's familiar in commodity markets and it immediately causes people to devise methods of dealing with the risks that that volatility creates. So that hedging those risks creates a demand for contracts and, in England, we have contracts for differences. We also have an electric forward agreement market, which essentially operates like a futures market. These contracts not only hedge risk, they facilitate entry and they reduce spot market

power. The last market is the capacity market, which raises some fascinating, highly technical, and difficult design problems. It will have to be addressed at some stage, but would take this discussion too far afield.

Let me analyze this theory of the role of contracts for differences. In a market with no contracts at all, generators would bid a supply function. Once you observed what the outcome was in the market, that would really be the best grasp of equilibrium that you'd be able to attain. And so one wants to look for equilibria in the supply functions and that's a rather different concept to the normal analysis of market power that I think lies behind a lot of documents that the Department of Justice probably produces. At the other extreme, supposing you had contracts for differences for your entire output. You'd only be concerned about covering the cost of generation, so you'd behave as a perfectly competitive small generator. If you contract more than you produce, you have an incentive to drive the pool price down below the avoidable cost of generation, because you're buying power back. It's only when you under-contract that you have an incentive to drive prices above the short-term avoidable cost. This has a number of interesting implications that can be tested against the evidence: It suggests that these profit margins will decrease as contract coverage increases. They decrease rapidly with the number of competitors. The simulations the previous speaker mentioned suggest that five competitors is plenty, even with no contracting. Profit margins also decrease with spare capacity. And the interesting finding is that there is actually a whole range of possible equilibria in this market. Where the balance is struck in the range from high to low prices will have a great deal of influence on entry.

The British pool has two privatized generators that are relevant to setting the electricity price. They line up their stations in increasing order of running cost (or bid price), and bid a certain number of GWh of capacity, and if you add all of those together, you get the industry supply function, from which the system marginal price is determined, based also on demand, which changes over a twenty-four-hour period. The price is therefore extremely volatile. Now, in the simulations we've mentioned, if there aren't any contracts or entry threats, then with just two generators as we have setting the price, you get high prices and considerable inefficiency or waste. If we had five of them of equal size, that would have worked very well; but it was for all sorts of interesting reasons that we ended up with only two.

It follows that divesting the mid-merit plants -- the ones that set the price -- is a rather pro-competitive move. And that is exactly what the regulator has agreed with the incumbent generators. The monopoly mergers committee reference is the threat hanging over the generators. If the regulator decides their behavior is unsatisfactory, he can refer them to the monopoly mergers commission, who might decide that they should be subdivided into more numerous companies. So the companies agreed to do their best to keep the time-weighted price below 2.4 pence, and the demand-weighted price below 2 pence. If one were pricing in a competitive market at avoidable cost, the price might have been rather lower than that. But not a whole lot lower. The problem instead arises because these two companies set the price almost all the time, mostly based on the coal sets that they have a duopoly on. It's selling part of these power stations to other companies that

is going to be critical for setting the price when the demand varies.

The good news is that the technology does enable entry to be credible now. And contestable markets are facilitated by two critical developments. The first is the technology -- the development of combined-cycle gas turbines -- and the other is the low price of gas and the EC decision in about 1989 that it could be used in electricity generation. The financial innovation was to invent these fifteen-year contracts for gas and electricity.

So there is essentially no risk involved in this situation. You secure the prices under which you determine whether or not you're going to enter. The bad news, of course, is that maybe the high prices the generators charged by reducing their contract coverage and exercising market power may have induced rather more entry than should have taken place. So over time, the shares of the two main generating companies have decreased as nuclear energy has expanded. Imports remain constant. Looking at it by type of plant, you can see that all the new entry is in gas-fired generation. One of the results of privatization is that we've essentially wiped out the British coal industry. Contestable entry forces fossil generators to keep revenues at or below entry cost, or entry will continue to eat away at their market share. The object of the game is to try to maximize the spread of prices from the peak load prices to the base load prices, consistent with that objective. And entry is continuing. The threat that new entrants can keep arriving on the scene keeps prices within a capped level.

What has it all done? Let's look at delivered power through the high-tension grid. Prices have come down, both through a dramatic fall in labor costs and a similar drop in fuel costs. Profits and pool prices have gone up. The generators' revenues are roughly stable and substantially higher than the pool price because of the vesting contracts. The prediction is, of course, convergence. So who has gained from privatization? In short, the people who are receiving profits. But, by and large, not the consumers, who've had relatively stable real prices despite the dramatic fall in the cost of fuel. And where does the pool fit in? It precipitates entry, which is critical to restrain market power where it exists. The transparency and the single price essentially level the playing field between small and large generators by reducing information asymmetries. And it facilitates the contracts which are needed to keep the competition effective. I would draw an analogy to futures markets, particularly as futures markets have been shown to reduce spot market power and improve the flow of information that is relevant for prices. And I would suggest that one must be deeply skeptical of the motives of the critics of the pools and futures markets, because there is invariably strong pressure to try to distort these markets or eliminate them altogether.

_: I'd like to ask the second speaker to elaborate on the concept of contracts being used by a regulated entity.

Second Speaker: It's something that can be done either in the context of regulation or in conjunction with the separation of generation from a vertically-integrated firm. Basically, the idea would be to establish a de facto contractual agreement between the generator as an entity and the customers. Think of it as a wholesale market situation. You'd have an

incentive contract of sorts that would define essentially a price or a formula for setting prices and minimum supply quantities over a fixed period. The reason this kind of contractual arrangement is pro-competitive is that it provides incentives to put more product on the market, not to withhold it. The less you contract for, the more incentive there is to exercise market power. If you over-contract, you can even see bidding below marginal cost into the pool to get rid of the excess. It's really just a way of affecting incentives in a way that is pro-competitive.

_: Two problems need to be dealt with in any look at market power. One is horizontal concentration and the other is vertical control. I submit that horizontal concentration is emphatically not a problem we're facing. The largest generators in the United States electricity grid have less than two percent share in the national market. And the market is increasingly operating on that kind of a national level. It's a radically different structure from the U.K. and it calls for different solutions. The problem in our market today is vertical control, stemming from the fact that people making purchase decisions are biased in favor of their own generation. And in contracts with third parties for the sale of power, they cross subsidize from regulated activities so they can undercut competitive prices in the marketplace. There's also a significant problem in the huge outstanding balance of sales contracts that will limit the amount of competitive market that's available. We'd like to see some sort of conversion rights associated with that situation, so that there's a mechanism for restructuring those contracts. Otherwise a very large portion of existing commodity sales of electrons will stay under term contracts and continue this vertical control issue.

All this goes to comment on the third speaker's opinion of the motives of people who are not supportive of a pool process. In the U.K., where two generators control upward of 80 percent of the marketplace, a pool structure may have made some sense to provide for transparency in the markets. When you have several hundred participants in the market it makes more sense to allow them to organize those markets in a way that's most effective for the commodity that's being traded. There are even those who propose that the U.K. will eventually have to end any hint of central management and open up power supply to the market. While in the U. S., you'll find that there is no geographic concentration anywhere in the country of any significance whatsoever. The real issue is we've got to break the vertical control in the industry because that's what's keeping fair, open competitive markets from developing. I think the speaker's comments about the appropriateness of a deep, open spot market are entirely appropriate. On the structure of that market we clearly disagree.

Third Speaker: The pool in Britain is, as you say, very unsatisfactory in many ways. But a great number of the proposals that were made to the Office for Regulation were to try and move away from a single transparent price to alternatives in which certain players would be able to benefit from access to preferential information, reducing the transparency of prices, and increasing the risk to small players. It is vertical deintegration that is the key to introducing competitive pressures in the market to forestall that kind of thing. You're also right to note that the EFA market in Britain is anemic, partly because of the manipulability of the spot market. But I don't think one should underestimate the difficulty of a futures market in which

something like 17,000 spot prices. That in itself creates considerable difficulties.

_: I think you're right as far as the U.K. is concerned. I'm just not convinced that we can generalize from the U.K. to the U.S. In the U.K., since you have a market that is so imperfectly competitive, you may be right that the motives of people who oppose the pool are selfish. In our market, we have hundreds of competitors who are competing on a daily basis very aggressively and the degree of competition is continually growing. I don't think you can make the same claims in our market. The second point about the difficulty of providing 17,000 prices; that's patently false. In the natural gas market, for example, we offer and make markets at 190 basis locations in North America on a monthly basis for twenty years, and it's no problem whatsoever. The solution is letting computers crunch the numbers.

_: I agree with you that vertical integration is the most important problem. But from my vantage point, all I see from you is attacks on PUHCA.

Given the fact that FERC probably can't fully deregulate the market, they have taken the approach of deregulating small, unaffiliated entries into the market, small players who don't have any assets that they can franchise. Is it practical to wait for a more complete deregulation in the future?

_: You have to look at the practical considerations. If a utility is going out for competitive bids for new generation, ten- or twenty-year contracts, why should you regulate it? You are deregulating the entire market in a sense when you allow unaffiliated suppliers to be deregulated. Because they provide a competitive cap on the regulated suppliers.

As we know, the extent to which FERC regulates a lot of these wholesale markets is really quite minimal; you have a great deal of flexibility under a fairly liberal kind of accounting cost cap scheme. Similarly, in the short-term markets, there has historically not been a lot of real regulation in those markets, and the formal lifting of administrative regulation on some suppliers is not a dramatic change. It will be once we move away from a kind of vertically integrated market to one in which there's a lot more competition that I think we'll start having problems related to mixing regulation and competition.

_: I'm concerned about the assumption that there is a need to have a transition approach to fully competitive generation. In some geographic areas, where there's a concentration of generation, would that transition limit the ability of generators subject to the transition mechanism to re-power and create new sources of generation, or could those new sources be created as fully competitive entities even at the same time as there's a transition obligation on existing generation?

_: Do you view a re-powering or something utilizing an existing site to be the equivalent of a new market entrant? That was the problem in the Kansas City Power and Light case.

_: Let's assume for a moment that vertical control problems are fixed. They aren't, but let's put that argument aside for a moment. It seems to me the real issue in your case is

whether the incumbent supplier can sort of lean on the regulatory process essentially to subsidize the development of the new capacity. If you can develop a contractual arrangement or regulatory arrangement where that kind of cross-subsidization isn't a problem, I'd encourage them to try to put that kind of capacity into the market and let it compete. But if not, I think it's something you would have to consider in great detail.

_: Are there incentives in the British market for distribution companies to reintegrate? I understand that they can build up to 15% of their own capacity now.

_: All of the independent generators have equity shareholdings held by one of the regional electricity companies. This is obviously one mechanism for encouraging entry into the market, though there is a danger that it can be used as a mechanism for transferring the profits from the customers to the company that is generating the electricity. It raises the regulatory question of whether we ought to allow "sweetheart" deals to encourage entry and thereby increase competition.

_: How feasible is it for the regulator to actually control what he is meant to be controlling, especially in the U.S. where the transmission system is deliberately oversized in order to compensate for any deficiencies in competition on the generation side?

_: "Oversized" sounds like a pejorative term. There's always been this sense that it would be great to have too much transmission capacity. The cost of it would be low and it would really encourage competition in generation. And it's true that a lot of the horizontal market power problems wouldn't be there if there weren't constraints on the transmission system. But I don't know what power a regulator has to manipulate private firms to make those kinds of investments, which, viewed narrowly, appear essentially uneconomical.

_: Certainly FERC doesn't have the authority to mandate transmission and to grant the right of eminent domain with it. That resides with the states, and from the state regulator's point of view, it ultimately comes down to what is it going to do to the native load ratepayers within that state. As far as I can tell, in many areas of the country now, as a practical matter, siting and building new facilities is all but impossible anyhow, even if you had that authority.

One could imagine making the transmission network contestable in the same way as generation, in that you sign long-term contracts for the delivery of power across regional borders. That way, if a generator exercised unreasonable market power, someone could contract for and hence finance the transmission that would erode that market power and you might actually get excess transmission capacity built. The Argentinean system seems to be moving in that direction.

_: What does the third speaker feel is the relationship between market power exercised in the contract market and market power exercised in the spot market? Your work seems to suggest that duopoly is a problem in the spot market, but that the contract market is relatively competitive.

_: It's a consequence of the low price of gas and the development of combined-cycle gas turbines in Britain. As soon as future prices look to be higher than the cost of building and selling that power, an independent generator can come along and make an offer that looks attractive. So in practice, the contract market is contestable to entry and that limits the power that the generators can wield in the kinds of contracts they offer to the regional electricity companies. If the price of gas went a good deal higher then the duopolists would undoubtedly have a great deal of power in the contract market as well.

_: The second speaker talked about market power in terms of high seller concentration ratios, but I didn't hear you talk about the real fundamental of vertical integration, of the buyer and the seller being on the same side of the table and the buyer often being in a position to exercise the largest supplier option.

Second Speaker: In my experience of these seminars, I think we've already had a great deal of discussion about pools and about the problems of vertical control, but very little about issues of horizontal market power at the generation level once vertical control problems are solved. My understanding was that vertical control issues were not the primary purpose of this meeting today.

_: All right. I have two further questions. One, you did talk about the importance of solving problems of vertical control without sacrificing the benefits of vertical integration. Can you amplify that a little bit? Also, I see that you talk about regulating some and deregulating others as a very unattractive solution, and so as I read that I thought that you must mean that we have to have disintegration or divestiture in order to achieve a situation where everyone's on the same market power playing field as well as regulatory playing field.

Second Speaker: Without getting back into the PUHCA debate, the decentralization of generation and the creation of a competitive market for generation is not so easy. How do you take what is now done internally to firms, the integrated planning and so on, and transform that into a system in which the operation of the grid is separated from the real-time and longer-term operations of generators? The details of how this is handled are very, very important. How do you substitute a set of market arrangements for things that are now handled inside firms? It's an issue we've discussed extensively in these meetings and an issue that I think we'll continue to discuss, though it wasn't the focus of my presentation.

As far as the remark about deregulating some but not others, I was trying to be a little controversial. If you believe that in the generation markets there are some suppliers who have market power and others who don't, imposing regulation on some and not on others can lead to all kinds of strange distortions when you have regulated and unregulated entities essentially competing with each other, but with different opportunities to set prices either high or low. If we're going to rely on competition, ideally we should do so as much as possible and avoid a mix of competition and regulation.

_: FERC has been reasonably successful in moving us toward a vertically deintegrated structure. In the Kansas City case, for example, we've spent about a year now trying

to structure the agreements that will govern the kinds of horizontal cross-subsidies and competition that will exist in the relationships between regulated and unregulated entities. We're creating whole new schemes of competition. In some regions of the country I can see that you'll have the option of buying power from the same corporate entity packaged under three different brand names. What does that imply for purposes of the horizontal integration issue?

_: This is something FERC had to deal with ten years or so back when this was happening in the gas industry, when interstate pipeline companies set up marketing affiliates. We're still struggling with some of the issues. Such a situation also creates an interesting problem around the definition of market share and how it's divided between affiliates. I think the best answer that I can give is that you've hit on an important emerging issue. There may be some lessons we can draw from the gas industry experience, though I suspect that the situation may be a lot more complicated than it ever was with gas.

_: I agree with you there. But I think a framework for solving these problems has already been established in a sense in a number of FERC proceedings. We'll be looking at vertical control issues, regulatory evasion, and horizontal market power in generation. My one caveat is in response to whoever it was that said that the relevant geographic market is the entire United States. Given that we have hundreds of generators in that market, I would argue that at least some people would suggest that we have somewhat smaller regional markets.

— : At a recent meeting at MIT, someone raised the idea that unless the regulators do something in the relatively near future, the market will determine what happens anyway. We're spending an awful lot of time determining what the perfect market should be without letting anyone participate in it. If, as someone suggested, this is all about customer choice, then once the customer is able to choose, the market will take shape quickly. My concern is that we will develop regulation only after there is retail wheeling already. The U.K. experience has shown that you can't open up the market to everyone overnight, nor can you predict what will happen from start to finish before you even begin. It seems to me that you have to start with open access, retail wheeling for a limited number of customers, then look at your results, change course and move on again.

_: Regardless of the eventual market structure, these market power issues are going to have to be addressed. It's not as if the market is going to just take over and we won't have to do anything. The regulators have a very important role to play in opening up the system in a way that benefits consumers.

_: I think we all recognize that perfect textbook competition is not necessarily the goal of our search, and that it's also not necessarily a prerequisite for serving the public interest better through market-based rates. I certainly agree that we ought not to get so fixated on finding the perfect solution that we are overtaken by events before we find it. There is some argument to be made over whether or not there ought to be transitional mechanisms to guide the process. I think we've all been somewhat surprised by how quickly market forces have come to work in this industry; but as regulators, we're bound

by the Federal Power Act to find some basis on which to rule that whatever we're looking at is a just and reasonable rate and that it's going to serve the public better than continuing with cost-based regulation. So I think there are certain exercises that we need to satisfy the legal requirements to get there.

_: In the U.K. we saw a sharp dividing line between the government monopoly and the system that resulted from its breakup. In the U.S., for utilities to be willing to undertake a transition that includes, for example, direct access in some form, they are going to have to be assured of a reasonable stranded cost recovery. That assurance will likely take the form of transition contracts with the stranded cost recovery mechanism built in. Can regulators provide those guidelines in advance or is it necessary for the first movers to get hit with whatever happens in the regulatory arena, and to let that set off a process of accretion of knowledge over some period of time?

_: I think there are a number of places in the open access NOPR and the transmission pricing policy statement from last fall where FERC has tried to lay down some ground rules without precluding specific ways of disaggregating utilities or recovering stranded costs. As the commission starts to focus on the comments that have been received on the alternative pooling mechanism NOI, I think probably a lot of these structural issues are going to come more into focus.

In the transmission area, you had companies like Pacificorps who had transmission nobody wanted to use, such that they were willing to accept anything the FERC would do. I'd hate to see that happen in the restructuring process; it would be very unfortunate because it might set FERC down a pathway that won't work for a lot of utilities. I'd hate to see the first mover set the rule for the industry.

_: Well, precedent is a powerful force in this industry, but I don't think the first mover is necessarily going to set a mold that cannot be broken with respect to what other companies may do.

Going back to the earlier discussion about excess transmission capacity, I'd like to argue that it probably already exists, except that, in the current vertical industry structure, there is very little incentive to use your transmission system efficiently. And also, in the vertically disintegrated gas industry, it's never been difficult to try to attract capital for the expansion of the transcos, even though FERC doesn't have the eminent domain or section 7 authority to try to entice them to build new capacity. And if none of those reasons are compelling, the fact that economies of scale now peak a lot earlier than they used to may argue for some generation that doesn't use a lot of transmission.

_: I would say that the first rule is to get the incentives right.

_: I don't think that vertical integration per se is the major problem with the utilization and expansion of the transmission network. I think actually the transmission sector is too decentralized. A lot of the operating rules that coordinate the control areas require triggers that leave lines less loaded than they might be if the control areas were consolidated. I don't think we'd be half as efficient here in New England, where we have a single control area, if we had seven or eight separate control areas.

_: That's not the impression I meant to leave. If you have high-cost generation, expanding the transmission grid to get more access to your markets is not something that a vertically integrated structure would find enticing in a lot of cases. I don't disagree with you at all that some horizontal consolidation may be very good for the transmission sector. I was just trying to make the point that separate transcos, like pipelines in the gas industry, seem to respond to building capacity without a whole lot of prodding from regulators.

_: One question that hasn't come up at all yet has to do with the functioning of the market into which most of the electricity is sold. Would improved regulation, either in the form of price regulation or possibly retail wheeling, be helpful in its feedback effects on competition in the generation market? As long as distribution remains a monopoly and the same company owns generation, there's a problem with potential market power no matter how open transmission is.

_: Our industry is built on the assumption that distribution monopolies provide a bundled service to customers. They've historically provided their needed generation capacity through ownership, although they can just as well do it by contract, and that's one area where I see that the market will be changing. But wherever we go in the interim, there are going to be some set of customers who are supplied by the incumbent utilities from generating facilities which they own. The critical problem for regulators is to design a mechanism to induce the utilities to use their own generating facilities only when it's economical and to buy from the market when it's not.

It does seem to me that there's a lot of capacity that keeps operating because of what some might consider regulatory distortions. Because if the facility were shut down it would immediately become a stranded investment, whereas as long as it's running, even if it's not the most economical option, the owners are at least getting a rate of return on their investment. Assuming this is true, such a situation is placing a significant damper on the ability of new entrants into that market to compete.

_: And from the regulatory perspective, FERC regulates wholesale sellers, not the rules under which those who are buying at wholesale make their purchasing decisions. Some of the states' powers under PURPA can affect the decisions by the utilities as to whether or not they're going to build their own capacity or buy it on the market, and, as the last speaker just observed, some of those factors can affect the opportunities for new wholesale sellers.

_: The philosophy in Britain is that the wires business should be regulated and as much else should be made as competitive as possible.

_: Is there any reason or structure for which transparent prices need to be linked in some way or another to central dispatch?

_: In England and Wales the purpose for central dispatch is merely that that seems to be the right size area over which to economize on the dispatcher plant. Whether it's sensible to have a single price for that whole area is something that has been discussed. There may at some times be constraints that essentially isolate some parts of the county, and maybe

one needs nodal prices that can fluctuate and reflect those constraints. So that at different times of the day there is either one market unified or several markets which are separately being dispatched. But the need for transparency of prices is just so that contracts to allow generation in one place to sell to customers in another place can be properly priced.

_: I think the desirability of central dispatch has more to do with maintaining system reliability and integrity. There's a separate question of whether that central dispatch is necessary or preferable for achieving price transparency as a public policy goal; I'm not sure we've answered that one.

_: Someone has to operate the network - there has to be a network czar. But what exactly the czar does has yet to be defined. At the very least, everyone who uses the network has to schedule their units. Someone has to provide network services and the cost of that service must be paid somehow. And at least some generation has to be dispatched for economic reasons. A second price auction mechanism provides incentives for buyers to bid marginal cost, which provides the signals you need to do economic dispatch. It's quite an elegant system for dealing with decentralization issues.

_: Following up on the question of system reliability in central dispatch, it's my understanding that locationally there are some units in England that are virtually must-runs. If they have that kind of market power, how do you regulate them separately, or do you let them participate in the bidding?

_: At the moment, a generator that is constrained to generate in a given area to supply it with power gets paid its bid price, not the system marginal price, and its bid price does not set or affect the system marginal price. So, in the short run, it has huge market power in those periods, which may be as short as half an hour or so each day, in which it must run to prevent the constraint cutting off customers. It's worth noting, on the other hand, that some of these plants bid in very high indeed, but their total revenue over the course of a year is barely enough to meet operating costs. Various solutions have been suggested, including contracts with the transmission company to be available to meet constraints, under which they would be paid a fixed price for availability to cover their fixed costs and would then bid at cost; or where the plant is essentially owned by the generating company. A more interesting question is who gets to pay these high costs. At the moment they're spread out over the whole system when logically they should be concentrated on the area that was separated by the constraint.

: There's a difference between walking into Tdoctor's office when you're ill and going to a medical conference. At a medical conference, you sit around and debate about which of the symptoms is the most important and, therefore, which of the remedies should be focussed on. But when you walk into a doctor's office, you want to get all five symptoms treated at once, and you don't want to sit around listening to a debate when you've got the flu. I'd like to suggest that we need to take ourselves to the doctor's office for this market. The study of markets is really a very imprecise science, notwithstanding the volume of literature, and we really need to recognize that there area whole host of symptoms we're trying to deal with, and what we need to do is give our patients a list of things they have to do. If one of the symptoms is that spot

markets can be manipulated in a concentrated market, then one of the things we need to do is make sure there's an open contract market to help deal with that and all its implications. You can go right down the list of problems we've been dealing with here and propose a treatment for each symptom. And I would suggest that we need just such a collective approach here, since we're dealing with such a variety of symptoms and we can't be very precise about which of these symptoms is the most important or which remedy is the most effective. Let's do them all.

Second Session. Advancing the Framework: Diagnosis and Policy Options

First Speaker:

I've been asked to talk about the Department of Justice filings on the PUHCA matter. I'll try to focus on the way the Department analyzes market power issues as they relate to the utility market.

Generally, like many others, the DOJ would like to see a more competitive electric power industry, and we view the PUHCA proposal as one way, certainly not the only way, to promote the transition. We see two primary advantages. First, it's a way to break the link between prices and average costs, which is the linchpin of a regulated market, whether it's cost-based or price cap regulation. Second, it is a way to sever the link between ownership and control -- ownership of generation assets and control of transmission and distribution assets. There are, of course, advantages to vertical integration, and maybe it's not necessary to eliminate it altogether. But it poses serious difficulties in terms of possible discrimination and pricing issues. We'd like to see a well-structured PUHCA, not as a mandatory rule enforced on the industry, but as a proposal for market-making activity that can stand or fall on its own merits.

Absence of market power is important for PUHCA to achieve its objectives. However, PUHCA itself, in our view, neither creates nor eliminates market power, although a poorly-structured PUHCA can provide a mechanism to exploit market power. If the ownership of generation is not separated from the control of transmission, it's possible to interfere with the price merit-based dispatch activities in choosing a price merit that does not reflect cost merits. If we fail to provide a mechanism for planning, constructing, funding, and pricing improvements in the transmission grid, there's no obvious way that that gap can be filled by a PUHCA arrangement. If we fail to set prices that represent the value to consumers of reserve capacity; if we fail to allow the offering of differentiated products that reflect differences in the security of supply and demand; if we fail to allow suppliers and consumers to negotiate contracts of varying duration and reliability -- we'll be faced in each of these cases with an anticompetitive situation that PUHCA cannot rectify. And finally, any PUHCA-like arrangement must have a governance structure that allows for the changes in the operation of the pool that will become necessary to respond to changes in market circumstances. PUHCA cannot be a static concept, and if we are not careful to design a flexible system of governance, it could easily be frozen into an inefficient status quo.

This morning we heard a lot about the Department of Justice/FTC horizontal merger guidelines. That may not be a very good way to think about a market power analysis in the context of PUHCA. It's really more useful to think of a PUHCA as a joint venture and to apply the Department's joint venture methodology for a competition analysis. The joint venture analysis proceeds with several different principles which are written down slightly differently in a number of different places. One place you can find them now is in the joint DOJ/FTC statements on health care policy, because there are a lot of health care joint ventures. The first principle is that the

mere fact that the joint venture affects prices and output does not make it anticompetitive. A purely horizontal arrangement between competitors to set prices or output could easily be illegal under antitrust laws. But in a joint venture analysis, such an agreement may not be viewed as anticompetitive in the context of an efficiency-creating joint venture. The classic example is the associations that set prices for copyright music licenses, who form blanket licenses where they set a single price to be paid. The Supreme Court's evaluation was that this was creating a new product that could not otherwise exist because of the large transaction costs of negotiating thousands of prices between composers and copyright holders for these copyrighted music works. The second principle is that the very fact that a joint venture may be producing a new and more efficient product does not mean that you can use that activity to shelter conduct that is itself anticompetitive. The example here is the Oklahoma University's suit against the NCAA, where they struck down NCAA restrictions on television broadcasting as illegal restraint of trade.

The basic approach the Department follows for a joint venture analysis is that first you look at the market in which the joint venture will be selling its product. In the case of PUHCA that is the market, if you will, for market-making services. This is important because the members of PUHCA will be wholesale generators who will be in competition with each other; but they will be competing to sell generation, not to organize markets. The mere fact that it involves all the generators does not by itself make it a monopoly activity. The second step is to evaluate the competitive effects. This would consider the market shares of the participants and the market-making activities. Step three evaluates things like collateral agreements and possible restraints on conduct that could affect behavior or outcome in other markets, such as the market for bulk power more generally. If, for example, control of transmission is not properly separated from the ownership of generation assets, there might be self-dealing problems which would affect the bulk markets, and so on. The final step is to balance efficiencies from the creation of a new market-making mechanism against whatever anti-competitive effects are created by that mechanism. If there are none then this is not an activity that would be challenged under anti-trust laws. If there are anti-competitive effects, typically they would be balanced against the efficiencies if the anti-competitive effect stems from conduct that is reasonably necessary to achieve the benefits of joint venture. Any conduct that has nothing to do with those benefits, and can therefore be split off without having any effect on them, would likely be challenged under anti-trust laws.

As a matter of process, utilities that are thinking about forming a PUHCA-style arrangement can apply to the DOJ Anti-Trust Division for a business review. We've been doing a lot of these lately. If the review concludes that there's not likely to be an anti-trust problem, that does not mean that the Department is enjoined from ever bringing an anti-trust action against the participants in the venture, should such action become appropriate in the future. But I would point out that the Department in its history has never challenged an activity that got a positive business review.

This issue of the horizontal evaluation of market power really goes to the question of whether the PUHCA concept would work as an effective mechanism for achieving price

merit dispatch of power. The most contentious issue is likely to be the geographic market definition, which always involves some legal and economic gerrymandering. It's very hard to proceed on an anti-trust action without a relevant market definition. I don't think that the relevant market for wholesale power is going to be national. I think it'll be regional, and the scope of those regions remains to be determined. But it depends on the cost of generation and physical transmission constraints.

A number of the issues that would go into this geographic market analysis have been discussed here already. Just to add a few, there's the question of whether or not native load would be included, or whether the capacity of the market participant is high- or low-cost capacity. The mid-price merit plants are the ones that are most likely to determine the market price. So, in evaluating who competes with whom, a relevant question is to understand the types of costs and whether or not they're comparable. This list could go on and on forever, and an important part of the process may be to focus on simplified rules and intentionally oversimplify the analysis.

The 1986 DOJ study on oil pipeline deregulation did simplify the rules a bit. I don't want to throw around some of the kinds of numerical indices that I've been hearing today; we don't know what the right number is. But it is possible to work out these sorts of wooden parameters that would automatically register "go" or "no go." Another way to do this would be to have FERC, possibly with the DOJ's participation, develop some market share concentration parameters which would then form a rebuttable presumption upon which to proceed with the analysis. A third option would be to consider one or more experiments as a basis to learn more about which types of deregulation proposals actually work. Of course an experiment is always costly and you have to proceed with care. But I don't think anyone knows yet what's the right and the best way to organize the transition to deregulation in the electric power industry, and we're just going to have to see which way works. Who knows; there may be more than one winner.

_: Are the results of the business reviews you mentioned publicly available?

First Speaker: Yes they are, and I think it would be useful for anyone who is particularly interested to get in touch with the staff of the Anti-Trust Division, because there are hundreds of such reviews available. A lot of that information could be very useful to parties interested in understanding how the Department evaluates these things.

Second Speaker:

I had a lot of trouble preparing this presentation, and I think it's because I keep coming back to the question of what is the problem we're trying to solve? It couldn't be that regulation has failed. Because if it failed, all the companies would have high costs. But that's not the case. This is a very complex comparative institutional question we're finally addressing. Are we basically trying to re-litigate the high cost question for a couple of utilities, and find a way to transfer load from one utility to another? Investors have been very successful at going after the low-cost power that people are trying to sell. Then you look at what utility commissions around the country have done in terms of economic development rates, flexible rates for large customers -- there are an awful lot of

discounts that have been made by state regulators in order to appease the industrials and stop the flight. There's also been things like cogeneration deferral rates, which at first glance look anti-competitive but which turn out to be part of IRP. So in point of fact, I guess when I look at this industry I find that regulation is downright faddish.

Ever since 1978, when we had PURPA, we've had voided cost, DSM, conservation programs, LUCP, IRP, decoupling, recoupling -- this is by no means an exhaustive list. And it seems to me that in trying to address the high cost problem, we've never stuck with one of these things long enough to have a solution. And now we're down to gencos, PUHCAs, and bilateral markets as the new solutions. This isn't meant to be pejorative, but it seems as if policy analysts and consultants have solutions looking for problems half the time.

When I start to think about the market power questions that we're faced with as regulators, it seems to me that our biggest problem has been that we've had a regulatory process that was designed around a static equilibrium concept. And the problem was that we're operating in a dynamic world of disequilibrium. So the real question would have been, how do you design a proper form of regulation and try to reduce competitive types of results? And over time we tried to cobble something together piecemeal to handle the disequilibrium problems in the marketplace, but not to try in some holistic way to give the companies incentives to keep the cost down.

When I think about this type of situation, I think about the way we conceptualize and analyze market power problems. The standard paradigm is that competitive structure in the market place leads to competitive conduct, which should produce competitive performance. But the types of pools we have are looking at a command-and-control, structured type of scheme, or an incentive scheme for regulating the marketplace. We've got a kind of schizophrenia in the marketplace for regulations today, because we're moving to performance-based regulations on a state-based level to control market power, while we're also moving toward this Poolco or bilateral type of discussion as a structure to try to control the market. When I look at this, I ask myself what kind of guidance I would give fellow commissioners about trying to assess market power in the marketplace today. The first thing is that all firms have market power to some extent. The threshold question is whether or not the market power has an effect on influencing the prices. Are the market forces sufficient to protect the public interest? The other thing is that it very well may be in some cases that a little market imperfection is a lot better than pervasive regulation to try to control market power, when the regulation may itself cause severe distortions. We need to tailor the tools to fit the task, and in some cases we may find that there's no single solution to a given market problem. The difficulty is to balance that unattainable certainty that theory brings to the process with the practical applications. In Illinois, there was a utility that found that 22% of its capacity was now idle. They wanted to pass that cost on to the state ratepayers. The commission told them, "You took that risk; now go out and sell that capacity." So they filed a tariff at FERC that said to munis, if you can get new industrial load that isn't our old load, then we'll give you 50% off our price on the bulk power market. So the munis went out and

started extending their jurisdiction and taking industrial customers away from the utility. The utility came back to the commission asking for permission to offer discount rates to try and attract back some of those residential customers. Suddenly we had competition in Illinois, right down to the residential level, and we hadn't discussed it at all.

When I try to analyze these kinds of situations, I find myself going back to Economics 101, which I used to teach, and thinking about how I used to characterize competitive markets. There are many self-interested buyers and sellers, selling a homogeneous, discrete, nondurable product. There are other qualifications based on the specific natures of transactions, costs, literature, and products; there's easy exit and entry, high quality information available, and no externalities. So I asked myself how these proposed structures fit into this model of a competitive market, whether we're proposing a flexible Poolco or a bilateral market, or bilateral contracts within a Poolco. We're certainly going to have many buyers and sellers in any one of these models. In terms of a homogeneous buyer, that's certainly present under a Poolco arrangement. Once you get into any sort of bilaterals, then what you're really dealing with is two people having a relationship in this process. Ease of exit and entry is no problem under the Poolcos, where anyone can join the market. Probably the greatest problem would have to do with information availability, in the sense that you might be getting too much information from the Poolcos, and that might allow for collusion and other problems. Also, if the pool is too small, everyone knows what everyone else can bid. Of course there are externalities in all of these situations, because of the fact that they're all connected to a network.

So then I asked myself how we can go a step further. Take a look at some of the transactions that normally take place in a hypothetical competitive marketplace. Normally, you'd think of them as discrete, simultaneous transactions and not somehow sequenced. They're all happening at once, in anonymous exchange. It's not someplace where you have a lot of long-term relationships occurring. It's a sort of neoclassical contract world. To me the Poolco fits into this scheme perfectly, because it is trying to set up the most fluid transaction process in the world. Whereas, if you go to the other extreme of bilaterals, where there is no structure, I would worry about the distortions of bids in the marketplace. I realize that bilateral contracts could be structured in such a way as to satisfy some of the requirements I've just listed, but perhaps not all of them. Under bilaterals I'd be very worried about the exercise of market power. Even information flow could have a substantial effect on the market. The rumor that someone was going to power down their nuclear units for refuelling can affect the bidding process, and if the unit doesn't then go down, they would potentially get rents from that aspect. What's the proper size of the firm in these worlds? We could hypothetically break down the genco into units. But is that going to be enough to let them operate efficiently, or do you need some minimum number of plants? How will an individual unit play in the bidding for contract terms in the bilateral market? In some ways, I think you're going to have to have some minimum number of plants In order to be able to offer reliable services.

So what's the advantage in joining the Poolco? If I'm a regulator in Idaho, and I'm looking at joining a pool with a bunch of high-cost utilities in California, and my utility has

five-cent power while the other has ten-cent power, what's the advantage of going into the pool if the result is some uniform seven and a half cent price? As a regulator, I'm going to want to net back the difference between the existing five cents and the seven and a half, so that I hold my native load harmless in this situation. Why would I approve that as a state regulator? I don't necessarily see the gains. FERC defines market power as the ability to maintain prices at above competitive levels for a significant period of time. How does the regulator evaluate this? What do we mean by the competitive level, by significant differences, and where is the line to be drawn between the allowable and the disallowed? We're redefining the markets and segmenting them and trying to price them appropriately; but what's the difference between that and price discrimination? There area whole crowd of these questions that, to my mind, still remain unanswered, and I think regulators need to hear and think a lot about those questions. How do we assess periodic changes in the market? Who's going to fund the excess capacity that may be necessary for supply elasticity? How do we determine whether or not output is being artificially constrained? Utility distribution companies may look at this situation and say there may be a very definite desire, as there appears to be in the U.K., to go out and build their own capacity, even though they're supposed to be playing in the Poolco market. I think we've got a ton of issues to deal with, and I'm not sure if the regulatory process, as it's set up today, is capable of handling the information needs and the situation that we're seeing here today.

Third Speaker:

This is a stylized picture of what life is like in most of the power markets in most of the lower 48. The left-hand side of the page is basically a load-duration curve. It's plotted a little more sharply than it needs to be, but basically we have all the loads for the year ordered in their chronological order. Stacked up against that we have the existing asset basis. Nuclear and must-run are shown at the bottom. Coal is in the middle here, and then some peaking resources at the top. in the Midwest, starting in Pennsylvania and going all the way to California, it looks like that. in the other regions, instead of coal, is oil, gas and residual, but it's all about the same.

What does that translate to in the price side? We find a very sharp curve, where we have a very few number of hours where we get high prices, shown here up to ten cents. And eight thousand and some-odd hours of prices around two cents, depending on where you are, give or take about three mills. In the middle of coal country, it's closer to 15 to 16 mills, and here in New England, where rebid is on the margin, it's maybe closer to 23 mills. So the question is: How would we recognize market power in this context?

The first thing is to distinguish scarcity rents from monopoly rents. Because for sure, these high prices are good -- they are not a symptom of a problem. And, indeed, if the system is to expand rationally, we need to see higher prices than this, and more often. Otherwise, we're not expanding the system correctly. These are scarcity rents, and we ought to make sure that we don't mount investigations anytime the price gets above five cents. That would not be a very intelligent way to think about things. In the ECAR

region, which is roughly 8,000 MW of peak, if you look at the load duration data, you will find that the peak load falls 1,600 MW in the first 75 hours. Which is to say that there are 1,600 MW of load that we're serving that we only serve for 75 hours or less -- indeed, on average, half of 75 hours. What does it cost us to serve that load with combustion turbines? With a 15% reserve margin, it costs you $2.00 a kWh to serve that last 1,600 MW worth of load, which you only have to serve for 75 hours a year. Two DOLLARS a kilowatt hour. I've left out fuel expense in that calculation, by the way, but I thought it was allowable, given the numbers. So the question before the house is, can we do better? And should we have a market that lets us see if we can do better?

So scarcity rents are not a problem. For this part of the price curve, this part of the year, these are markets that are contestable, because this is the place where you've got other options, including customer curtailment. There are alternatives when you get prices up this high, and we should be less worried about this part of the curve. The problem is the other 8,400 hours, because this part of the curve is not contestable by new entry, barring a shift in technology that we've not yet seen. I'm not aware of anybody who can make money at two cents a kWh for 8,400 hours a year, and a little bit more than that for a couple of hundred hours of the year. So new entrants are not going to help us here, and in that sense, maybe we're unlike the UK. That is, a combined cycle gas plant does not provide as much of an effective cap on average prices in this kind of world as it did with some of the numbers that we see from the UK.

So we're looking for one of two types have a market price which is above the running cost of the unit, but the unit isn't running and the person who owns or controls that unit has got another inventory of plants that are running. Those three conditions together are one set of danger signs. There's a second set of conditions under which you might see market power being abused, although it is much less probable -- that's the case where one or two players control all the units that make the margin. They have a good sense of what the price umbrella is that they're working with, and they just bid all those units above their costs. This is what we've been talking about with the U.K. You don't see a change in output. The right units run, but the market clears at a higher price, because the marginal units, either tacitly or not, colluded to set that price a little bit higher, but not so high as to invoke any particular supply or demand elasticities.

Is divestiture the answer? Why would we think about any more options beyond that? Cooperation and volunteerism. If the reason we're doing this is to facilitate competition for the efficiency benefits, the sooner we get it behind us, the sooner we'll start to realize those benefits. And if getting the current owners of generation to cooperate in this process means that it happens sooner than it would otherwise, then volunteerism and cooperation are going to get us there sooner, and we will realize these efficiency benefits sooner. You could write such a big check to the incumbents that they're happy to part with their generation, but there are other ways to get their cooperation and to get their volunteerism. For those who bridle at the notion of dismantling their companies, it's at least worth asking the question: Is this something that we want to encourage?

Massachusetts, as many of you know, is the midst of a restructuring hearing. The state consumer advocate recently went through a stirring rendition of all the infirmities of the current system, and all the indignities that customers have suffered as a consequence of those infirmities. I thought, "Gee, this is terrific. I don't necessarily agree with all of his diagnoses, but of course what he's going to logically do is now talk about how we shouldn't delay one day in a transition to a new system so that we don't have to do any of this stuff." He then proceeded to take the position that utilities were entitled to no stranded costs, therefore guaranteeing that the old system would be perpetuated for quite some time.

Complexity is another problem. Think about the number of jointly owned generating facilities we have in New England, some of which are owned by ten or twelve co-tenants. What you need to do to divest a plant takes on a different meaning than for wholly owned facilities. This is a problem that has not been looked at very closely.

I'm not so brave as to suggest that we might contemplate divestiture of nuclear plants -- I don't think that's a likely outcome -- but we might be divesting assets out from under nuclear plants. But the NRC requires a number of things to collateralize their obligations to protect the public safety. One is the nuclear plant itself -- they don't hold that in particularly high regard on its own. A second is the franchise. And the third is all the other assets. If we're going to get into fairly extensive divestiture, depending on the terms of that divestiture, at some point the NRC might start to wonder whether too many assets are being taken out of this company and whether the remaining estate has sufficient resources to protect public health.

We know that, in the context of thinking about a transmission divestiture which was originally conceived as a transmission sale, that a funny thing happened on the way to figuring out how to do that. Tax and indenture considerations suggest a different type of a transaction. If we're talking about divesting multiple generating plants to different people, the transactional issues become fairly significant. They're fact specific, depending on the indentures and all the rest of the individual utilities, but it's a nontrivial set of issues.

When are you going to get the most value for the assets? At the outset, when there's the maximum amount of uncertainty about how the market's going to work, what the prices are going to be, and all the rest, might not be the best time to maximize the value of the divested asset. You can argue the converse, as well -- you can argue that the greater fools are there at the outset; they'll pay too much money for the asset, and that will be a good thing for everybody but them. But, in any event, it's an issue that one needs to think about.

What are the alternatives for dealing with the abuses I mentioned above, without confusing them with scarcity rents? If we can get a very competitive spot market with visible prices -- however that comes about, whatever market structure gives us that deep spot market that there seems to be agreement on -- if we can get that right, we're well on our way to mitigating market power abuses, period. The long-term contestability, the contracts, the forward market -- if we get this market right, we've done a lot for ourselves. All of this is based on how to mitigate market power, given a spot market for electricity. There are four ways, short of divestiture, to mitigate abuse of

market power, given a competitive, deep spot market with visible prices. These options are not mutually exclusive, and they all have certain attractions.

In some senses, the least intrusive is basically audit and enforcement. If you have a deep spot market and a visible price, the first set of conditions are things that you can look for: units not running when the price exceeds the running costs that are owned or controlled by incumbents, where the incumbent has other stock that's running. Also look for somebody who is under-contracted -- if someone is fully contracted, or has contracts for differences, then the incentives aren't here. With a visible spot price and fairly good knowledge about the incremental costs of running the plants that are owned by the incumbents, it's not crazy to think about a workable audit system.

Another option is a variant of this, where, for the incumbents, dispatched bids are either cost-based or capped. That's to say they don't have the discretion that other market players might have to tell the dispatcher, to dispatch their units based on something other than their costs or some kind of cap. This is very similar to the pools we have today. It would solve the problem of mispricing or misbidding into the dispatch, but you would still need to audit for withheld or unavailable capacity, to see if there was a systematic pattern of unavailability which was highly correlated to higher prices.

A third option is hiring bidding or operating agents for a subset of plants. In its most convincing form, this would be a contract operator for a particular generating station. That contract operator has a contract where compensation incentives mirror the market, and gets paid, not based on the contribution that that plant generates in revenues in excess of its variable costs or whatever, but based on some market-based set of incentives. Most economists and business people will immediately start to kind of think about the agency problems of having the liabilities and other complications of this kind of arrangement, but there actually is fairly significant NUG experience with this kind of arrangement. My understanding is that Makowski, now owned by US Generating, operates none of their plants -- they're all in contract operation -- so somehow they've come up with a satisfactory resolution of the agency issues in their mind. So three of our five potential reasons to consider something other than divestiture are actually helped by this particular approach, despite its seeming equivalence to actual divestiture.

A fourth option is transition arrangements that reduce the ability of the generator to profit from market power. We have been discussing horizontal market power here, as if it's the only issue. But if the issue is restructuring, and we think about the basket of issues that have to be resolved to get from here to there, it turns out that stranded cost is a big problem. This graph depicts the stranded cost quantification problem. This top line is an estimate of the generation cost of service going out for some number of years for all the incumbents' plants. The bottom line is an estimate of the market price over some period of time. And there are two lines that diverge from that one, because we don't know what the market price is. Of course the stranded cost calculation is merely the present value of the difference between those lines -- very simple to do. in California people have done this calculation and the bid-ask spread is $20 billion.

A real problem in any restructuring effort is to figure out how do you attack this Gordian knot. Neither ratepayers nor shareholders are going to want to bear the part of this that is market price forecast risk. Who knows what the market is going to be? Given the success with which we have estimated avoided costs over the last decade, we should approach this task with more than a little humility. We're going to see utilities and consumer advocates and commissions all saying, "You know, this market price forecast risk, this is impossible. None of us can live with it. There's no place in the middle." Successful transition plans are going to have to incorporate true-ups for differences in market price forecast. Not necessarily for anything else, but definitely for the market price forecast risk.

How do you do that? If you use a power contract with a contract for differences, it turns out that they provide the side benefit, if they're properly structured, that they substantially eliminate market power concerns during the transition, because they basically balance the incumbent's portfolio to the extent that they can't profit from market manipulation during that transition. Once we move to the true-ups, we might as well do them right. "Do them right" meaning do them in such a way that we get market power mitigation benefits as well. This type of arrangement also goes a long way toward dealing with those concerns. If we say, "As of this date you get this power contract for your existing generation, but you have to live in the marketplace. That's what you get from regulation for generation. You don't get another nickel.

The only hook is, transition to what? This works while the deal is in place, but what's on the other end? There I have a little less comfort, because I'm not sure how long will it be before this curve changes enough in shape and magnitude so that it is contestable by new entry. If we get a transition that gets us to where that's going to be the case, then we have a transition to someplace. If, on the other hand, we're not going that long, or if we think that this is a boom and bust industry and that there might be three years where it's contestable and then we get over-investment, and then we're right back here again, except we've got slightly less market concentration, then I don't know where we are either. But, hey, you know, if we can get ten years maybe we ought to declare victory.

There are two restructuring proposals in the Massachusetts docket -- the NEES proposal has just such a well-structured power contract as a cornerstone to that agreement, and another utility, Boston Edison, has a contract for differences approach in its proposal. And for people who want to get more details on how it might be done, I would urge them to read either the Mass Electric NEES proposals, or get more information on the Boston Edison proposal, because they're two ways of trying to skin the same cat.

_: I'd like to start with a question that's been bothering me. I think all three of the speakers this afternoon made essentially the same point, and I'm worried about it. And it's this. You only have to worry about the mid-range plants or the plants that are nominally setting the price on the margin. As long as you have enough dispersion of ownership there, you don't have a problem. Now suppose I have a couple of large base-load plants, and I have a lot of information, I have a big share of the total marketplace. Why is it that I can't restrict the availability of the base-load plants, especially during the period when peak plants

are going to be needed. Then there wouldn't be enough for the total peak market to compensate for the amount that I took out at the base load plants, and I'd end up driving up the price and profiting on my base load plants.

_: You've changed the hypothetical. There may be plants that are in a must-run capacity, and if they're put into the marketplace, whether it's Poolco or bilateral, they're not going to affect market price. But as soon as they're not in fixed supply, then you may well be on the margin.

_: Well, that's exactly what happened to us once in the U.K. Our generator did withdraw a plant at short notice. They then redeclared them after the prices had been computed. So they collected the scarcity rents, as well as driving those rents up in the first place. And the regulator took a dim view of that, and has now put in place audit procedures to establish that the nonavailability of the plant was for a good reason.

_: The last time I worked with the U.K. system, you couldn't actually make any money that way. The capacity is so dramatically different, that you're better off making two pence on top of your base 1.5 than you are by making three pence, but on an incredibly small amount of capacity. I ran the numbers as many ways as I could, and the only way it made any sense to gain that way was during the short period that the system allowed for declaring non-availability.

_: Well, in January of this year, the pool had lost two large power stations, and the capacity payments went to 90 cents a kilowatt hour, and during that month I think the generators covered all of their fixed costs for the entire year. So somebody did rather well out of that brief episode.

_: On your issue of the contract operator, I presume what you were getting at was a situation where you go to bidding in a pool, and then you have delegated authority to the bid to that contract operator. The reason **I** ask is that in the Makowski situation there is no delegation of bidding.

_: The answer to your question is that yes, that is indeed what's contemplated. And you're quite right that Makowski agents don't really have to worry about that. They basically run against the contract, presumably, whatever it says. My point was that if you have successfully dealt with the agency issues of getting somebody in there even to align interest under the contract, then it seems to me to be a relatively smaller step to substitute the market for the contract.

_: I'm somewhat familiar with the 92% efficiencies of split savings that the speaker mentioned. But those estimates are based on the assumption that the marginal cost calculation of the regulating utilities is a legitimate marginal cost. The algorithm for dispatching is very nice, but it's never clear that the parameters that go into it are really the marginal costs, or are the lowest costs that a true competitor would actually attain in the market.

_: Would it make a difference if the utilities were operating under performance-based or price-cap regulation?

_: Price cap regulation always ends up going back to a cost-of-service type rate case. I'm

all for getting rid of that where you can replace it with performance. I agreed with almost everything the last speaker said, but the one thing that bothers me is that we built a power system on the theory that the vertical economies were so great that we didn't want to have independent power generators. If we don't divest through an auction process, or go to at lest the opportunity for new owners to both operate and repower plants and close them down if need be, we'll have little guarantee that the people who are most efficient at making that work actually own and operate the plants, because they'll just remain in the hands of the existing operators. And secondly, although estimating the strain of costs and giving it to them once is the right answer, that's going to be a long and litigious process unless you just auction the stuff off and live with the risk. We've been getting fuel risk questions wrong for the past thirty years. I don't see any reason why that will change any time soon.

Third Speaker: If it turns out to be true that there are more efficient operators than the incumbents of the generation, then the market incentives that I talked about are as strong as they can be. And so at that point, you just have to let the market work. If it turns out that the best thing to do on an ownership basis is to have someone else operate a given plant, we don't have to have a debate about whose incentive it is and where the profits come from. That transition cost quantification is made up of the market price and the cost of service forecast, and I know that once that is opened to debate, people are going to want to impute some productivity and efficiency benefits into that total. If it's more efficient to have someone else run the plant, then the financial officers of the utility are sure going to want to do it that way.

_: I guess that what I was getting at was that if you auction off your assets right now, at the beginning of the process, then the stranded cost calculation is a very simple subtraction.

_: But it is not immune from risk. in one of the papers we got today on the U.K., the author cited the rise in returns since investing. Let's suppose some of that was due to the exercise of market power or a market price forecast risk, although some of it may well have come from additional efficiency benefits. Now there are companies there that are at twice or over twice their flotation value. There's an argument to be made that the customer is therefore paying twice what they ought to be, once for the market price and once for the stranded costs. And you won't have the same problem if you estimate the stranded costs, as long as you have a true-up for the market price, and make sure the true-up is against something the company doesn't have control over.

_: Can someone explain this true-up mechanism to me?

_: Well, we'd come to an agreement as part of the stranded cost quantification that there's a certain net revenue above fuel costs that the owner of this generating plant was entitled to, and that we were dubious that the market was going to produce all that revenue. And so we'd have a one-time quantification of the anticipated shortfall, and move that somewhere else, as a distribution or an access charge or something. But in order to check that number, we'd keep track of the actual market price distribution over time, and to the extent that there was deviation, we'd collect additional charges through the distribution franchise or rebate them back through. It doesn't involve any of the utility's cost; it's

just a way to try to deal with the market price forecast risk.

_: Wouldn't there be a public outcry if it happened that you had to revise the forecast in the utilities' favor? People won't want to see their bills going up because your prediction was wrong.

_: It's no different than the treatment of stranded costs, in which rates cannot go down without shareholders' losing money.

_: Rebate to the customer is nondistortionary in that they'll see the correct market price?

_: None of this is nondistortionary. If we're going to try to meet that test, we might as well close up shop here and now. We're not looking to optimize allocations of risk historically or anything else. We're trying to find a politically workable mechanism that will allow us to move the process forward. The true-up mechanism that we've been talking about is not all that different from a model that's used frequently in corporate transactions to cope with exogenous risk factors on whose valuation the parties cannot agree.

_: In California, one of the objections to making an initial estimate of stranded costs was that you were allocating the risk one way or another and you didn't know which way so people proposed a true-up. Well, unless you've solved all market power problems simultaneously, you've got opportunities for the pool spot prices to be manipulated periodically, and the manipulative period corresponds very neatly with the time the contracts are up for renewal. Do you solve the problem by simply having so many such true-ups that no one will bother to try to manipulate them any more? How do you deal with that?

_: Even if we want to make the true-up calculations cumulative over a fairly lengthy period of time, we'd want to do interim calculations maybe quarterly or even monthly. Look at how people do fuel clause true-ups. I think the periodicity is less important than the principle that we're looking at something cumulative that is not affected by any single particular calendar month.

_: The liability for the true-up is on the asset. The plant could be forced to close down if the true-up were too inaccurate.

_: But I think that's a separate question. If current rates are economically sustainable, all we're talking about is how to fairly honor the bargains going forward. The whole issue of rate design and who pays are independent of competition. The sum of the market price collection plus the true-up is never going to be more than current or forecast rates. It's just an ex post way of finding out the stranded cost and allocating it appropriately.

_: I think the last speaker had a good list of possible alternatives to divestiture. I'd add to the list the possibility of the licensing of strategic assets, which, of course, doesn't go as far as full divestiture. For instance, if you have incumbents whose sites are natural entry sites, you could require them to license those sites to others, to promote entry. Another possibility could be to take exclusive fuel contracts and make them nonexclusive.

_: I was a little surprised by the question about what's to keep a competitor from

withholding capacity. I thought that was sort of the purpose of calculating your HHI index -- to see whether you had enough competitors. If there are enough competitors, then that's the protection.

_: Yes, but not all competitors are created equal. The whole process of market definition is defining that aggregate of suppliers that are reasonably close substitutes for each other. But if you have some suppliers who are way off the charts because they're very high cost, they're not going to exert much of a price disciplining effect. And you could be off the chart because you're in a must-run situation, and the effect of that would be different. It goes way beyond just counting the competitors and coming up with an HHI.

The fact that there's a shortage does not necessarily have to do with the degree of competition in an industry. Even perfectly competitive industries have shortages, and they're just scarcity rents, distinguished from monopoly rents because they're not particularly affected by the actions of any one individual firm.

_: I think all of the stuff we're talking about springs from the desire to figure out in an instantaneous market the sort of descriptive characteristics that mean that the supply and demand elasticities are adequate at every moment to deal with anything that we might have. If you have a plant that's at or near the margin, which, if you take it off-line, triggers an N-1 transmission limitation so that you have to back down on imports, you can take a lot of cheap energy out of the marketplace. And those situations are going to be very hard to detect with any kind of aggregate indices. The question of how long they're sustainable is still open, I think. Those may turn out to be the ones that are the best candidates for the contract agent, or some other mechanism where you basically say, there's too much opportunity to play a game here; we need to put this in the hands of someone who has no external profit opportunities on this unit.

_: We're putting a lot of weight on strategies for belling the cat here. The contracts are an attractive way out. But we seem to be asking for a vertically integrated utility in the form of a contract between its distribution company and its generators, and the only protection is the regulators. Wasn't the second speaker's point that the regulators don't have the time or the ability to evaluate all those things? Who is going to bell this cat?

_: I see no substitute for commission involvement in and review of stranded cost calculations. And I think what we're talking about here is that the contract is not a contract with the generation units. It is a contract to deliver specific kilowatt hours. So it leaves undisturbed the incentives to actually perform against the market in terms of owning the generation. It's a bundled financial transaction to make good on a series of past obligations. So it does require at least one-time regulatory involvement to make sure it's a fair deal; but the ongoing aspects of it do not require oversight.

_: So you wouldn't see it necessary to have a separate contract for each plant. The regulator could approve a contract with a single utility for all its plants.

_: Yes, and if you do it as a power contract, as opposed to a contract through differences,

there'll be fuel issues to deal with in pieces of that contract.

Even in a Poolco that recognizes congestion pricing?

—: Yes. I have an easier time thinking of it as a contract for differences, saying, I'm going to bid into that spot market and get what revenues I can for my generation; and I'm going to come up short relative to my embedded costs forecast, or what I otherwise was entitled to. The question is, how do I get the rest back?

—: Why should the utility not run at below marginal costs if it has an assured market?

—: If we overcover the utility, it will. But we're trying to match the amount of cover in megawatts and megawatt hours to the productive capability of the portfolio or assets.

—: Strikes me as an incredibly difficult thing to do.

Obviously you're not going to get it per- fect. But if you have a perfect match of load and contracting, then there's absolutely no incentive to do anything other than just what's competitive. To the extent that you deviate, there is some market power, but it's only the difference between the target and the contracting in either direction. You'd probably end up biasing slightly under.

—: It sounds like there's general agreement that the transmission facilities that utilities have, and their control over economic dispatch, are crucial to the emergence of a competitive bulk power market. Everybody's got to have access to that, and the power has to be dispatched in a way that allows the efficiencies of the competitive market to occur.

—: Would the DOJ have a problem if a utility that was fundamental to the efficient operation of a pool in its region simply said, "We don't care what our neighbors do, we're not going to participate in a pool," and therefore did not open its transmission lines to allow customers that it surrounded to participate in the pool?

—: That's not fundamentally different from what we see today. I don't think the issue would be fundamentally different, either as a regulatory issue or as an antitrust issue, with respect to the inclusion of someone who doesn't want to be included into the pool. There'd be the usual problem of managing parallel flows, and the physical flow of electrons versus the contracted flow of electrons. And of course, a utility that isolates itself from the pool has the problem of whether or not it can achieve efficient dispatch. Do you see that as a regulatory issue?

—: I see it as up to regulators to decide, including the antitrust people at the DOJ.

There are issues of efficiency here, with respect to how large the pool has to be to maintain efficiency; but I would like to see those efficiency problems come out as a market test. They should be able to get people to join the pool because of their efficiencies. There might be a reason for certain people to say, we will go exclusively with the Poolco in order to get this thing past the critical mass. Beyond that I don't see why. it has to be mandatory.

— : About divesting contracts: If the only goal is to try to mitigate market power, then you're not going to want to waste time trying to

calculate the best possible competitive quantity. You're going to aim for something much less, because you only need to mitigate market power, and you don't want to tie up too much power under these contracts. Second, it's quite plausible that within a utility service area, there could be more than one spot price. in that case, you'd have to specify in these contracts the amount of power to be delivered in each of the regions separated by transmission congestion costs. Finally, there shouldn't be any reference to particular plants in these contracts. But you could play with the idea by targeting certain plants depending on what you needed.

_: The concept of the independent system operator is a unique entity which has a lot of responsibilities for reliability and balancing and all kinds of other things, and thus has access to a lot of information. So the operator shouldn't be allowed to offer economic dispatch services, because he would have privileged access to information that other providers of the same services couldn't get?

_: Yes. Unfortunately, as we all know, vertical integration entails significant efficiencies and significant opportunities for anti-competitive effects. It's the logic of the AT&T divestiture -- you have to decide whether or not you want to sacrifice some efficiencies in order to preserve competition.

_: The second speaker made the statement that he was asking whether the problem we're dealing with is the high-cost question, and then said that the high-cost question was really only associated with forty or so utilities. I've focused my thinking on the low-cost end of it, looking more on the benefit side than on the cost side. What do you perceive are the benefits of restructuring the industry?

_: I focussed on the high-cost utility problem because I think of that as being where all the pressure is coming for retail wheeling and so on. Industrials have used that muscle to get their rate breaks. The question to me was, if we're going to restructure the entire industry, where are the incentives for the low-cost utilities to become part of Poolco or whatever the structure is?

_: The reason I'm sort of puzzled is that a lot of the utilities I looked at are simultaneously high-cost and low-cost. They're high-cost because they're sitting on capacity they can't handle, like the nuclear example, but their marginal cost is astronomically low. I'm not sure how that fits into your comment.

_: We see this kind of problem in Illinois where the low cost/high cost utility is selling on the bulk power market to neighboring states, and industry is moving out of the state in order to get the very power that they could have had if they'd stayed, because we don't allow marginal cost pricing to accommodate that need. And the stranded investment question is there no matter what happens.

_: The generation side of the utility business is regulated as a natural monopoly, and it hasn't been one for decades, so there's no reason to maintain that structure. It is possible for lots of people to compete in this industry, and that will change a lot of the ways business is done in this industry.

_: There are other structures the FERC is considering right now, comparability for transmission being one of them, so that if we have an open grid and performance-based

regulation there's the incentive to buy cheaply. How effective would that be in dealing with the problem when compared with a total restructure?

—: There's a big difference between mimicking a competitive market place and having one for real. And I for one vote for the competitive marketplace unless you have structural conditions that necessitate regulation as a natural monopoly defense.