HARVARD ELECTRICITY POLICY GROUP
SIXTIETH PLENARY SESSION

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RAPPORTEUR'S SUMMARY *

Session One.
Smarting from Resistance to Smart Grids

The advantages of deploying smart grid technology include efficiency gains on both the supply and demand sides, as well as environmental and customer service benefits. Despite that potential, equity and risk allocation questions have produced obstacles to deployment. The equity questions are essentially twofold: privacy/consumer rights and assigning responsibility for the costs. In most jurisdictions the meters, and perhaps other customer premises equipment, are treated as a utility function, the costs of which are to be recovered through fixed charges. That, as noted, raises equity concerns but also, as is playing out in a number of states, it raises serious concerns about risk allocation. Seeking regulatory pre-approval is seen as a means of avoiding that risk by passing it on to consumers. Who should be at risk for, or stand to benefit from, technology choices in smart grid investing – utilities, entrepreneurial companies such as marketers and/or aggregators, or the consuming public? Smart grid advocates suggest that some of these concerns are overblown or are capable of easy resolution. How serious are the concerns being raised, both substantively and politically, and how might they play out? In short, will they be resolved, and, if so, how?

Moderator: Our assignment today is to look at the issues revolving around what we're calling "smarting from resistance to smart grids."....So our panelists today are going to address their views and their experiences with deployment of smart grid. How do we get to that place that we move forward? How do we get customers engaged? What is it that we're going to focus on in the coming years? Because what we do in the next several years will really be a game changer for not just our individual states, but for our country and hopefully for the world. So without further ado, I am going to call on our first speaker.

Speaker 1:

I always like to quote David Owens who says, "I'm going to be a little controversial." This first slide is a definition of the smart grid. I really am an advocate of the smart grid, because I really believe in the benefits that we're going

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to get out of it, either with critical peak pricing, or peak time rebates. On this slide you can see a 36% reduction in critical peaks with critical peak pricing, and then a 32% to 37% reduction with peak time rebates. So really you're getting the benefits of reducing the peaks on those critical days from either of two methodologies, some of which are easier to get through politically than others. The cost, about $482 million, and the initial estimates were about $2.6 billion in benefits. And I think when you start talking about the benefits, you're talking about the ability of the utilities to avoid building new generation, building transmission, distribution, and mitigating the wholesale markets.

This slide shows the scale of when those benefits started to kick in over the years. And you can see some initial benefits kicking in after just a few years of implementation.

But I think here what we've seen is that with telling consumers, "That's a critical peak," we're seeing roughly across the pilots that I've looked at 15% reduction in the critical peak days, and with technology, 30% and almost up to 40% reductions. 80 or 99% of the customers said they'd continue, and there are huge benefits. Let's get into the problems that I've seen.

The pushback for smart grid: AARP has said, "Don't do it. It costs too much." But I think the pilots and the studies in all the states that have done these analyses show that actually the one rule I understand about regulation applies--you've got to show regulators that the benefits to consumers exceed the cost. And that's what has been done in all these states.

In terms of concerns about electro-magnetic fields for meters, for those of us who went through the "currents of death" with Paul Brodeur years ago, I'll show you a chart. Evidence is that emissions coming out of the meters are 1/1000 of those that you would feel if you were in a Wi-Fi café.

"My bills have doubled" -- the meter accuracy objection. I think they went through the records in Bakersfield, and there are a lot of other reasons why those bills actually doubled that actually had nothing to do with the accuracy of the meters.

Another concern: the impact on low-income customers, "Poor Aunt Sadie, she won't be able to eat. She'll be paying her electric bill." The Institute for Energy Efficiency (IEE) just completed a study on the impact on low-income customers. But the impact on low-income customers is actually that most of them benefit. I like to go back to what New Jersey did in terms of low-income customers. The majority of low-income customers will see lower bills. But then you find those who see higher bills, and those are the ones you help. I think that kind of targeting does a good job.

Here is one of the charts out of the IEE study. You can see that low-income customers actually do respond to critical peak pricing, and this slide shows that with rate designs, there's a large percentage of low-income customers who will benefit in terms of bills, even without shifting. So the benefits of moving to dynamic pricing really spanned all income brackets.

I was just at the GridWise global forum, and someone said, "Critical peak pricing won't do anything. There are just too few hours in the year, only 50 critical peak hours, how could it help?" I explained to him that those are the 50 hours that force utilities to have to build or buy very expensive generation or energy. And if we could get customers off it, the benefits are huge.

There's also, on the remote meter reading, the "Just skip me," response. The Department of Energy and their request for information asked whether or not customers should be able to opt in or opt out of remote meter reading. And I said, "Sure, if they would like to pay for that truck to drive out to their place every month to read their meter specifically, maybe they can opt out." But it just doesn't make any sense to let people do that individually.

Another concern is privacy—that the smart grid provides information on when to rob me or when to attack me. I think those are legitimate questions, and I think those are things that the industry has been looking at. The utility industry has had customer data for 100 years. We have had a fine record of keeping it private and secure.

Cyber security is becoming a huge issue, especially what I call the 12 year old terrorist living next door being able to possibly hack into your meter. We'll see if that's true or not. But I think a lot of us are very, very concerned about this new worm that was discovered, the Stuxnet, which is the first cyber attack ever recorded.

And then also what we hear from a lot of the others, "technology's changing too rapidly for utilities. They shouldn't be allowed to do it." I think that's really a point related to stranded costs-- that we will change technology. We will put in new technology, as I said, when the benefits to consumers actually exceed the cost of switching out to the new technologies.

Here is a chart that shows the relative radio frequency (RF) power densities. And you can see, there are the smart meters at .01 microwatts per square centimeter relative to everything else. So it's another EMF [electro-magnetic frequency] scare that I don't think is true.

I think people ask whether or not the regulatory compact needs to be changed. I think the regulatory compact is fine. I think that the implementation has been flawed. As I said, my rule is, does the value to consumers exceed the cost? Again, a lot of people are coming to "help" us, like state and federal legislatures. Really, I think, they should allow these state commissions and the utilities and consumer advocates to do their job, and not impose what's been lobbied for on them.

I've been in this business long enough that I remember, you probably do, some of you, too, a lot of people want the laws to help make a business for them out of the business that utilities do for customers, prohibit utilities from competing in retail markets or something else, basically so they can make a business. The Public Utility Regulatory Policy Act of 1978 (PURPA) "avoided cost" standards require payments to make me profitable. People misconstrued the original PURPA standards, to mean that if they had a PURPA project, they had to become profitable from the payments from the utility. But that's not exactly how it works.

Some other things--what's the purpose of our renewable portfolio standard? Is it to support the solar industry? Is it to support the wind industry? Or is it really to reduce our dependence on fossil fuels and reduce greenhouse gases? The studies that were done at the IEE have shown that energy efficiency can reduce greenhouse gases much cheaper than solar options. At least, in the last congressional bills, where they do have a 15% renewable portfolio standard, they do allow credits for energy efficiency, rather than solar, wind or some other renewables.

This slide is a chart that that shows the relative costs of a lot of the different proposals: EPA compliance, a 15% RPS, transmission, and smart meters. Comparatively, the cost of smart meters is really pretty small. And that's putting things in relative perspective.

My point is: are policy directions going the right way? I think the electric industry does require long term planning cycles, and we really need to start now. And I think a lot of the policies that were put in place really need to be rethought, and we need to do things that really, really make long term economic sense for consumers.

When we talk about the smart grid, I always talk about optimizing the value of the investments for the benefit of all consumers. The difference is that when you have someone who puts a solar panel on their home, and sells the electricity back to the utility, that's really (aside from maybe California) a lot of very rich people putting \$30-\$40,000 worth of solar panels on their home, selling the electricity back to the utility at above market prices and having the low and middle income customers subsidize them.

If you want to do solar, I think you do the same thing, but you do it in grid scale, take advantage of the economies of scale and scope, to the extent they exist, for a larger grid level, and really promote the same policies, but in a way that makes more sense for all consumers.

The same thing with making investments in smart devices. If you have people that make investments in smart devices and play off the wholesale market, that's great. They can make money in that way. They can do it. The utility can do it. Maybe they'd do it the same way. But it's really a single revenue stream playing demand response against the volatilities of the wholesale market.

To the extent that you have those investments, and it's being done by a third party, without respect to the benefits to utilities from a system operations standpoint…you've left money on the table.

AEP, when they put in their battery substation, they have a city that had a ten MVA (megavolt ampere) transformer, and the load on the city was going up to about 11. The cost of switching out that transformer to a 20 MVA, which was the next size up, was about $20 million and would last them about 30 years. They put a battery in there, which cost them about $5 million, and they've about able to handle that load.

But you do have load pockets where demand response and all these things can have other benefits. For example, you've got a million solar roofs, and a cloud comes by. Does the utility stand there with spinning reserve? Or do they start turning off water heaters and balancing the load with their finger on that button that has no relationship to the wholesale market prices?

So I think there are lots of things that we need to think about in terms of policies going forward. And I think it's really important now. The future competitiveness of the United States depends on making the right public policy decisions. The robust economy will depend upon energy which is clean and reasonably priced and reliable, and the smart grid provides us with the ability to move forward and get more out of our existing resources and not have to build new resources to meet customers' loads in the future.

National energy policy for energy independence will depend a lot on the ability of the United States to integrate not only all of the solar and renewables and storage, but the electric vehicle (EV) chargers, each one of them could be 40 or 80 amps--that's equivalent to another home on the same transformer. And when we start out, we're not going to have a lot of EVs spread out over the service territory. You're going to have a rich cul-de-sac, and one guy gets an EV, and his neighbor says, I'll get one, too, and you've got two EVs. They both come home at 7:00 pm. They both plug them in at the same time. You've got another 80 amps on that transformer. You either shorten its life, or you blow it up. Thank you.

Question: You said that some low-income customers are going to need some kind of subsidy and some don't. What demarcates who benefits and who doesn't?

Speaker 1: No, no, no. I think in New Jersey that there is a program that limits the amount of a low-income customer's electric bill as a percentage of their income, and to the extent that it exceeds that percentage, New Jersey will come in and pay. But then they target those customers for weatherization and help them. So it's not one state versus another. It's just a good idea that when you see some of the studies on low-income customers, where most of them will see the benefits, there are some that will see, could see higher rates, and those are the ones you target for help.

Comment: For clarification purposes, New Jersey does not have smart meters in residential communities. For a lot of reasons. But New Jersey does have an energy efficiency program, that matches up people in the Universal Service Fund (for low-income, up to 175% of federal poverty level, customers) with their usage and their income, hooking the state computers up, believe it or not, with the utility computers, and we go to the lowest income, highest use customers and do whole-building energy efficiency.

Speaker 2:

Every time I hear the discussion of "smart grid," I keep thinking of how, whenever I'd say something I thought was intelligent to my father, he'd always say to me, "Well, if you're so smart, why do they call you 'schmata'?" which for those of you who don't know Yiddish, it means "rag." So the question here is, are we going to end up with a smart something, or a schmata?

There is a lot of pushback, and obviously controversy about deploying smart grid, and there's a lot of debate about exactly what "smart grid" means. But I wanted to explore some of the central policy issues and the flash points in the smart grid, in the debate over deploying smart grid, at the distribution level. And the issues are here, that I see. Pricing, risk and risk allocation, cost/benefit analysis, cost allocation, access to data and privacy, public education, capturing the benefits on the supply and the demand side, and price signals or centralized dispatches--how do we use the technology once it's deployed?

Let's start off with the pricing question. First, there are clearly benefits on the supply side, that is, on the distributor side of smart grid. For a large part, maybe entirely, California's decision on deploying smart grid technology was based on the benefits on the distribution side, and not so much on the demand side. It's really clear that you're not going to capture many benefits on the demand side without some kind of real time pricing.

Speaker 1 was talking about why various new uses, particularly electric vehicles, mean that you are going to have to have some kind of price signal or some kind of control, or you're going to cause a lot of problems and a lot of costs to be incurred. So if we're looking to capture benefits on the demand side, the only way we're going to do it is through meaningful price signals or through load control, which also is another form of pricing. But absent that, forget about trying to get much benefit on the demand side.

There's nothing new about the technology. Rural electric cooperatives have been using this for more than 30 years, for controlling appliances. So it's not new. What's new here is the technology we're using to do it, but not the actual function.

Another question about it that gets into the pricing is, as Speaker 1 put it, "Why do you need this?" Or when they're in telephone debates, the issue was POTS, "plain old telephone service." "Why does Grandma need anything but POTS?" Well, the question is a perfectly legitimately question. And the answer is twofold. If the customer's consumption level is very small, then the benefits they're going to get on the demand side are minimal. The benefits for the system, that is, on the supply side of the meter, are significant, and small consumers are going to share in them, maybe in a way that's disproportionate to what others get in terms of how much energy they consume, but issues about monitoring the quality of service, more efficient billing, more efficient meter reading, those kinds of things are clearly benefits that everybody's going to share. And so one of the questions that comes up is, "Well, if the benefits are disproportionate, then how do we try to distribute the costs in ways that reflect who gets the benefits?"

One way to think about it is instead of making meters, smart meters, for example, fixed cost, you make them variable cost. So they're recovered through energy costs, or through other variable costs. So the more you consume, the more you pay for the meters. And if you look at the meters as an aggregate cost for everybody, and you simply start drawing down on those costs through the energy charge and other kinds of variable charges, then what you're doing is essentially distributing those costs in ways that reflect energy consumption, and in that sense, I would argue, you're distributing the benefits in a more equitable way. It also may assist in a problem I'm going to talk about in a minute, which is utilities that are really focused on cost recovery, which was sort of written big and large in the Maryland Public Service Commission case. There, obviously, BG&E was extremely worried (one could use a stronger term) about not recovering every single penny it spent on smart meters.

The other issue, of course, is what a utility's incentives are in all this, which relates to the decoupling debate, which is another discussion. But obviously, if a utility's profits are entirely linked to its sales of energy, and now we're spending money to put on devices that are designed to encourage energy efficiency, utilities lose money. They lose interest in doing that. But that's another debate that I just wanted to reference and not get into today.

On the issue of risks and cost and risk allocation, this is really déjà vu for anyone who was a regulator during telephone deregulation. It's almost the identical issue. When you read the Maryland Public Service Commission decision and the concerns that Baltimore Gas & Electric had about recovering its investment, it raises a serious question. How are utilities, which after all are focused on recovering their investments through depreciation schedules, going to manage two risks that are critical here? One risk is that the technological life of this asset is almost certainly less than its physical life. So if you schedule depreciation based on physical life, the likelihood that you're not going to recover all that money through a traditional regulatory mechanism is not insignificant. And so the question, and second thing, if that's the case, is how do you expect people who are waiting for depreciation schedules to run out to respond in an agile fashion to technological change and put in more efficient technology? And the answer is that this is a culture shift. This is for anthropologists. It's a cultural thing. Are utilities really the ones--and it's not so much the people of the utilities as much as the entire way the regulatory system is designed, the way cost recovery mechanisms are designed, and the mindset that follows that--are they the appropriate people to even handle this kind of technology?

What was discovered in the case of telephones, at least in the initial years of deregulation, was that they weren't the most effective people for handling changing technology. They didn't respond quickly. And you could argue, they're getting their revenge today as the industry reconsolidates, but the fact is, it's a big risk.

So there are two fundamental risks. One is the risk of not fully recovering capital investments. The second risk is that if you give utilities the job of doing this, they're not going to be very agile in responding to technological change. And you may end up with a system that's less efficient. And clearly one of the issues with smart grid investments is, what technology do you buy? What's the most useful technology to buy over the long term? And the long term's not as long as the physical life of the asset.

So one of the questions that gets raised, then, is maybe this ought to be opened up as a more entrepreneurial activity. That has a whole other set of risks associated with it, which I'll talk a little about in a minute. But I think every state in the United States has decided metering is a utility function. I'm not sure why that has to be the case. And I think there are good reasons to rethink that question. Or figure out other ways. And as I say, if you recover the costs through variable charges, it may be that the depreciation schedule is less relevant, and it changes the mindset. But I think that is something that hasn't gotten enough attention in terms of how we looked at this.

This next slide actually goes through the question of utilities vs. alternative suppliers in terms of the meter. But the question is, what's the goal here? Do we try to minimize risk to the investor, or maximize the benefits to the consumer and to society? To what extent do regulatory considerations, like depreciation schedules as a mechanism for recovery, drive decisions that may not be optimal in a non-regulated circumstance, or in a more ideal circumstance?

The fear of stranded costs actually has two issues, which is another interesting aspect of what the utilities are doing. One is what I talked about. You're not going to recover the cost of the assets through a depreciation schedule, because the technology will become obsolescent. But the other fear is that you're going to pick the wrong technology. And so what happens is, utilities, to make sure they don't get in that situation, ask the regulators to decide. Now, if you ask a regulator what technology you should buy, you're asking the wrong guy. It's a real question--do you really want utilities coming to the regulators and saying, "Well, gee, what is the best technology? What's the way I take the least risk?" And you actually find utilities asking that kind of question, particularly in the context of trying to get regulatory preapproval, for fear again of stranding assets. And then you get to the question of the symmetry between risk and control.

If we decide, for example, to immunize utilities against the risks associated with either buying the wrong technology or not fully recovering through distributed cost mechanisms, you're essentially saying that the manager doesn't take the risk. Somebody else takes the risk. It creates the classic moral hazard where utilities are absolved of risk, but they're managing something for which they bear no risk, which is an asymmetrical kind of arrangement. And you can get this question about who's going to be more agile in responding to change, technological change in particular.

You want the focus to be on the regulatory process around what the customer wants and needs. Who is best positioned to capture the supply side benefits? The answer to that is clearly the utility is, because the supply side is under its control. Are they best positioned to capture demand side benefits? That's a more complicated question. Because that depends on what their incentives are. It depends on what the relationships with the customers are. It depends on a lot of variables, and also on the degree with which they're focused on the customer's needs. And who's best positioned to seize innovation opportunities?

And quite frankly, for reasons that are understandable, if you were looking for technological innovation, the electric utility industry is not the place you would start. For a whole variety of reasons it's not the place. And if we talk about innovative technology, there's a question, and quite frankly regulators look askance at utilities taking big technological risks, for a variety of legitimate reasons. So it's part of the culture not just of utilities, but of the whole regulatory cycle. And that can be problematic. And I don't think we've examined it state by state at a level sufficient to really determine who's really best positioned to be in the metering business. The only place we have some experience where it wasn't the utilities was in England, and that's become problematic. So it's not like saying, "Well, the utilities shouldn't do it. Let's get somebody else." It's a complicated question that I think requires more serious attention than it's gotten today.

And by the way, just to throw that out, the Obama Administration policy of let's throw cash at utilities is also an example of a not terribly thoughtful approach to this problem. But that's what happens when you try to combine incentives for stimulus for the economy with technological innovation.

In terms of cost-benefit analysis, are the supply side benefits, that is, all the benefits on the utility side of the meter, sufficient to justify the investment? I guess in California and in Texas, too, in most states they found that yes, they are.

Whether that finding empirically holds up or not, I don't know. But the point is, there's been sufficient justification. And there clearly are significant supply side benefits. That's not a debatable question. The question is, are those benefits sufficient to justify the costs?

The demand side benefits are a little less controllable and not entirely anticipatable—there are a lot of variables. But to the extent to which supply side justifies the investment, not adopting pricing and other policies that encourage the capture of the demand side benefits would be a mistake.

And then you have this question about what's the appropriate technology. After all, if electric co-ops 30 years ago could be doing load dispatch with radios, do we need to invest in new technology? Well, it's a more complicated question now. But the point is, there is less expensive, more primitive technology that you can get some of those demand side benefits that we can derive from smart grid. So there's the question of what's the appropriate technology.

Cost allocation. As the transmission argument wears down, it's time to revisit that argument at the distribution level. And actually, these same issues come up. Who are the beneficiaries of smart grid investments? How do we apportion them? How do we allocate the costs proportionate to the benefits?

The example of the plug in cars is Exhibit A of why that's a problem. Most people are not going to have plug in cars for a long time. Some people will. How do we adjust distribution rates to reflect that? Or do we?

What makes this more complicated in visiting this issue at the distribution level, what might create problems for the consumer advocates of this world, the issue is not just inter-class equities, but intra-class equities. Some residential customers will benefit. Others won't. So it's just an extraordinarily complicated thing.

So those of you who are despairing as we move towards a more competitive world, that there may not be more regulatory work to do, just think about these issues at the retail distribution level.

There are implications, again, for whether the utility or the alternative suppliers are best suited to deal with this. In other words, are regulatory mechanisms, not so much utilities, but regulatory mechanisms, the way to deal with that, or do we take more of a market-based approach where people decide what costs they're going to incur, and then incur them? The problem on smart meters is, because there are system benefits and there are individual benefits, it's difficult to allocate between them, so you just leave everything up to the customer to choose, because you want to capture the system benefits, and if the individual benefits don't accrue sufficiently to justify the investment, you still may want to impose those costs on customers because of the system benefits.

You also have obvious issues that are not traditional subjects for HEPG, which are privacy considerations. How do we protect people's privacy? And then of course the privacy issue has to be balanced off against the competitive issues. It's always interesting to me when monopolies say, "We want to protect our customers' privacy. And by the way, that means no competitors can access the same information we have." Well, that's curious. It does protect privacy, but I'm not sure for what end.

So you've got a balance between the privacy consideration and the question of who does the customer data belong to. One way to protect privacy and to allow for some competitive access to the data is simply to say that all the information is the customer's information, and it gets used and disposed of only in the ways that the customer consents to. That's my personal view, that it's the customer's information. It doesn't belong to anybody else. And the customer can contract use of that information, and obviously you contract with the utility to use it in order to provide service at the distribution level, but you may want somebody else to use it to give you an alternative pricing mechanism for your energy, or for demand side services. But you've got to balance privacy and fully enabling competition.

You have another subset of that question, which is, does the customer have to opt into a plan, or do they have to opt out of a plan? Most consumer advocates, and my own personal view is, it ought to be opt in, not opt out. So that customers really have a choice, as opposed to having to go and do something to avoid a consequence they don't want.

This segues into the next question, about public education. The customer having to make those choices obviously means somebody's got to help the customer learn exactly what's at stake, what's going on. It was interesting, again, in the Maryland Public Service Commission's critique of the company's proposal, they noted that there was no public education plan. Obviously, if we're going to invest a lot in smart grid or smart meters and customer premises equipment, and we're not going to spend any time helping consumers understand what they're doing, we may be wasting a lot of effort. And then the question was, well, who does that education? Is that what regulators should do? Is that a function of the utilities, the marketers, all of the above? How do we do it? But some sort of public education program is clearly involved.

The other question that we always have, and have always had in terms of any kind of retail competition, is the question of, how much time and effort am I going to spend to save myself three cents a month? And where do the stakes become high enough that I'm going to pay attention? And despite all the good intentions of utilities and regulators and markets to teach me, how much time and effort do I want to spend learning? Part of it has to do with what the economic stakes are.

In terms of capturing the benefits on the supply side and the demand side, we recognize that potentially there are substantial benefits on both sides of the meters, and the implications of who assumes the responsibility for customer premises equipment, that is, does a customer simply respond to price, or do we actually contract for some control of the use of appliances?

There are three things fundamentally we want the meter to do. We want it to calculate how much you're using, and we want it to give that information. But we also want it to tell the utility what service you're getting. We want to tell when there's service related problems, quality of service, outages, whatever, billing information. So the meter has to talk to the utility, the distribution utility, or the billing entity. But it also has to talk to the customer, and not necessarily directly to the customer, but to the customer and/or to the customer's refrigerator, air conditioner, hot water heater, and so forth.

This is a curious problem, which we confront with every technology. I was talking recently with a member of the NIST, the National Institute of Standards, about trying to come up with standards, so that all meters can talk to all of these entities I was talking about. And every manufacturer, as you know, and every vendor, has God's technology. And therefore, you can't standardize, because only they have the technology that's the correct technology. So if you think about it, what they're doing in some sense is, they're planting the seeds of their own Betamax existence--they're going to wipe themselves out because they don't want to talk to their competitor's technology.

So the need for standardization here is absolutely critical. In the absence of it, I think one thing is assured--we're not going to capture anywhere near all the benefits that can be captured.

Finally, the other question: whether we rely on price signals to customers to get them to respond. In one sense, the benefits of doing that are obvious. Customers become far more aware of what their usage patterns mean in terms of economics, and perhaps in terms of environmental consequences, if you're concerned about carbon footprints and so forth. And customers learn a lot more.

On the other hand, if you're planning the system, and you're operating the system, that's a little unpredictable, because there are times when I'm just going to say, "I'll just overrule it. I'll just pay the price, and I'm not going to worry about it." So I don't know that anybody's going to respond to the signals. So the flip side is, you pay the customer a certain amount of money, or you give him a rebate, however you do it, and the customer allows you to cycle his or her air conditioner, control their hot water heater, do the various kinds of appliance dispatch. That has the benefit of adding a level of certainty in terms of demand response, and I suppose it has the disadvantage of not making the customers as fully aware as they might otherwise be of the implications of when they're using certain appliances and performing certain functions.

The other question, of course, is whether there are competitive implications--for example, utilities are clearly in a better position to do centralized dispatch than alternative suppliers. Alternative suppliers can do it, but they're not quite as well positioned. So if you're concerned about retail competition, the competitive implications, centralized dispatch and demand may skew things a little bit in favor of incumbents and away from alternative suppliers, although it doesn't necessarily have to be the case, but it may.

Those are some of the issues that I think really need to be weighed and thought through more carefully than they have in a lot of places. It's also the argument, I suppose, for how anthropology should relate to, and cultural implications, relate to regulatory decision making. Thanks very much.

Question: Can you say more about the relationship between supply side and demand side benefits? Don't they interrelate?

Speaker 2: Supply side benefits would be benefits where you could better monitor quality of service, more efficient billing and meter reading, operations, system operations, looking at voltage levels, anything that relates to what happens on the supplier side, the distribution side of the meter.

Obviously, if you have voltage problems, you're going to see the impact on the demand side. So you're right, they do interrelate. But basically I'm just drawing a line between whether the benefits are on the distributor side of the meter, or are they on the customer side?

So the demand-side benefits have to do with whether you're controlling appliances or whether the customer's actually seeing real-time price signals. And you can argue that the demand side benefits are more individualized, and the system benefits are more capable of socializing this cost. But that's not always true, because demand response is characteristic for both. So the line is not an easy one to draw, but in a general sense, that's the way I would draw it.

Question: Actually on page eight, access to data and privacy, you talked about you'd prefer opt-in. Is it "opt-in" to get a smart meter, because that would obviously be a problem with adoption, or is it just opt-in with respect to the data and who owns the data?

Speaker 2: Yes, what I meant was, no, not opt-in with respect to the smart meter. I think everybody should ultimately get a smart meter because of the supply side benefits, so I think there's a benefit for the whole system to do that.

When I say "opt in" and "opt out," I'm talking about what programs you use on the demand side. For example, let's take real-time pricing. As opposed to saying, "we're going to give you real-time pricing, but you can opt out if your consumption is below a certain level, where the benefits, if you're participating in real time pricing are negligible," what I'd say is basically, "If you want to change from what you have, the customer has to actively opt in," as opposed to saying, "Here it is. Opt out."

Because if the customer makes a knowing choice, then they don't have something forced on them. But I'm not talking about the meter. I think smart meters ought to be installed.

Question: Your model sort of presupposes that the utility is front and center, in the middle of all this, and in control. And then you raise some legitimate issues. What about under a model such as the Google model, where you still need some upgrades to metering, but in many ways, you're skipping over the utility and directly interfacing with the customer through the Internet? How do these issues play under a Google-type model?

Speaker 2: The electricity is not going to come through the Internet. Electricity is still going to come through the distribution wires. So no matter how you figure it, the utility's going to play a central role. You're right, you could bypass it for some of the information purposes, like price signals, that's true.

Look, if all we're going to do is try to capture the demand side benefits and forget about all the supply side benefits, you're going to have a really hard time, even harder than the other way around, justifying the cost of a smart meter. So that's why I say what we really ought to be focused on standardizing so you can have all these options, and everything can communicate with everything else. And to me that's absolutely a sine qua non. If we don't have that, forget about all this stuff.

Question: I've been following the NIST process, and I think that's exactly what they're doing, is standardizing all the communication between all the different parts. What do you believe that they're not doing that needs to be done in order for it to work?

Speaker 2: I'm not saying they're not doing anything. I don't know ultimately, that's clearly the direction they ought to be headed in. What I am saying is, they're encountering a lot of resistance from vendors and manufacturers who aren't terribly interested in it, because they want a lock on the market.

Moderator: It's kind of like the cell phone, that you need 500 chargers, instead of one type of charger.

Speaker 3:

I'm here really to talk about the consumer perspective, and the previous speaker really did a great job, and it's a great segue for me, because he's identified in many ways all of the issues that are involved in these smart meter proceedings that are pending in many states.

When we look at the title for this program, the word "resistance" is there. When you take a look at what the word "resist" means, it's "obstruct, impede, hinder, rebuff." And this is kind of the sense from some quarters of what consumer advocates do. The perception is that consumer advocates are in there to stop things from happening. They get characterized as naysayers—people who just don't get it, people who are behind the eight ball with the technology. They get called "dinosaurs." And the perception is that if consumer advocates just kind of understood things, they would get up to speed, and everything would be OK.

I think one of the things that's important is to look at things from the consumer group perspective, which is not the naysayer perspective, particularly with regard to smart meters. Consumer groups are looking at smart meters and saying, "You know what? We just haven't been at the table." This conversation started several years ago, and consumer groups were not part of the discussion. I'm glad to see over the past year there have been tremendous strides, and consumer groups and consumer representatives are now part of the ongoing discussion, and I would simply say, if you want this to move forward, you need consumer groups to be at the table.

Another concern is that the approach to smart grid and smart meters that's been adopted early on--a couple of years ago--was really a top-down approach: "This is what we need to do. We need to do it now, and we need to do it our way."

There's been a shift, I would say, over the past year or so, but that approach is not really a viable long-term approach, particularly because you're going to be relying on consumers to do the heavy lifting. One of the things that certainly has finally been addressed, particularly in the BG&E decision, is that, particularly when you're looking at utilities being the prime delivery mechanism, consumers ultimately have been asked in some instances to bear the cost and bear the risks. Those are both financial risks and technology risks, and there has been concern from consumer advocates over that particular aspect of many of the programs that have been proposed.

The bottom line is that when we take a look at a number of the programs, the expectations of consumer behavioral response have been a little overoptimistic, particularly in the short term, and if you're building programs based on, "If we build it, they will come, and they're going to come today," you're going to run into problems.

So I would just suggest that from the consumer perspective we've seen a lack of involvement of consumers. We're seeing a changeover now, and I think that that's a good thing. And if you want to see movement over the long term for the adoption of meter programs and behavioral changes, you need to fold consumers into the mix.

Here is an old quote from testimony from former Commissioner Butler, "Don't put the cart before the horse." I almost hesitated to put that in, because it sounds like, once again, I'm living in the 19th century. But that's not really the point. The point actually is, when we're talking about the smart grid, consumer groups have not been opposed or been nonresponsive or negative about the grid aspect of the discussion. In fact, I have sat in on meetings with DOE folks and other folks and have actually put the question to them: "When are you going to start talking to consumer groups about the grid, the transmission and distribution efficiency, and what's going on there? You have a lot of potential for positive support from consumer groups. Consumer groups want to see what you're doing, how it's being done, and how you can fold this into the mix."

The bottom line, when we're talking about consumer response or potential negative response, is the meter and the focus on the meter, meter programs, and dynamic pricing programs related to that. That's where all the concerns are. The concerns are at the state level, because that's where they're being implemented.

This really takes me to the Baltimore Gas and Electric (BG&E) smart grid initiative, and frankly, that's why I'm here. This is a case that's gotten a fair amount of attention.

I don't have a lot of detail here. I don't have charts. I don't have diagrams. For those of you who are in the weeds on these issues, you've already read the testimony of the decisions. For those of you who don't care about the weeds, you don't want to see any charts coming from me. But I thought I would focus on some of the elements of the smart grid initiative that were of concern to consumer groups. And it was the full deployment of smart meters over a three to five year period that was being proposed. They were talking about 1.4 million electric meters and over 700,000 gas meters. (The gas customer has gotten lost in the mix. They're also getting meters, and nobody claims they're getting any benefits out of this.)

There would be installation of communications networks and supporting IT, basically to cover utility-to-meter, meter-to-residents, and a web portal to enable customers to get access to information. So that was the deployment.

Their proposal included a mandatory time of use proposal that included both a peak time rebate and a two tier time of use pricing scheme that would be mandatory for all customers. There was a proposal for a tracker, and dollar for dollar recovery for all of the costs related to this. The cost recovery mechanism was an issue.

What the initiative did not include-- upgrades to the transmission and distribution system. It was just suggested that these would be new and additional costs once we got the meters in. It did not include any kind of in-home displays or other types of enabling technologies that have been talked up recently, and certainly it doesn't include the appliances that, I don't know about you, but are probably not going to show up in my house any time soon, in terms of the refrigerators, the washers, the dryers, all those things that have the chips that hopefully we'll see down the line. The estimated cost was about $835 million.

One of the things that the Commission's Order took note of is that there were about $200 million in additional costs that were identified in testimony that were not identified in the original proposal. The original proposal talked about the costs related to the installation and deployment of the meters, operational expenses over the life of the program (about 15 years), and a certain amount of education for the program. The proposal did not include the cost of early retirement of all of those existing meters that are in homes. It didn't include the cost of the billing systems. It did not include comprehensive education. And of course it didn't include the cost of energy management systems or appliances that customers would have to incur in the future to take advantage of some of the features of these proposals.

In terms of the business case, basically, they said this was a no-brainer, and that everybody should love this, that it had fully passed the cost/benefit test.

The operational savings that were being proposed related to meter reading. Most of that, of course, comes from elimination of meter reader personnel. Meter operations--this would have been a reduction in the field operation calls, collection visits, avoided costs of maintaining the current meters. Distribution management costs--these would relate to efficiencies as they track through better information what the load is on the system and how to better manage it.

There weren't any real issues from consumers about the validity of operational savings. More information, better information, certainly is beneficial to consumers on that end. The only thing that I would point out is that better information in terms of where the outages are located doesn't necessarily mean that the outage will be corrected. You still have to have a game plan, for example, in a huge storm to get the trucks rolling, the out-of-state trucks rolling, deployed in the right places, and there are a number of other things. Information is good, but it's certainly not the end result. The utility still has all of these other steps that they need to effectuate in order to make sure that the system is efficient.

BG&E's case really placed most of the emphasis on supply side[1] benefit projections that certainly Maryland customers would be able to gain a lot of benefits from capacity revenue, energy revenue and price mitigation in the wholesale markets. They also indicated that there would be a benefit solely from smart meter and dynamic pricing in energy use reduction, about 1%. And, finally, that there would be some avoided costs from transmission and distribution infrastructure that would not be needed. And this was certainly a key point of the case that they presented in terms of the business case.

One of the things that I would point out with regard to the supply-side benefits is that the key assumptions built into the projections relied on changes in customer behavior and responses by customers. They made key assumptions about the number of customers that were going to shift energy usage and also how much. And these were key assumptions that were built into the business case from the get-go.

With regard to energy usage, when we're looking at energy use reduction, this is energy use reduction incremental to any energy efficiency programs or load control programs that currently exist, and on BG&E's system, for example, energy efficiency programs are being built already. They have had automated meter reading in place for a number of years. And they do have direct load control, both of air conditioning and programmable thermostats. So the smart meters are incremental. That's really what we're doing, is talking about kind of incremental benefits to the existing programs.

The consumer advocates' position, basically, on the meter proposal was that this was not in the interest of residential customers as it was proposed, and really the bottom line was that it's because of the cost recovery mechanism, it was because of the business case, it was because of

[1] Rapporteur's note: In contrast to Speaker 2, who uses "supply side" to refer to operational savings, and "demand side" to refer to savings obtained through customer response to price signals, Speaker 3 follows the Maryland PUC in using the phrase "operational savings" to indicate savings related to operations (for example, remote meter reading), and "supply side" savings to refer to savings related to customer response to price signals (for example, possible responses to time of use pricing).

the mandatory time of use pricing scheme, and because of certain issues related to consumer protection.

In their response, the Commission really kind of captured their view of the case and their rejection of BG&E's initial proposal. They basically said the proposal asked "BG&E's rate payers to take significant financial and technological risks and adapt to categorical changes in rate design, all in exchange for savings that are largely indirect, highly contingent, and a long way off. We are not persuaded that the bargain is cost effective or serves the public interest, at least in its current form." And I think that really captures their view of the business case when they rejected BG&E's initial proposal. But also it captures the reason for their invitation to BG&E to come back in and present something different.

And they basically said, "You can come back in, but don't give us a tracker for guaranteed cost recovery. Don't give us mandatory time of use pricing, and related to that, really, is we need to see a better sense of risk sharing between the customers and the shareholders. This should not be an all on the customer risk, both when you're looking at the financial risks attendant to this, and also the technological risks."

So they suggested to BG&E that they should come back in and set up a mechanism that would involve more risk sharing, provide a business case with no mandatory time of use built into it, and provide a more comprehensive consumer education plan. All of these conditions are basically captured in a second commission order that they issued about a month later after further litigation.

We now have a BG&E decision, a second decision that says, "We've approved the smart meter proposal, but no tracker (for cost recovery). You're going to get a regulatory asset."

The importance of that is that it does shift the risk to be shared both between the customers eventually and [the shareholders.] Because one of the standards that they used in saying, "OK, you can potentially recover the costs of this smart meter program in a rate case, you can prove your case for recovery of the regulatory asset. Once you've successfully deployed the program and showed to us that it's cost effective."

The company basically withdrew its time of use rate proposal and left critical price rebates, which was kind of a carrot, not a stick, on the table. They indicated that consumer education certainly is something that needed to be worked on. The Maryland Public Service Commission accepted the initial plan from the company, but it's an ongoing process to develop a further education plan.

I think one of the things that the BG&E decision reflects is, number one, with regard to pricing schemes, it vindicated the consumer perspective that one size does not fit all, that the time of use rate proposals, certainly at this point in time, need to be voluntary and not mandatory, as they were proposed. And that flexibility is important.

I don't think that this has been just a "low-income issue," as has been portrayed in many quarters. This is not just a matter of low-income versus non-low-income. There are people in a variety of different circumstances throughout the BG&E customer base. You could be talking about age. You can be talking about disability and medical conditions. You can be talking about the large percentage of folks who are working different shifts during the day, in addition to low-income folks. We don't know who these people are.

That's really the point of saying flexibility is important. Voluntary participation is important. It's quite important not to view it or characterize it simply as "people with low-incomes are the only ones raising an issue or concern about this."

One of the things that the Commission focused on was consumer education. They said quite clearly that education is needed before, during, and after any kind of deployment of smart meters, and that any kind of success with these types of programs is fully dependent upon a comprehensive and successful education program.

One thing I would point out, because I've been hearing it from lots of quarters, is that I think a notion that education is sufficient to address the concerns of consumer advocates is problematic. What I would say is that once you determine that this kind of smart meter proposal makes sense in a particular state in a particular jurisdiction, consumer education is a critical component, but it doesn't replace going through that process. So it's necessary, but not sufficient.

With regard to accountability, one of the things that the Commission really has done is provide accountability, because they have not guaranteed cost recovery. They have not accepted the use of a tracker. So there is this risk sharing here, without the guarantee. It places some onus back on the company, and that means accountability is back on the company, to make sure that this is done right.

The Commission has established the need for performance metrics with the consumer education program and also with regard to detailing operational and supply side benefits as they move forward with the deployment. And that is really critical. So they will be looking at the budget. They'll be looking at the deployment stages on an interim basis. But they'll also be looking within the customer class at what's going on for folks who are participating in existing load control programs and now have smart meters, versus those people who don't have load control and just have the smart meters. They'll be looking at what's happening to the gas customers. And also looking at all of the customer classes.

So accountability has been built into this process at this point. The order doesn't necessarily address issues related to all the consumer protection categories, I would say, except for the remote disconnection and billing and dispute rules. I think the Commission has sent a clear message to the companies in Maryland through the order that they will not at this point abide any reductions in consumer protections when it comes to disconnection of customers.

The reason that consumer protections had become important for consumer representatives, is that built into the business case for BG&E, and I've seen it in other utilities, is that on the operational side, your savings are primarily personnel cost reductions. And one of the personnel cost reductions is sending people out for last-time field visits to homes prior to a service termination. The only way to do that is actually to change the consumer protection rules in a state like mine. So the Commission I think sent a signal that that's not going to happen, and it is really critical for consumer representatives to ensure that there is not a diminishment of consumer protections as a result of putting in smart meters.

There has already been discussion on the privacy and ownership of data issue. And these are really important issues to consumers. They do tend to kind of fall outside the bailiwick of a lot of our discussions, but to some extent they have come up in the context of retail competition in states where there has been deregulation.

We've already seen, over ten years, discussions about ownership of data, disclosure of data with regard to usage. The discussion has taken on increased importance, and again, we don't want to see a loss of control over the data.

So, bottom line, one thing that I would suggest to you is that the BG&E decision and the Maryland Commission's actions on this can provide a model for activities in states as to how you can set up a process that allows a full consideration of issues of concern to consumers and allow this kind of full vetting of the process to ensure, number one, that it make sense, in a particular service territory and a particular state to move forward with a small meter proposal, and also to make sure that if you are going to do it, it's done in the right way, and that it captures benefits on the consumer side as well. Thank you.

Question: Thank you. I've heard a lot about the order, but this is actually the first time that I've heard it summarized.

It is true what Speaker 2 said, which is that when California regulators approved the expenditure of money for installation of the meter infrastructure, it was on the basis of the benefits on the utility side, because they just were not convinced that there was a business case with enough level of detail on the customer side, and they were able to show sufficient utility side benefits. And after the fact now, California has an order that requires utilities to come in next year with an overall approach to smart grid, since smart grid can mean about 5,000 different things in an orderly fashion looking out ten years.

So my question is, is the Maryland Commission also looking and asking for a smart grid overall plan for the utilities?

Speaker 3: Certainly it's a great suggestion to move forward with something like that. Consumer advocates in Maryland have suggested that that type of broader planning should be done, but frankly, for the past year, they have been tied up with three utilities in Maryland having smart meter proposals that they have been litigating.

But I think you're suggestion is a very good one in the sense that they have been discussing the smart grid vision, which includes the smart meter proposals, certainly for the past few years at great length. But it really is a long-term vision, and it needs to be kind of put in the various blocks--the five year plan, ten year plan, 20 year plan--to make some sense out of it.

I think one of the difficulties has been that the focus has been on the meter aspect of it, leaving all these other elements to the side. This is unfortunate, because certainly there's been discussion about efficiencies on the transmission and distribution side that may certainly equal, if not supersede, the benefits that we're seeing from the smart meter aspect. So I certainly would encourage our commission to go forward with that.

Question: What percent of the total savings in the BG&E case were from the response to time of use pricing versus everything else? Do you remember?

Speaker 3: When BG&E was building their business case, and I think this was somewhat different from some other company proposals in other jurisdictions, the operational savings were a relatively small component. In some other states, they were able to build a business case on operational savings quite specifically. That was not the case in Maryland with BG&E. And so therefore, when the consumer advocates were looking at, gee, what can we get on the supply side, that aspect of their business case became a much more critical consideration by the Commission.

Question: Was there only downside risk for the utility in this order? Or was there some upside opportunity—are they sharing any of the savings?

Speaker 3: I have got to assume that BG&E made a business decision once that second order came out. The Commission was clear and said, "Here's our order. You make a business decision whether you want to go forward," and the company decided to go forward. So I've got to assume that they made the decision that this is not placing the risk on them to the extent, perhaps, that was showing up in the litigation, and that they could see a winning proposition out of moving forward under the Commission's edicts.

I mean, let's face it. We're talking about imposition of a regulatory asset. There is certainly some question, certainly because of the way regulatory assets are set up. Is this a guarantee of recovery? Is it a guarantee with a little bit of risk? The question is, how much risk really is being shifted back? The Commission gave them assurance by setting up a regulatory asset. They could have said, "It's all on you until you file a rate case." They didn't do that. However, they did set a very clear standard, and that's where the risk is for the company. Can they succeed? Will they come up with a successful program? But the standard there is clear. If they do, they'll get cost recovery. I think they're in a good position, myself.

Speaker 4:

I'm going to quickly talk about some of the things that have been done in Texas. I also have what is really a pretty comprehensive *Smart Grid Today* piece that was done in mid September. I'll have copies of it out here to give you some sense of what's been accomplished and how all the pieces of it fit together.

You know, Texas is clearly unique. I'm not going to suggest that what Texas has done is applicable to everyone. Texas really began this back in 2005, following instructions from the legislature to begin to go forward with regard to advanced meter deployment, recognizing that advanced meters had the potential for increasing the reliability of our electric network and might promote dynamic pricing and demand response.

This was really an interesting time in the session of 2005, because it was primarily a telecom deregulation session in Texas, and so Texas ended up deregulating land line service, and I think to some degree, this effort to embed in House Bill 2129 some conversation about smart meter deployment really came from the telecom space, looking to the future as an opportunity, a business opportunity perhaps, to kind of put some of these pieces together.

There was also a unique situation in 2005 because the Texas reserve margins were appearing to be in the out years pretty thin. The Texas Public Utilities Commission was concerned that Texas was not going to be at 12 ½% in the ERCOT [Electric Reliability Council of Texas] region, and so as a result, the Commission began to think about ways that it could help assure that Texas would keep the grid reliable and have plenty of power at reasonable prices. Smart meters felt like a piece of that, albeit perhaps a small piece.

The legislature came back in 2007 and basically told the Commission again that "We really mean it this time." It's the intent. It was very clear. This was House Bill 3693, which really was the beginning of the effort at energy efficiency.

This bill was a large and comprehensive omnibus energy efficiency bill, and buried in it was this one little paragraph about smart meters. Interestingly enough, it was carried by Joe Straus, who's now the Speaker of the Texas House of Representatives. At the time, he was a freshman back bencher who had these crazy ideas about energy efficiency, and he wanted to go forward with them, and so Texas now has a very strong advocate with regard to smart meters and energy efficiency.

You know, in my house growing up, if you were told to do something twice, you'd better start doing it. So the Commission immediately embarked upon rule making, and that was embodied in Project 31418, which was begun in the late spring of 2007. What this did was to establish minimum functionality if you wanted to recover your investment from rate payers.

The rule making was done in a very collaborative way. This rule making set out the functionality that the meters had to have. Of course, the Texas market is unique in that there is a very robust, competitive retail market. And so the ability to switch reps easily was one of the important characteristics, plus the ability to do remote connects and reconnects, because people move around a lot in within the state, and the ability to give real time information to the customer was very important.

The Commission didn't care what vendor you used or what exact technology you used, but if you wanted to get money from the rate payers, your system had to be able to do these things. And this is just a subset of actually what was done.

There were a couple of intervening events that I think in hindsight helped the Commission along the way. There were very significant hurricanes, Hurricane Katrina hit ground in Southeast Texas/Louisiana late August of '05. Rita came three weeks later, and while it didn't get quite as much publicity in all of Texas, still it did significant damage in the Houston area.

After those hurricanes, the Commission held its 2007 session, and there was again a renewed sort of focus on reliability. And then Hurricane Ike came dead on into Houston September of 2008, and there were over 2 million people without power, some for three weeks. Now, let me tell you, you think it's muggy out here right now, you should be in Houston in late August/September. It's terrible. And so, as a result of that, it gave the Commission some more momentum to go forward with what it thought would be one tool in the reliability toolbox.

So the Commission had contested cases for each of the three utilities whose deployment plans the Commission has now approved, and those are mini trials, and the consumer groups were involved. All market segments were involved. And each of those cases was settled. And in the Oncor case, the consumer groups were able to negotiate about $10 million for customer education and in-home display devices. And in the CenterPoint case, which is the Houston area, about $7 million for that. So the Commission was happy to get these cases all settled, and it felt like it had everybody on board as it went forward with deployment.

Interestingly enough, CenterPoint first came to the Commission with a plan that was a very small sort of pilot modified plan. The acronym was the AMEN plan, and it had about that much chance. The idea there was that the retail electric companies would come in and tell the Commission where they wanted CenterPoint to deploy meters. And so the Commission calculated it was about 50,000 meters, and of course, for the most part, it was on the west side of Houston, which is the more affluent side of town, and yet it was still spread out over a territory about half the size of Rhode Island. That plan was accepted, but then the reps never followed through with their previous commitment to pay to put the meters in.

So the Commission quickly transitioned from that into the full deployment for a number of reasons. Here's some statistics about where Texas is today. Over 1.9 million smart meters have been deployed, 1.2 million in the Oncor area. A web portal, smarttexas.com, has been developed that only the customer, the wires and poles company, and a third party agent that the customer can designate, like a rep, has access to. The customers can get information over the Internet about their use. What's really cool is that Texas is seeing some retailers begin to offer very creative products.

The Commission spent a lot of time during these contested cases on this in-home monitoring device issue, because the Commissioners felt like it was very important for the customer to get feedback real time in order for them to make some modifications to their consumption.

I like one of the technologies that I saw talked about in California, which is this orb that glows red if prices are high, and green if they're low. I think that's the kind of technology that we're going to see. But really, what has happened in our market is that the reps now will text you your consumption information as often a day as you want it, if you signed up for a particular product. So they're really skipping over the in-home display device and using your mobile phone device as a mechanism for telling you what you're consuming. At least two or three of the reps are offering that, and that seems to be a product that is really getting a lot of traction.

The last thing, and of course my kids don't believe this, *Rolling Stone* Magazine recently said, smart meters are a "sure bet" to "cool the planet."

Now, you know, you might think of Texas as being a place where they just sort of do what they want to do—just sort of plow straight ahead and do whatever they want. But I've got to tell you, at one point, the consumer groups, not organized groups, but grass roots groups, really became excited about what was happening with bills, and so when that happens, of course, they go to their legislative representatives, and they send the Commissioners letters and call them.

An example of this is when a state senator began calling on the Commission to stop deployment. The Commission would not agree to that, but it promised to do a test on the meters--a comprehensive test, and it promised that if the meters were not accurate, they would stop using them.

So instead of stopping the deployment of the meters, the Commission brought Navigant Consulting in. Navigant had done a lot of work for the Commission in the past. They did a four month exhaustive test of over 5,600 meters. They did meters that had been deployed. They did meters that were in the crate that had not been deployed. They did side by sides with brand new meters on the side of someone's house with the old meter. I have a copy of their report, if any of you are interested. And basically at the end of this period, they concluded that there were two meters that they found that were inaccurate. That's a 99.96% accuracy ratio, if you're a mathematician. That's wildly more accurate than the old electromechanical meters.

They did even more than that. Of the two meters that they found to be inaccurate, and we're talking about less than 2/10 of 1% inaccuracy, they actually drilled down into it, and they found that one of the meters was an early manufacturing design that had some hand soldering on it. And there were about 400 of those meters deployed. So the Commission went and pulled all of those meters and had the company replace them. The second one, one of the meters was running fast. The other one was running slow. The second one was actually sending a signal to the utility telling it that it was having a problem, but the utility didn't know what to make of the signal.

One of the things that is a lesson learned here is that these meters will give you a lot of information. And if you're not prepared to receive it and decipher it, you're not going to know exactly what's going on. So the Commission kind of chastised and talked to the utilities about this. "Hey, guys and girls, you've got to understand, this meter was telling you that it had a problem, and you were not recognizing it." And then the Commission took every individual customer complaint, every person who had a complaint, and got Navigant with them, and went back and looked at their historical consumption and tried to make every one of them satisfied that it really was about the weather. I know it's been hot in some places--LA I think hit a record yesterday. In Texas, they had the coldest winter they've had in years last winter, and in fact Texas heating degree days were 50% higher last winter. So one of my recommendations would be, don't do a smart meter rollout if you're going to have really cold weather. Because people begin to associate high bills with the new meter.

The last thing, quickly, is I've got to tell you I'm a big fan of EVs. And one of the things that these smart meters are going to allow us to do is to prepare individual residents for electric vehicles. The Texas Commission set up a project related to this. In Texas in particular, commuting patterns are going to be ideal for EVs, and given that Texas is going to go from having four areas that are going to be non-attainment for EPA air quality to about 11 under the new standards, this is an opportunity to really make a difference.

Question: In Texas, how are they recovering the costs of the new meters?

Speaker 4: Yeah, this is a pretty long answer. I just quickly would say, you know, the old meters were always recovered just through rates. So they'd have to come in for a rate case and demonstrate. Here the Commission actually tried to balance it a little bit. In the Oncor service territory, they're charging $2.21 per residential customer. It's different for the other customer classes. It's more. And that will go on for a period of time.

As far as time of use pricing, that is totally up to the retailer in the Texas market.

General Discussion Period:

Question: Speaker 3, you describe the implementation or the proposed implementation as top-down in the planning. Was the Commission active on any smart grid investigations or initiatives? Did the companies make any effort to sort of engage others--if not in the decision-making, at least at the education level?

Speaker 3: As of January of 2007, three of the utilities had filed proposals for smart grid or AMI [Advanced Metering Infrastructure.] Some of them were from THI, Pepco and Delmarva. They had a blueprint for the future, which was a multistate endeavor, and BG&E had filed some proposals as well. So they were filed with the Commission.

There were some initial discussions, but the Maryland People's Counsel's office from the get go asked for evidentiary proceedings on these matters, starting in 2007. And finally there were very specific proposals filed in the summer of 2009, and the Counsel's office went forward with litigation at that point. If you're thinking of work groups, collaboratives, things of that nature, those did not take place.

Follow-up question: Given the reception that the original application got, it seems to me to have been hopelessly naïve of the utility to be asking for what it asked for in the terms in which it did, and I guess my question is, was there any lead up to that that would have induced them to make a proposal that detailed or that sweeping?

Speaker 3: All I can tell you is, starting in 2007, the company knew very clearly that the Counsel's office was going to have problems with the cost recovery mechanism being proposed, with the details of the business case, and with a mandatory time of use pricing scheme. So all I can tell you is that two years before the filing, all of the issues that were ultimately raised in the proceeding had been flagged, at least in broad-based discussions and comments. So when they did make the filing, they knew very well what the litigation landscape was going to be.

Question: Yeah, my question is for Speaker 3. A brief observation and then a question. I've watched this consumer and industry debate happen over the last three years or so. And I was taken by your comment in the beginning, how the consumer advocates were viewed as resisters or naysayers or obstructionist. I kind of viewed that as that they were playing a protectionist role, but they didn't really understand the issues so well.

I recently read the white paper by AARP and NCLC, consumer groups, and my observation as I read through that is that this debate looks to me like it's evolving and I think the advocates have maybe been viewed by some as elbowing their way to the table, but it seems like having them at the table is resulting in more creative and better ideas. Is that a fair observation?

Speaker 3: I like that. I think that that is a fairly accurate reflection. I made the comment that this was early on a top-down discussion. I mean, let's be frank, a lot of the discussion was at the federal agency level, and certainly since 2008 at the White House level, through the federal agencies, through the utility structure, in some cases, not all, states. IT industry, vendors, marketers, consumer representatives really were not part of the discussion, at least for two years, I'd say at least until some latter part of 2009.

I do think at this point, it is helpful to have these groups at the table. I think consumer representatives have been viewed as being naïve, being not informed about the issues. But let's face it, there are a lot of things going on at the table, and I think Speaker 2's presentation made it quite clear the number of issues that are under discussion in every single one of these categories.

But having consumer representatives at the table can only help matters over the long term, because one of the points I had made earlier was that all of this is highly dependent upon consumers responding, acting, behaving in a way that I guess folks would like them to do.

If you set things up in such a way early on that consumers develop negative views--they don't understand, they just don't want to do it or get involved, you're already behind the eight ball before you even start.

I think that some of the things that have been reported out of Texas and California that took a lot of headway--I don't think the message from there is so much the accuracy or inaccuracy of the meters. I'm not surprised that the meters turned out to be very accurate. But the lesson to be learned from all those incidents is that when people don't understand things, if they feel that things are being imposed upon them, they will rise up and react. And once you're dealing with a negative reaction, you're already in a hole, and you have to dig yourself out of the hole and get them back on the ground, level ground again and push them forward.

Perception in those instances is key. People perceived their problem with high bills to be the meters. Accurate or not, this happened two years ago in a high bill complaint scenario in Maryland, and the meters were pointed to as the problem, the regular meters, the old meters. And as it turned out, a very cold winter, weather patterns, heat pumps--actually with a combined gas and electric company, one of the problems was the pricing on the gas supply. But people at that point did not want to hear "here are ten reasons why the meter was not the problem." So I think your comment about how things have moved along is correct, and I would hope to see things move forward in the future.

Moderator: The critical point that I see is this: the educational piece that must be out there for our consumers. In the instance that you just talked about, since it wasn't actually the meter that was the problem, what is the role of an office such as the Maryland People's Counsel office to make sure that the information that is given to the public in the press and everything is accurate, is not inflammatory for the wrong reasons?

I mean, I think we all have a part to play to educate the consumers. I don't think anybody owns consumers. So how do we do that better?

I know that in Illinois, they really reach out to consumer advocates. The table is quite large. They are being very deliberate in how they are doing smart grid—they are excavating before they build the house. And so from that perspective, how do we ensure that the information that really does need to get out there is heard? Consumer advocates have a very large voice. When they are interviewed, and things are reported in the press, how do they make sure that they get the correct information out to the public? And do you see that offices like the office of the Maryland People's Counsel has a role to play in that regard?

Speaker 3: I think it's a very complicated issue. When we're talking about education, for example, with BG&E, the Commission is requiring a work group so that stakeholders such as the People's Counsel, other consumer groups, the technical staff, are involved with the company in developing a comprehensive education plan. But one of the consumer advocates' messages back in the Commission, and also to the utility is, "We will get involved, participate, but don't shift the responsibility back to my 19 person agency for full and comprehensive education and understanding of this program."

They proposed it--it's their program. They own it. And on some level, the utility is fully responsible for that program subject to the Commission's directives. Consumer advocate offices are often small—many have four to five people--no webmaster, no IT person, no public information officer and no budget for publication. With that, with all those resources, it is sometimes expected that consumer advocates will go out and educate as many as a million plus households on smart meters, or some other type of topic. Consumer advocates just can't do that, and it really is not their responsibility.

Having said that, I fully appreciate that there is a responsibility for state officials and lawyers to provide accurate information. So when consumer advocates talk to the press, when they file things with their commissions, when they put out information for their websites, they try to make clear what their position is. They don't go out to intentionally kind of inflame situations. And what they look for, frankly, are solutions. And I think that's really what their role is.

Speaker 1: I agree with a lot of what Speaker 3 said. The smart grid is not for every city, every co-op, every muni out there. It is not. It's not at this point, maybe some point later on, as their old meters move out, and new ones are brought in.

I think that we haven't done a good job. In the '80s, we turned this country around on energy efficiency, and we started something there. And we've done an incredible job. We now have refrigerators that run, what, $35 a year to operate, and two set-top boxes equals a modern refrigerator.

Those things need to be next on our list. We've done a culture change. But that was when we had 30% reserve margins, and the price of electricity was very expensive. Now we don't have 30%.

This concern started about five years ago, when the NERC [North American Electric Reliability Corporation] reliability study looked across the country, and ¾ of this country was at or soon to be below reserve margins. That meant we were on a build cycle for generation. And when you build a new generator, that's a 30-40% rate increase for all consumers. We need to get off the kilowatt hours and onto the kilowatts, and that's why I think when you're looking at smart meters, smart grids, smart appliances, all these things, that's what you have to have in mind.

I've been through the NIST process, and I remember the first meeting I went to, there were 700 people there. Only 60 utilities. Let me tell you, it's life and death for the vendors, and they want smart grid for their bottom line, period. That's what's going on out here.

For utilities and consumer advocates and states, it's really what's best for the consumers, period. I think we need to have those discussions, because the difference I see here, we've done direct load control for 50 years, and it's been great. But the difference that we're doing now is, that's where you cycle people's air conditioners, and you come home, and you really don't know whether or not anybody's done anything. What we're trying to do now is on those five to ten days a year, when we are at our critical peaks, and those critical peaks determine whether or not we have to build new generation, those are the days we need customers to do more. And I think that's the message. And to the extent that we can get customers to do more on just those five days a year, that's the value of dynamic pricing or some way.

I think we've got 65 million smart meters already in some state of deployment right now. That's a lot of infrastructure out there. How do we maximize the value of that investment for the benefit of all? And you talk about supply and demand, you know, I step back, and I look at, we've got all these devices, and I've talked to Whirlpool. I've talked to GE. They can't make the case for somebody to put an energy management device in a home and just go off of the retail rate and make a case for spending that money. There's really not that much money there. The value is getting all the way up from the wholesale markets, through the generation, through the distribution, all the way down through the customer to the smart devices and having them all work together. That's where you can get the most value for consumers. That's where we can optimize the investment in all these devices.

When Speaker 2 talks about the difficulty of knowing what new technology to choose, this reminds me of I guess the '80s. Did you buy a PC, or did you wait for the AT? Or did you want for the 286 or the 386 or the 486? When did you jump in? And I think that we're missing the point. When you talk about cell phones, yeah, you want a new one every two years, because your old one, number one, it died probably, but the new one's got new toys and new widgets. OK?

I don't think we're going to see that much technology necessarily in the meter. We're going to see, GE and Whirlpool have all agreed, all their new white goods are going to be smart. And I think with 2012, they're all going to be smart. It's done. It's out there. And you can't buy a dumb refrigerator anymore.

All we need to do is to somehow get the signal out at the right time that tomorrow from noon to 6:00 pm it's a critical day, do what you're programmed to do, and help customers save money. And I think Speaker 3 is exactly right. We have to enlist the customers to understand what we're trying to accomplish. We're trying to avoid building those new nuclear or whatever power plants you've got, and we've got to have them engaged in helping us help them.

Speaker 4: We could take a whole lot of time here, but I think we need to be very specific in our dialogue, because rate payers have been paying for meters forever, and so in many ways, this is nothing new. So let's be sure we're distinguishing between the latest meter technology and time of use pricing and demand response controlled by the utility, because those are distinctly different things.

There is a co-op in Texas, a rural co-op, 83,000 meters, they're all smart. They all communicate to a central control room. The operator knows exactly who has power and who doesn't. That makes sense for him, because when he has to roll a truck he doesn't have want to have roll a truck 50 miles in the wrong direction. So let's be really clear as we're talking about this what specifically are the issues and what we think needs more customer education than the other topics.

Speaker 2: Just one other point, yes, the analogy to the PC is interesting. If the choice is mine to make, and all the risks, and all the benefits are mine, that's one thing. But if we're going to allow somebody to make that decision and immediately socialize that cost, then the analogy goes away, because that creates a real problem. You don't have an incentive to make what you think is the most prudent investment. You have different kinds of incentive systems. And that's the problem. If it's decided that somebody's going to do that, going to make a technology decision, and then immediately socialize the cost, spread it to everybody else, and have no risk, that's a problem. That's where your computer analogy falls completely apart.

Speaker 1: Well I don't think so, because the 286 today will still do Word. It will still work. It still does what it was planned to do. When we went for a restructuring, the problem was that we had used the physical life of power plants to depreciate rather than their economic life. And therefore you had stranded cost. If you want utilities to trade out meters when there's a new technology every two years, for example, then depreciate them over two years, and we'll be just like the telephone companies. The bottom line is that when we put the technology in place today, and use today's technology, when new technology comes along, those things don't stop working.

Speaker 2: Fine, then you should take the risk for that decision. It's a valid point.

Question: First to Speaker 4, in your presentation, you referenced HB 3693, a measure that was passed in 2007, in which the state legislature made it a priority to advance basically the AMI. In your opinion, how helpful has that been in terms of bringing the different parties together to really look at AMI deployment and perhaps build a bigger case for other smart grid technologies as you're moving forward?

I ask that, because in many other jurisdictions, frankly, you don't have that kind of specific legislative mandate that will set the table, if you will, for moving forward on these kind of policies.

Speaker 4: Well, it's quite helpful when one of the members of the legislature now objects to what the Public Utility Commission is doing, because they can point back to the bill that the legislature passed, and it was unanimously approved. There was no opposition at all. So from a very practical perspective, it has helped the Commission continue pushing forward.

So if you can get this direction from the legislature, I think it's a nice bit of support that you can get, either ideally before, you know, maybe during or perhaps after you've gone forward. But more than anything, the Texas Commission believes in stakeholder involvement. They bring everybody, put them all in the room, and say we'd really like to figure out how to do this. Who are we going to charge? How much are they going to be charged? And how much money did we need to set aside for customer education, in-home display devices given to low-income [people]? What are the rates going to look like? All that. And you guys don't come out of the room until you've figured it out. This has worked pretty well. But ideally, you'd love to have the legislative authority at your back.

Question: Let me ask you this. Frankly, if Texas didn't have this legislative mandate, do you think that they would be as far along as they are in some of these initiatives and what has been done?

Speaker 4: That's a great question. I think most of the members of the legislature would say, "Yeah, we never really meant for the Commission to go that far. Gee, when we told you to build lines, we didn't mean $5 billion worth." Texas probably would not have made the progress that it's made without the legislative mandate.

Now, given Texas's unique market design of retail competition and the need to be able to switch between retailers and facilitate those remote connections and disconnections, all of which the smart meter gives you, you could probably also justify the changes based on reliability and Texas being in Hurricane Alley and all those kind of issues. But it would have been more difficult. So just try to get just a little bit of direction, and then drive a truck through it, would be my recommendation. [LAUGHTER]

Question: I don't have a question, but a clarification statement. From Speaker 3's slides, we have seen that the breakdown of the BG&E smart meter-initiated benefits were 20% operational savings and 80% supply side savings. And when I speak to a lot of people, most of them raised some concerns that these 20% savings were too low, when compared to those of the California utilities, which were around 60% operational savings. But it's really important to note that the benefit-cost ratio in the BG&E case was really high, around 3.2, I think.

So 20% is not a really low number, and not something to be concerned about, because to pass the cost effectiveness test, you need a benefit-cost ratio of at least one. And then you think about those benefits. BG&E's benefits would amount to something around 50-60%. So I'm raising this because whenever we speak with people about BG&E's smart grid case, one of the first things that I hear is "Oh, but their operational savings were too low. The other benefits are all speculative." But it's really important that they have a very strong benefit-cost ratio.

Speaker 3: I know that's a clarification, but if I could respond. Number one, this was the company's case, so their estimate of operational savings came from the company. And really there wasn't any dispute. So I think actually it's an important point from my perspective to bring out, which is that circumstances can vary from service territory to service territory and state to state, and that's why it's important to take a look at the facts. What the facts were in California for their jurisdictions may not be the same for other jurisdictions.

One of the things also that doesn't get pointed out with regard to BG&E, for example, is that they did have AMR [automatic meter reading]. They had load control programs. Many companies (for example, there were a number up in the state of Pennsylvania, in the rural jurisdictions) don't even have automated meter reading. And so they're starting at a lower base, jumping to smart meters, and so you see some more dramatic kind of savings because of where they are, what the baseline is, so to speak. So I think that the operational savings are what they are with regard to all of the other benefits, which are really benefits that they were attempting to capture in the wholesale markets. The consumer advocate did retain witnesses in that case.

They presented a case, and the bottom line is, they took the company's information, evaluated it, and the advocate's basic view is, the company case was built on a load of uncertainties, going towards the future, so that the Commission, when making a decision, should not place all of the risk of this on customers based on a significant number of key assumptions and uncertainties with regard to the operation of the wholesale markets and customer behavioral response. For that reason, the consumer advocate suggested that the Commission not adopt the company's proposal.

So again, BG&E's position was to assert a very dramatic cost/benefit ratio. The consumer advocate witnesses actually said, well, the ratio tipped over the one. They didn't say it didn't. But what they did say through their witnesses is that there was a tremendous amount of uncertainty in both of those figures, and it was just inappropriate to place all of the risk through cost recovery on primarily residential customers.

Question: Thank you. The title of this session should really be "smarting from resistance to smart meters," not smart grids, because what we're talking about here today seems to be, and it always seems to be this way for the last seven or eight years--residential customers, should they have smart meters or not?

The purpose of smart meters for a lot of states, is cutting peak demand. How do you do that, and how can residential electricity customers participate in that? There is the cost/benefit issue. So the question is, what other ways, less costly ways, including all the costs for smart meters, are there that can cut residential demand, especially during peak times? For instance, utility control with air cycling, programmable thermostats, that kind of thing. I mean, what types of things would you all recommend, and what have you seen?

Speaker 1: I agree, [cutting peak demand] is the target. In the Baltimore case, it's who pays, when they pay, who bears the risk. To a certain extent, that's noise. Yes, the bottom line is, what is our goal here? Our goal is to look down the road long term and avoid major infrastructure investments when we can. Don't give me smart meters without smart rates. I think, frankly, not doing dynamic pricing, not giving customers a price signal that they can respond to, is unethical. A lot of places, if it's a flat rate, customers will use it day, night, peak day, they don't care. And in five years or so, when the utility puts in a new power plant, and their rates go up 30 or 40%, they're going to come yelling and screaming and opposing this.

If we could bring customers in under the tent, get them educated, explain exactly what we want, and do a much better job than we have in the past and help them understand what we're doing, I think they'll come along.

I moved into my house in Pepco service territory 20 years ago and got onto their time of use rate. There's 20 years ago, my on peak, during the summer, every day from noon to six was 18 cents a kilowatt hour. And I said, "Oh my God." And they gave me a shadow bill for a year. And if I had been on that rate, my bills would have gone down 15-20%--everybody looks at the rate, and they forgot about the bills. 18% during the day, but a penny and half, 2 ½ cents at night.

The critical peak is just 60 hours a year, but when the people that are using electricity during that peak time are paying the $1.60 rather than the utility charging them 14 cents, then the utility's out of the hedging business, and everybody's rates drop--I think Brattle said, it's 3-5% just drop to start with. And then those people that are seeing the $1.30 a kilowatt hour during those peaks, well, they think, "Maybe I won't use that at this point in time."

We need everybody to work together and do a much better job and move off of kilowatt hours to kilowatts. The head of [company name not clearly heard] spoke at the DOE RFI (Request for Information) and said, "I've got this device, and when your air conditioner goes on, your electric charger, vehicle charger will go off, and it will load-level." And I said, "From all the utilities in the country, thank you." But I don't know of one state in the country where a customer would save one penny by lowering their total demand at any point in time. I was told Vermont actually has a rate that does that. I mean, those are the kinds of things that we need to think about.

Speaker 4: I would say we need to be very careful about *mandatory* load control. In Texas, you might as well confiscate the shotguns, because this is government being given something that people didn't agree to. And while I'm all in favor of time of use pricing being offered, I don't think it ought to be mandatory, and I think it's kind of the cherry on top of the ice cream.

Really for us, it's about empowering the customer with information. What we're seeing with these customers that are receiving text messages about their consumption is that instead of a monthly conversation with their utility company, which is mainly a one way yelling match, they now have a daily conversation: "Gosh, I can't believe it's this high." "Well, what's your thermostat on?" "It's on this." "What else did you do?" "Well, I had the pool pump on." "Try this. OK?" The next day they came back. "Hey, I did that. It actually worked pretty well. I saved a few more dollars based upon the information you've sent me."

And so now you've become an equal participant in the buying decision for electricity, something you've never been able to do. Yeah, if you put a time of use pricing plan on that, you'd probably get even more dramatic changes. But I'm skeptical about having the government be in control of my thermostat unless I've previously given them permission to do it.

Speaker 2: One of the frustrating things about this discussion, especially internationally, is they almost exclusively focus on the demand side or exclusively focus on the utility side, and really, your question was one dimensional. It was only about the demand side. And from the demand side, that is largely the purpose. But there are a lot of supply side purposes. I mean, I just came back from a discussion in Brazil on exactly this question, and I didn't hear a single person mention demand side.

California's decision didn't turn on demand side. So we've got to think about where the benefits are. I mean, take the example of sending a truck 50 miles in the wrong direction. You can't lose sight of that. So when you think about whether it's worth deploying for residential customers, I mean, one of the things you've got to think about is, what benefits on the utility side do they get? Do they get more efficient? Do they get shorter disconnection periods? Do they get better quality of service, because it's by voltage fluctuations? On the gas side, you can spot gas leaks earlier. So there are all kinds of benefits on both sides of the meter, and I think my caution is, don't focus exclusively on one side or the other.

Speaker 3: Well, with regard to that particular point, I think this became an obvious issue in the BG&E case, because they couldn't make their case on operational savings. In other states, they may be able to do so, and so you don't have these types of discussions going on. There are jurisdictions, for example, up in Pennsylvania, where smart meters were adopted. They were rolled in, just as other meters were rolled in, and on a kind of a regular schedule, and the meters are in.

What's different about these scenarios is that they didn't ask the rate payers, the customers, to front the money or to guarantee the money. The meters went in, and it was just to find the operational savings. It's really important to be clear in your specific jurisdictions about how the numbers work. If you can make the case on operational savings, that's where you're on firmer ground.

Obviously I don't support mandatory time of use pricing, and I think one of the really important issues, if you are going to engage customers, you really have to go to where they are, and the customers are in very different places, all over the place. Some of them love text messages. There's a significant portion that do, and it's probably going to grow. But there are people in very different circumstances, and even if you give them the information, they may not want to react to it, and I don't think it's quite appropriate to require them to do so and put them in a pinch.

Question: This question is for Speaker 4. For Texas, have you seen actual studies or savings on both the supply side and demand side after implementation of smart meters, especially for Oncor, on such a massive scale?

Speaker 4: I haven't seen it manifested on the supply side yet. Again, given Texas's deregulated supply market, what will happen will be some generation developer that thought they were going to build a plant now has decided not to do one because they're seeing the meters begin to affect peak or total consumption. I think that will play out over the next couple of years. There were some pilots that were run primarily in the Houston area before their deployment, and they more or less verified the 10 to 12 to 13% savings that have been seen at some of the other pilots.

Question: Let me direct this to the whole panel. We've heard about different customer groups that may be disadvantaged by advanced metering infrastructure and dynamic pricing. But aren't there inequities built into the traditional flat rates that utilities have been charging for all these years that don't account for the cost of serving customers that have peakier loads versus less peaky loads? And isn't it possible that low usage customers who tend not to have a lot of air conditioning load could be among, to use Ahmed Faruqui's term, the instant winners, from moving to dynamic pricing?

Speaker 1: Yes, look at my example before about net metering. Poor people don't put solar panels on their roofs. And I was talking to one of my friends who worked for GE. I said, "As a GE employee, you must have an all-electric home, electric hot water, electric furnace, electric air conditioning, electric EV charger, all these things." And the utility's building a generation, transformers, lines, all to meet his needs, and he's paying the same per kilowatt hour basis as the guy in the one bedroom apartment. And I think we've seen in a lot of cases that there is a cross class subsidy with the low and middle income subsidizing those peakier users. And that's why I said, if you find someone in that group that really *is* a low-income customer, and this would increase their rates, those are the people that you focus on, and those are the ones you help.

Speaker 3: It might surprise you, but I agree with your point, and I think it's one of those things that needs to be folded into the mix. It doesn't change my view with regard to the mandatory versus voluntary. But I think that what it does do is fold into the discussion moving forward, partly about education and getting, helping people to understand what's going on in their individual home. There's been data I guess over the past 20 years when they're looking at low-income energy usage, and kind of on average, at least in a state like Maryland, it does tend to be less, partly for a simple reason. Square footage in a house. Many sections of Maryland, including Baltimore city have row houses, very small apartments compared to much larger houses that are being built in other jurisdictions, and also kind of use, central air conditioning and how much saturation there is in some of these households. So I mean I think it's a legitimate point to raise and take a look at. But I would kind of fold it into, if we're moving forward with these things, how do we help people to kind of understand where they can get the benefits.

Question: Having worked in the legislative process for a very long time in Washington, it seems to me, sort of stepping back, and I wonder what you think, that a lot of the public acceptance questions have to do with a perception of accountability. Who's imposing this change on me? Or who's inviting this change? And Speaker 3, it seemed to me you were saying that it almost seemed that consumer advocates had to be very careful to draw lines in terms of whether they were being asked to sort of flack for the change, when in fact their role is very, very different from that--smart meters are coming from another source.

But do you think that's part of the public acceptance issue? And does it vary from situation to situation or region to region? Because I think Speaker 4 made it sound very clear that there was a lot of stakeholder involvement. But his account also suggested a lot of trust within the state of Texas. Is it different region to region? Does it depend on whom the average consumer sees as initiating this process? Is there inherent distrust? Does it seem to come from the utility? Is it better if the perception is that it comes from a legislative mandate?

Speaker 3: I think to some extent, everything is local in some respects, and you really are starting with a state environment, and then a commission environment, and a service territory environment and dynamics. And it's going to vary from state to state and place to place. And I think those factors will play into what happens with regard to a topic like this.

When we were talking about the top down, there is a perception that this thing has been moving as a concept very rapidly, at least over the past few years, and that in a sense artificial timeframes have been put on deployment and implementation of some of these programs. And so right there, you're cutting out the people at the bottom--and these are the customers--from any kind of discussion or involvement.

Talking to advocates, that's where a lot of the concern has been. On a practical level, these programs require customer participation, particularly if you're including dynamic pricing, to succeed. And when we're talking education, we're talking not about a brochure or a website with information. We are talking an ongoing process that's going to take years for people in segments within the residential population, perhaps to get up to speed. Part of the difficulty with this whole thing has been the notion of rapid deployment, rapid decision making and rapid deployment. And the push back is coming because of that.

Speaker 4: Let me make a couple of observations. I give a lot of talks on this, and what I normally say is, I think this is an empowerment tool for the consumer, because for the first time, you'll actually know what you're consuming, because we know the utilities lie to us. And of course, nobody knows how to read the mechanical meter. Right? So why wouldn't you be supportive of a tool that gives you real-time information, just like you get at the gasoline pump when you're filling up, about what your consumption is? (Now, I don't really mean that utilities lie--they don't lie all the time…)

Speaker 3: That sounds like kind of a Judo approach, you know, starting from the negative, and instead of saying this is coming from the utilities, saying, "You know, you always have to wonder about those guys, and we're going to give you this tool to do something about those guys."

Speaker 4: Yes. Now, at the macro level, I can also make this argument, that going forward, it may be very difficult to build a lot of new nuclear plants. It also may be extremely difficult to build a lot of new coal plants. And depending on what happens with the EPA's analysis of hydraulic fracturing for shale gas, it may be difficult to continue doing that.

So if I take all those off the table (and in Texas, which continues to grow, they've got to keep the lights on at reliable prices) then this is a tool that may become a very important tool ten, 15, 20 years from now. So that's sort of the top-down.

I think this is where the Administration is coming from, not only with some of their energy policies, but also with the national broadband plan, which for the first time is a confluence of energy policy and telecommunications policy coming together to empower customers, and it's right there in chapter 12 of the broadband plan. I think it makes a lot of sense, so I think you can come at it from top down or bottom, either way you want, and still justify going forward.

Speaker 3: And I suppose, in addition to the type of generation plants you were speaking of, where there can be difficulties, either economic or in terms of public acceptance, there's also the question of transmission lines, because people are all for having lots of options, but when it starts running through, in my case my parent's farm, it gets a lot more complicated.

Speaker 1: I think to Speaker 3's statement, and Speaker 4's also, how many of you called Intel and said, "I need a faster chip?" How many people called Apple and said, "I need an iPhone?" There are these technology choices that are at the high level. But I think at this point, the decision to go forward with the smart grid, had a case of "pilotitis." We had so many pilot projects. We had what, 60 or 70 pilots all over the country. We needed to stop the pilots and do the demonstration program.

This is what I saw in Illinois, with the Center for Neighborhood Technology—this is a group that's doing it, and put it on the news and showed the benefits. I wrote Ahmed Faruqui a nasty email. He said, 95% of customers will benefit from dynamic pricing, and he was wrong. The Center for Neighborhood Technology showed 97% of customers benefited from the dynamic pricing. To get the customers, there's no better education. This is just like I had to have a year's worth of a companion bill that took the scariness out of 18 cents a kilowatt hour and showed me, you can take my time of use rate out of my cold dead hand, to paraphrase a Texas analogy.

I think customers don't understand. I'm not saying that we are mandating things, but when you go on the Metro, yes, there's now a time of use base, because if we have everybody going at rush hour, then we've got to build more subway trains. In the old days of telephone, we used to have a time of use pricing for telephones. We're used to those kinds of pricing.

I'm not an economist, but I sort of play one every once in a while. Providing the right price signal is the right thing to do. What customers do in response to that--no one is saying, "You must change your thermostat." I think you've got a lot of rich people for whom their electric bill is a small part of their total income [so they may not respond]. But what we've seen is that if 30% of the customers actually respond, they're getting 80% of the benefits. You've got people like myself and my wife, no kids in the house. I turn my thermostat every day up to 80 degrees, and by the time we get home at 7:00, I've never noticed. And I'm on a 100% off during critical peaks from Pepco. I've never noticed it being cool. But I've contributed. And I think that's the kinds of things we're going to see. Excuse me, I never got hot. I'm sorry. [LAUGHTER]

Question: There is an undercurrent here that in terms of benefit/cost allocation as reflected in the risk allocation for utilities, most of the utilities we've spoken with sense there is a very asymmetric upside/downside allocation of risk/benefit for their investments in smart grid compared to traditional supply-side technology.

Some of them find it somewhat ironic that they probably have a higher likelihood of getting a return on their next-generation nuclear plant than smart grid technology. But they'll go with the flow.

On the other side, there is obviously a sense of utilities trying to lay claim to the smart grid landscape as quickly and as broadly as they can. Some feel they're being stampeded into it to some degree. But from what you've seen, do you have any real empirical evidence that at this point commissions are applying a different metric on risk allocation, on investment versus supply and demand side? I ask to Speaker 1 and anyone else on the panel.

Moderator: I'm going to take a stab at that. I think it's because there are so many unknowns, and I think that in the case that Speaker 3 was talking about, there were unknowns. There was not what we would refer to, or I would refer to, as substantial evidence to support the Commission approving that project. And when regulators can't put a dollar amount on something, or a timeframe, it makes it very difficult to make those cost decisions that are going to affect people's rates.

I think that's the problem from the regulator's viewpoint--that there are very many unknowns with regard to the cost. The acceptance, the pilot programs and "pilotitis,"-- I don't know how else you do this and do it right.

Speaker 1: This is the computer analogy. We've got the PC today. Tomorrow it's the AT. Then a 286, 386. Every two years or less, there was a newer, faster, better, whatever.

And as I said, it doesn't matter. I think the smart devices we're putting in today will work, regardless of whether or not there's something new. I'm not sure there's going to be that kind of application differential that will render all these unusable. But I think there is a concern that, to the extent that in five years, they said, "Why didn't you wait, or why did you do it this way?"

The FERC, with respect to the NIST standards, said they are going to "adopt them." They're not going to make them mandatory, but they're going to "adopt them." I don't know one utility that will take the risk before a state commission to say that "Well, FERC didn't make them mandatory, so we didn't use them." You know? So I think their adoption is de facto mandatory. But I think I've seen in my career a lot of cases where after the fact review, looking down, you should have done this, or you should have known that. I think this is a case, just as we need to get the consumers involved, utilities and commissions and consumer advocates have to make a decision now to the best of their ability, where they think the technology is, and the best path forward for everyone, and then stick to that.

Speaker 2: The sort of asymmetry that you're discussing is actually present in lots of areas. I mean, it's the same argument about purchasing power or building power plants. It's the same issue. There are a lot of inherent asymmetries or hidden incentives or disincentives in the regulatory regime.

And one of the problems is, I think, in general, regulators don't think those things through, and what those incentives are. And frequently, and usually the interest groups that appear, whether utilities or others, that appear before the regulatory body have absolutely zero interest in doing anything other than providing incentives for whatever they're hawking. That's part of the problem. I don't think regulators generally do a good job of looking at the kind of hidden incentives that you're discussing. But I think the point you're making is more broadly applicable than doing effective demand-side versus building a generating plant. There are a lot of other things that have the same issues present.

Speaker 4: When the Texas Public Utilities Commission wrote their rules on this, they really tried to thread the needle in a couple of ways. One, they allow for a true up at the end of the deployment, and they said that there will be a presumption that if you deployed in a manner consistent with the PUC's rules, with the meter set and the functionality that the PUC requires, and you don't deviate from the plan that everybody agreed upon, there's a presumption that you're going to get full recovery. Now, the PUC debated, is it a rebuttable presumption? At the end of the day, they said, there's a presumption, so there's still a slight amount of risk, but yet it still gives them some comfort.

Secondly, the monthly charge does not cash flow the deployment. They still have to borrow money, so there's still a risk element there as well. Now, the Texas PUC didn't think it was appropriate for them to have to borrow *everything* up front, because that was too much risk. But then rather than a five or six dollar a month charge, they thread the needle on a two or three dollar charge. So hopefully that captured some of the appropriate balancing of the risk in terms of what happens when you get to the true up, and you've expended, you've collected $400 million, and you've expended $300 million through the capital markets.

Question: In the voluntary opt-in view of the world, one of the big obstacles always has been the meters, paying for the meters, and having only some people have it and others, they don't get all the savings, and all that kind of thing. And that's a hard problem.

But if you get past that in places where we're putting them everywhere, and lots of people will have these smart meters, still, I've heard of opposition to allowing people to opt for dynamic real-time pricing, which is not the same thing as time-of-use pricing, incidentally. Partly because they see it as cross subsidies going the other way, and they don't, maybe they're wrong about this, but they don't want to give up the fact that they think some people are subsidizing other people, and they like that. And they're worried about the people who are providing the subsidies opting out and going to the dynamic real-time pricing. Is that a real concern? We sort of have a mandatory rule now that you can't have dynamic real time pricing. Right? And so, or is that an option that people will be able to pursue, given that they have the meters?

Speaker 1: One of my slides shows a summary of 3,300 hours. You're talking about 50 hours where you're going up to $1.30. But for all of the other off-peak hours, which are about 60%, you're going from 14 cents down to nine. Once people see the $1.30 kilowatt hour, even for 50 hours, they get scared. And I'm not sure how you do a shadow bill for dynamic pricing.

Question: …I would be better off if I looked at dynamic pricing. Somebody else would be worse off if I looked at dynamic pricing.

Speaker 1: I think what we've seen is, when we get to dynamic pricing, and you start charging people what it costs the utility to buy from the market or from a generator, you charge them the $1.30, and you really pass that cost on to the people who use it. Number one, you'd get the utility out of the hedging business, and we don't have to buy hedging contracts. And so what we've seen is that this saves customers, all customers, 3-5% on their bills off the back. And then you get some customers who say, $1.30, I'm actually going to turn down my thermostat, and so you reduce the load again.

Remember when we were talking about the hockey stick years ago and looking at the wholesale markets, we're looking at a 3% change in demand, dropping the wholesale markets down 50%. That was Eric Hearst's analysis. So here we're looking at dynamic pricing, where you call people. You're getting a 15% reduction. But the pilots that we've seen, we've seen 30-40% reductions. So I think, it is a hard argument to convince consumers about, but I think it's just one of those things like they've got in Illinois, you've got to show by demonstration projects and word of mouth, "Hey, my bill's going down. And I haven't been hurt."

Speaker 4: Well, one of the things we're going to have to probably reconsider is that every consuming group except residential has a demand ratchet feature. OK? So already we're subsidizing residential, because they can go all the way up to any KW number, and they don't get hit with a demand ratchet, like small business or commercial or industrial does. And by the way, we tried to switch the VFW halls, American Legion, churches and synagogues off of a demand ratchet, because some volunteer comes in on a cold January morning, turns the thermostats up, and they've just set the electric bill for the next 11 months. They don't understand that. Right?

If we continue to do more of that, then we *are* shifting. We're going to be shifting to another group. So it may be that if dynamic pricing really begins to take hold, we will begin to see consumption patterns across all rate groups that require us to do something different on demand ratchets.

Question: My question really just goes one step further, I think, than the last question, which is that if you allow exemptions for low-income customers, or opt-outs for disabled or some of the other categories that Speaker 3 talked about earlier, then what's left for a customer who has a voluntary option to get into a real-time pricing or TOU [time of use] program that presumably reasonably represents cost of service, and they're choosing not to. Then they're a customer that at least believes that they're being subsidized by the current rate structure. And yet, the panel seems to be almost universally believing that we can't have a mandatory TOU or real-time pricing program, even for those customers that aren't being excepted or protected. And I guess I'm trying to understand why do we want to perpetuate that subsidy for the customers who are not willing to be responsive to the prices in the market?

Speaker 2: Actually I would prefer mandatory real-time dynamic pricing. Politics may dictate something else. Is that rational policy? No. But I mean, if you did have some people opt out of it, or you decided as a matter of policy they weren't going to be mandated to be in it (they can always opt in, of course) then it should be based on basically marginal consumption. So for example, take Speaker 4 talking about the demand ratchet. I mean, I don't know the load configuration in Texas, but if you had, for example, if you didn't put in low-income people, I'm not saying it's a good idea, but just hypothetically, the marginal impact of excluding low-income customers from real-time pricing would be negligible. So in terms of where you make it mandatory, the more consumption, the more likely it is to be mandatory. But if you ask me, I would have it mandatory across the board.

Speaker 3: I would simply suggest, once again, that you're kind of jumping the gun, trying to do too much at one time when we're having all of these discussions. So that's just kind of a practical reason for not going forward with it.

The second thing is, this kind of mandatory approach I don't think will get political or consumer acceptance. I think you're going to end up in the negative position instead of a positive trying to encourage people to participate. When you're talking about these "exclusionary categories," I think one of the important points to make about that is that you don't know who these people are. I'm just going to take the low-income customer group, because everybody seems to think these are all identified households. In the state of Maryland, for example, there are about 350,000 households that are eligible for energy assistance programs--the standard is 175% of federal poverty level. Last year, and this was a real jump up, 160,000 individuals applied. About 130,000 households received energy assistance. That means that there are about 200,000 households out there that are low-income and not identified that we know about.

So quite simply, one of the first points, even with low-income customers, we don't know who these households are, unless they kind of self identify themselves, and they don't tend to. When we're dealing with other categories--if you're on shift work, working during those peak hours, the things that you have to do in your house are going to take place during on peak yours, whether it's sleeping, whether it's turning on appliances and this and that. We have no clue who these folks are. So the only thing I would suggest is that there are no clear ways to define who these so-called exclusionary groups are, so instead of going down that path, I would say that the preferable path is to have people at some point, at least with time-of-use pricing, make the choice based on information that they're getting to choose some things that may be preferable to them.

Question: One quick response, though, is that those very low-income people that haven't effectively identified themselves to take advantage of the low-income pricing are going to end up being the ones subsidizing those that choose not to be in the program that should be mandated to be in the program. And actually, in my question I allowed for the exceptions for the categories like the shift workers that you described before. I think that makes perfect sense.

Speaker 1: I think part of the study that is going to be delivered and probably handed out tomorrow shows that without shifting, between 65 and 80% of low-income customers will see lower bills without shifting, just because they have flatter consumption than the rest. But dynamic pricing is not time-of-use. There's a distinction between real-time, time-of-use and dynamic pricing. And some kind of dynamic pricing that sends a signal when the utilities generation or costs are at their peak and will drive new investment. That's the time that we need something to be done.

Question: In the interest of time, I'll just make a statement. I don't really need anybody to argue with what I'm about to say. [LAUGHTER] I'm surrounded two deep with regulators, so I could get dope slapped in the middle of this. I'm an economist. I'll say that. So rates that reflect cost are fair rates, and those that don't, that's what I mean by "subsidy" when I use that. And one point that hasn't been raised here is that it's not dynamic rates that create winners and losers. It's rate averaging, regardless of the underlying structure, and one size fits all.

So your flat rate, if you do it relative to cost of service, however you want to argue about cost allocation, you're going to see big winners and big losers relative to cost of service. Why is *that* fair if a time of use structure better reflects costs to begin with? Why isn't that a better and more fair underlying rate, especially if it's default service, and customers have choice? They can go to a market, presumably, and get somebody else to sell them a flat rate, if they can't get it from the regulator. (This question was rhetorical, sorry.)

Question: Most of the issues that we've been discussing, many of the ones that Speaker 2 brought up earlier, you could make the case that they really fall within the jurisdiction of the state regulator, the state PUC. But as we know, the federal government is still very much determined to make an effort in pushing the smart grid forward.

So the question is, what do the panelists think is the best or maybe the most effective role that the federal government might play to address some of these issues? Just to give a couple of examples, we saw Senator Udall introduce his consumer rights bill in the Senate, and then Markey introduced two versions of the same bill in the House. We have the FERC NOPR [Notice of Proposed Ruling]. So there are all these efforts at the federal level which are kind of percolating, which have big implications on the issues we're discussing.

Speaker 1: Number one, who owns the data is irrelevant. I think it's a red herring. I will quote my wife who says, "Utilities don't always do the right thing, but they do what they're told." You know? And the commissions will tell us what to do with the data and who gets it and how we keep it safe and secure, and utilities will follow that. But the question is more with respect to the bill and customers getting the data. How much is it going to cost? And how much do regulators really want to put on consumers to have that data collected and passed through?

We normally pick up the data one day, analyze it, verify it, put it up and it's ready for anybody on the Internet the next day, 24 hours. I think there's very little incremental cost. I think the cost of having the meters have the ZigBee chip and send it out if they're capable of doing it is really cheap, and the question is, I think with respect to Maryland, who buys the device in the home that actually reads that? OK? Is that the customer or is that the utility?

I'm not sure most commissions want to spend $100 per customer putting a device to read the meter in everybody's home. I think the people who want that should pay for it. The other third option was where we would be taking the data back on a near real-time basis, taking it back from the customer meter to the utility and putting it out there on the Internet in near real-time, this would require us to basically throw away our whole communication back hall system and put broadband to every meter in the country. I don't think anybody wants to spend the hundreds of millions if not billions of dollars to do that. But I think customers are entitled to the data, and it's up to the commissions to decide who pays and what we want to pay for that.

Speaker 3: I fully agree with the comments with regard to having to assess what the relative costs are as you ratchet up the granular data that you're providing. With regard to things like access to data, those are really important issues at the state and the local level. They really need to be addressed ultimately at that level.

I would hate to see at the federal level an undermining of state consumer protections. This is not an issue that's peculiar to the energy area or the utility area. I would say starting several years ago, concerns started arising, in many attorneys general offices and other consumer offices over the shifting of certain responsibilities from the federal to the state level, and certain preemptions that were taking place of state responsibility or control over certain issues. And certainly issues like privacy and control of data I would put in those categories.

Consumers do have very real concerns about information that is being gathered from their households, who has access to the data, how is it secured, and who should have the right to get access to it. When we talk about "opt in, opt out," I talk about it very much in terms of opting in or opting out of giving permission to get control of that information. And I certainly view it as requiring a need for opt in.

The customer must be able to affirmatively consent to release of information that's being gathered from their place of residence. And then there's a question of how much information? And I think then you can get into cost. But that is something that's very particular to the customer. It should not be released without their consent.

You can set it up on an opt out basis, and I think we've all gone through that with a lot of the financial companies, and we all got these privacy notices that had this fine print. And it said, well, you can opt out of us releasing all your information to all of our affiliates. And I wonder how many people actually saw those notices, read those notices, responded to those notices and actually understood what was going on. That's what opt out is. Opt out in those kinds of situations mean you are counting on people not paying attention, not reading, not understanding and not responding in an affirmative way. So at that level, I think those are issues where the federal government may provide information and guidance, maybe minimum standards, but the states really have to make ultimate decisions.

Speaker 2: To answer your question very specifically as to what the feds can do, basically it's three things. One is, meaningful prices at the wholesale level, which we have in some parts of the country, and we don't have in other parts of the county. That can be translated into meaningful signals to retail customers. A second thing which the federal government can do, in regard to the contents of smart grid, is setting standards, uniform standards and requirements, as to what these devices do, who they can talk to, how they talk, so that we can interchange different vendors and different equipment.

We can change who is in the meter business and who isn't, without sacrificing any ability to communicate. And then finally, I don't know if I agree with every detail of what Speaker 3 said, but I think the privacy/competition issues should be sorted out at the federal level, because I think the market is really national, and those rules ought to be national. But those are the three most important things the feds could do.

Session Two.
Transmission Cost Allocation

The FERC NOPR on transmission planning and cost allocation embraced allocation of costs according to the principle of beneficiary pays. Those who receive no benefits should not pay. The proposed rule forecloses arguments for socialization of costs on the grounds that (i) it is too hard to identify beneficiaries or that (ii) it will all work out in the end with complementary socialization of the costs of future investments. The Commission significantly expands the domain of the definition of benefits to include reliability, congestion relief, and public policy mandates. Having walked through the door to a broader consideration of benefits, the Commission is silent on how to implement such an evaluation. There is much work to do here. The evaluation of many possible scenarios is an implicit embrace of the ex ante methodology which would avoid the necessity of revisiting cost allocation. How will the details of benefit evaluation unfold? How will the FERC initiative affect legislative efforts to define transmission cost allocation? What complications does the NOPR propose for evolving cost allocation methods in different regions? Will the FERC initiative provide a breakthrough or a breakdown in the transmission investment process?

Moderator: Well, let us launch into this particular session about a subject that just won't die, and that happens to be transmission cost allocation, although this has a somewhat new twist to it insofar as it comes on the heels of a NOPR [Notice of Proposed Rulemaking] by FERC that kind of spreads the issues over which reform is to be considered.

Speaker 1:

I want to talk about the New York approach to planning, both reliability and economic planning, and then talk about the FERC NOPR and inter-regional planning.

In New York, the planning processes that were put in, the one thing to remember is, they're very market friendly, and actually, they're designed to bring market solutions to bear as the first priority. So the market design is done that way to try to attract resources to the right locations, and that marries very nicely into the planning process. And like all the RTOs [Regional Transmission Organizations], the NYISO [New York Independent System Operator] processes really are transparent, and they engage all the stakeholders, the regulators, market participants in a very open and transparent process.

The comprehensive system planning process is an all- resources process. It's a ten year outlook designed to identify solutions that could be both market-based or regulated backstop solutions. Market-based type solutions, of course, are generation and demand response, and could be merchant transmission as well. Then regulated backstop solutions would be primarily transmission.

But the planning process does address cost allocation and cost recovery and is based on a beneficiary pays methodology. The New York ISO and its footprint does have methods for both reliability projects and economic projects. They're similar, but they are also some differences. The reliability process, of course, was put in initially and has worked very well, again, very closely aligned with the way the market is designed, and in New York, right at the get go, New York put in locational energy pricing markets and locational capacity pricing markets. So as a result, just to give you a comparison to New England, there they started out with one price for the whole pool, and did not have a locational capacity market.

In New England when all the new generation started coming in in the late '90s and early 2000s, it tended to locate at the intersection of the pipeline and the transmission line--because it was the same price wherever you located. So it tended to locate in Maine and Rhode Island for the most part.

In New York, because of those locational capacity signals and energy signals, generation tended to locate close to New York City or inside the New York City zone, or on Long Island, where most of the load is in New York.

So when I say the planning process is working very well, it's not that I can point to a map and say, look at $5 billion worth of transmission projects that have happened as a result of that. It's because resources have been located in the right places so that those big transmission projects weren't needed, because generation was put closer to the load.

And in New England, that wasn't the case in the beginning. In New England a while back, there was the generation. It was bottled up. You couldn't meet NERC reliability standards as you went out a few years because of load growth and get that generation to the load, so it was pretty easy, really, to do studies. The uncertainty had kind of gone away. It was clear where the generation was. It was clear where the load was. And as a result, quite a few transmission projects have already been put in place now in New England, and just recently the new Maine reliability project has been approved by the Maine PUC, and will be going in service in the next couple of years.

But in New York, with this locational market design approach from the very beginning, the reliability planning process is designed to look out ten years and identify where reliability criteria can't be met, and then identify those needs and send those needs out to the marketplace for a response, and in this case, in New York, and most cases, merchant generation located, or demand response located in the right locations, and in fact, today, as they go out the next ten years, assuming they have no retirements and assuming Indian Point doesn't go away, we meet reliability criteria for the next ten years, both transmission security and location capacity, LOLE [loss of load expectation] kind of analysis.

But there is a process for how to do cost allocation for reliability projects. It's a three step process. Locational requirements are determined, and costs are allocated to LSEs [load-serving entities] and locational areas. If it's a statewide project, because it's a statewide need, then costs are allocated to all zones based on peak load.

Just a couple of years ago, FERC approved Order 890 for New York, which established an economic planning process, and here there's a cost allocation process that's been approved as well. First you have a hurdle to go through, and that's to demonstrate that the control area wide production cost without this transmission system would go down sufficient enough with this new transmission project to justify covering the annual charges of that transmission project. And this is done over a ten year study. LMP [locational marginal pricing] load savings are calculated, and cost allocation based upon zonal LMP load savings net of TCC [transmission congestion contract] credits and bilateral contracts for those zones that get the savings.

And then there's voting process, since those beneficiaries have been determined to be the ones to get the benefits of those projects, these load serving entities in these zones are required to vote on the project itself and the cost allocation, and we have a super majority vote of 80% to allow that project to go forward for cost recovery under the tariff. So that's a procedure that's been in place now for two years, and the New York ISO is in the middle of going through some analysis under Order 890 to identify the most congested corridors in New York and specific projects which might mitigate that congestion in New York. So they are going through the process now to see what bubbles up through there that can be justified based on economics.

Jumping to the FERC NOPR, the FERC NOPR does state that different cost allocation methodologies may be applied to different types of projects, suggesting reliability, economic and also public policy types of projects. And it also recognizes that FERC has already approved cost allocation methodology under Order 890 for various planning authorities.

For public policy type of work, the NYISO planning process does provide an avenue for scenario analysis to take place, looking at different future states, different generation mixes in the future, so that studies can be done to inform policymakers of different outcomes, both in terms of cost, reliability and environmental benefits.

NYISO also is very active in its state's energy planning process, and they are an official legislatively-named advisor to the state energy planning board that was established last year. And then they provide with independent sound technical analysis studies that they're requested to do by the policymakers and by the market participants in the state.

It's the NYISO's belief that when you get to public policy, though, it's not the NYISO's role to be identifying what *is* public policy. Their job is to do independent technical analysis and inform the policy makers--so that's the state, and that's the federal government. That should be made pretty clear.

So the NYISO believes that the FERC should allow flexibility, as there are some significant differences in regions for cost allocation. Some regions, for example in New England, have a very sound process that's been working for reliability projects where those costs are socialized through the whole region, and in New York there is a beneficiary-pays concept that's been well accepted in that region, and has been getting things done the right way.

The FERC should clarify that cost allocation for public policy considerations should not be required unless the relevant regional public policies include a requirement to construct. I've been in the business of building infrastructure for a long time, and even when you have the power of eminent domain, you always end up in front of a federal judge, even if you have that power, and you're there to tell the judge, you need him to give you this person's land. And the judge should ask you why. And so you have to say, "Well, we've done some analysis. Our studies show that unless we build this project, we can't keep the lights on for this area of the system, and we've looked at all the alternatives, and this is the very best alternative and lowest cost alternative to keep the lights on." And then the judge hears from lots of other people. But if you're correct and persuasive, you will then get the ability to get that land.

So imagine you're back in front of this same judge now, and you want somebody's property, and the judge says, "Why?" And you say, "Well, they've been talking down in Washington that we should reduce carbon." And even in New York, they have some goals--every time a new governor comes in, they even raise the goals a little bit more. And the judge is going to say, "Well, where's the law for that? What's behind it? Come back and see me when you have something. I'm not going to take this guy's land."

So that's fundamental to everything we're trying to do in this country to get infrastructure built. If you don't have something that's backed by public policy, which means law, you're not going to get anywhere. So that's part of the comments that the NYISO is making to FERC, is that coming up with pre-established formulas that aren't backed by anything doesn't work.

To get transmission built, you need to have studies that inform people, that show what the issues are, what the benefits are, what the costs are. And when it gets to inter-regional planning, the regions that are affected that have the needs and that also would end up paying need to be at the table to agree that it's a good project, and then to agree on what share of the project each one should pay. And then they should take that share of their cost and take it to their regional cost allocation process the way they normally do other projects.

So that's how I believe things can get done if we do need to build more transmission and more interconnections, and that method has worked in New England, and the new interconnection was built between New England and New Brunswick, using that method. And many interconnections at TVA were built that way. And in New York, new HVDC [high voltage direct current] projects have been built from New England into New York, and from PJM into New York, and planning studies are ongoing, looking at the need for additional interconnections as we move forward.

But those kind of issues need to be done out in the open and then negotiated between the regions without having some pre-established formula to say who would pay for what percentage of a line or so forth.

The NYISO is very happy to see that the FERC NOPR did not impact the work that is being done in the East on the Eastern Interconnection Planning Collaborative, which is a collaborative designed to do a lot of analysis, the scenario analysis type of things that each of the ISOs are doing in their own footprints, and that effort is very important to inform policymakers of the impacts of many different future scenarios and the cost and environmental impacts and reliability impacts of three major plans that would be developed through that process. So the FERC NOPR very carefully allowed that process to go forward and didn't impact anything involved in that process.

So specifically on inter-regional issues related to the FERC NOPR, the NYISO agrees with the principles laid out in the NOPR for inter-regional planning and cost allocation that would require that inter-regional projects be included in each region's annual plan. And that would serve as a prerequisite for cost allocation, and that this would require mutual agreement on inter-regional cost allocation, and would prohibit cost allocation to regions who receive no benefit, [and] would prohibit cost allocation to regions where the facility is not located. The NYISO urges the FERC not to mandate a uniform inter-regional cost allocation methodology because of the very reasons I went through earlier. But there's more good in the FERC NOPR than bad, and it's certainly something that we can all work together to try to improve and take our industry forward. Thank you.

Speaker 2:

I was glad to see no one else had a little background slide. I thought maybe everyone would have kind of the same background slide. So for those of you who haven't been watching the specifics, the first round of comments went in yesterday. I haven't read any of them yet, and I'm sure you all stayed up late last night reading them all. But there were many, many comments filed, and over the next few weeks, many of us will be going through them and trying to understand what people said and what we need to respond to.

After we get through the reply comments and the initial order and clarifications on that order, there will be compliance filings that are due by the regions and by the entities that are subject to this. And there's the six month time frame for the intra-regional filings in compliance with the order and a 12 month for the inter-regional.

So New Jersey and New York will be hopefully in agreement on the inter-regional at that point. One thing that's clear is that it will be a long process. We're not going to be at the end of this road in the next six months or so. It's going to be a couple of years, I think, before we have this concluded, and it will probably go on for longer than that with interpretations and various issues that come up.

So the purpose of the NOPR, I looked at it and tried to really understand from my perspective, what are the key things that FERC says they're trying to do here? Well, they focused on three areas, how transmission is planned, (we'll talk about that just a little bit), who gets to build it, (I'm not going to talk about that in today's presentation, but that is a key issue in the NOPR, this right of first refusal for incumbent transmission owners that have an obligation to build, but may now not have the right to build some of those projects), and then the third category is, who should pay for these transmission projects?

So three distinct categories from my perspective (for sites, too) with statutory authority under the Federal Powers Act, to ensure that rates are just and reasonable for transmission services as the basis for its look into these three categories or issues.

I think just as important as what the NOPR does address is what it doesn't address. And there's a lot of discussion leading up to this NOPR I think in PJM, which started these debates on who should pay for transmission. I want to say it was like 2005 when it started to get quite controversial, and they're almost at the end of the road on the cost allocation in PJM. Maybe not. They're on remand from the 7th Circuit and they'll see what FERC does next in response to that, and probably end up back in the seventh circuit, I suspect. Maybe they'll settle. Maybe they'll be able to resolve all these issues.

But many of the issues that been debated on cost allocation are just not addressed in the NOPR, and I think that's a very positive sign:

--Interconnection-wide planning. You don't see that in the NOPR. It's not required. It's not suggested. And I think they do reference the EIPC [Eastern Interconnection Planning Collaborative] and another of these interconnection wide efforts as being something that's going on separate and apart.

--Top-down transmission planning. We heard a lot about top down transmission planning, and the need for the federal government to step in and address that. We don't see that in the NOPR.

--Rules for generator interconnections. Now, they don't specifically address generator interconnections, but I'll talk about it a little bit later that there are implications for generator interconnections in these rules.

And I won't list the rest of them, but some key things that are just not covered, which is important and good news.

So let me turn to the category of transmission planning, keeping it at its highest level. FERC really proposes some very simple changes. They do require and they create a new category for transmission that's driven by public policy requirements. I think it's fair to say that most, if not all, of the transmission entities and regions right now *do* incorporate public policy requirements because as they get implemented, that necessarily gets incorporated into the transmission plans, which at least in PJM are updated at least once a year. So every time the state of New Jersey, their public policy for solar generation gets implemented, that gets put into the transmission plan, because the generators get into the queue, and that ties back to the plan. But FERC is saying that we need to have a whole new category and start planning transmission for public policy requirements.

As Speaker 1 indicated, they also talked about how the regions plan transmission, and I think that is an area that we haven't done a great job of, at least on the East Coast. We talk about Indian Point retiring. There's something that if Indian Point does retire, we would hope that PJM and New York would have already had a conversation in advance to say, what can we do jointly, rather than just fixing that problem within New York.

They are building new nuclear in PJM, and having a process in place where the regions can have those conversations and come to the efficient results, rather than just looking within the boundaries of their RTO just makes common sense, and we don't have that process, at least a robust process in place now.

And then the right of first refusal, which is another significant area in the transmission planning that might change.

As far as key themes, one very important theme that we see throughout the NOPR is this intent to tie cost allocation to transmission planning, and that's very important. That's really been absent in cost allocation debates and the future. And cost allocation needs to be tied to transmission planning. And that relationship is fully recognized by the FERC.

There's also a recognition about voluntary arrangements. There's no effort to eliminate voluntary arrangements, whether it's a merchant transmission entity deciding to make a deal with a particular load or utility to deliver, those relationship and opportunities are respected in this NOPR.

Interestingly, FERC states several times in their NOPR that they've always followed the principle of beneficiary pays and attempted to have a relationship between cost allocation and planning. But they say that things have changed, and that the current cost allocation mechanisms that are in place may no longer be just and reasonable. And that they may need to change those allocation methodologies in order to make sure that they *are* just and reasonable.

But the idea that so much has changed I think is really an open question. Yes, there have been changes in the industry over some time span, depending how far you look back, and there will continue to be changes. Regions are getting larger. People are leaving MISO (Midwest ISO) and joining PJM. Pretty soon PJM will be a very, very large area on the East. They have mandatory reliability standards which must be complied with in the planning process. More and more states are adopting renewable portfolio standards, and PJM is building a lot of transmission that's changing the dynamics. So yes, those things are changing, and they will continue to evolve.

But a lot of important factors that drive transmission planning have not changed. We don't have any direction from Congress on environmental policies. They've talked about this. They're debating it. But we don't have a national RPS [renewable portfolio standard]. We don't have a cap and trade program. We don't have any of those mechanisms that would say, OK, now this is the game changer.

Things need to dramatically be looked at differently in the planning process. As Speaker 1 was saying, we have things that might change, and we have ideas and concepts. But that's not something that makes the cost allocation regime no longer just and reasonable. People are still making resource decisions, where to buy their power, what generation to site base mostly on local considerations, state requirements. Of course, people are taking into consideration what might happen in their future and either taking risks or being conservative in their planning. But most of these decisions are still being made locally. And in many regions, I believe within New York, within PJM, the cost allocation mechanisms already do take into consideration beneficiary pays, at least for some categories of transmission.

So what does FERC say that needs to be changed in order to better align this new paradigm of planning with cost allocation? Well, a couple things make sense, and are needed improvements perhaps, or improvements that can always be made.

They say that cost allocation should be addressed right up front. Well, that makes perfect sense. The idea that you're going to plan transmission and then figure out afterwards, after you decided that it's needed, who's going to pay for it--it doesn't really make a lot of sense, and makes the siting more complicated. It makes the planning process more complicated. It makes sense to have that decision and that process established in advance.

Having transparency in the planning process, so those people who will be forced to pay have some say in the planning process, whether it's through a voting mechanism in New York, which is an excellent model, or whether it's just the ability to advocate in the planning process that "This project doesn't make sense. I don't want to pay for it," and put pressure on the planning process. That is important. And we should have improved tariff requirements on that.

They also say that, as Speaker 1 was indicating, "We're going to let the regions have the ability to have different rules for cost allocation depending on the type of transmission planning, and if there is an identification of beneficiaries in the planning process, that there should be a line there."

And let's take the three categories. Reliability. In the process--you either are planning for regional reliability or subregional or local. But clearly you know in advance which region, what area you're trying to solve those problems for. If you're planning regionally, you should allocate regionally, because everyone in the region's benefiting. But if you're planning to solve local problems, and they're local criteria, the local customer should pay for that.

On the economic side, this is one major flaw right now in the PJM cost allocation. They treat economic cost allocation for the high voltage just like they treat reliability. Yet in the planning process, they identify and have a split between production cost savings and net benefit to load, so they're specifically identifying who is benefiting from this project and who is not benefiting. And they need to, according to the NOPR, take that into consideration in the cost allocation.

And FERC talks in terms of ex-ante transmission cost allocation as being needed for certainty, and some people say that transmission companies shouldn't worry about that, because they know they are going to get paid at the end of the day when they build transmission. But it does make a big difference, as Speaker 1 pointed out, in the siting process. Take as an example the recent siting process for the Susquehanna Roseland Mine, a 500 KV project in New Jersey. One of the key issues was, who's going to pay for this, and how much are they going to pay? And that is inevitable. I mean, people want to know, "Is it going through my backyard, and how much do I have to pay for it?" And those will always affect people's views of whether it should be built or not.

And LSEs [load serving entities] who are entering into contracts and load, whether they're municipals or someone else entering into long term contracts, need to have some certainty as to what their costs are going to be.

I already touched on this one, on different allocations for different types of projects. So I'm going to skip over to my next slide.

Generator interconnections. I think this is the easiest challenge, although it continues to be debated in some regions. But unless you're in Texas, and Texas is different, I understand that, or unless we have federal IRP [integrated resource plan], we need to allow generators to understand the cost impact of their siting decisions. We can't hide that in a load payment. If you're in a region where there's no doubt that the generation that's going to be built is going to be paid by that group of load, that's one thing, and some areas have that ability.

But when you're in a region like PJM, and you have 14 distinct jurisdictions, and you have exports and imports and multiple levels of transactions, you cannot tell me that a generation facility built in New Jersey is going to necessarily benefit customers in Illinois, or vice versa, or in Duke's service territory going to help people in another part of PJM. So having generators responsible for the "but for" costs of their siting decisions is logical, and it works with these multi-jurisdictional areas.

Cost causation principles dictate that they really need to be identified in advance, and then the generator, whether it's a regulated generator or a merchant generator, needs to incorporate that into its siting decision.

There is a clear trend towards deferring to consensus and voluntary assumption of cost responsibility in the NOPR. And that makes sense; however, there are a lot of unanswered questions in this area.

One of the issues that we've been thinking about and debating is, if you have a region that has a stakeholder process and that agrees to a cost allocation mechanism, and then there are a few customers or sectors that don't agree to it, but the minority, and that's presented to FERC as a consensus, is that enough to ignore whether this cost allocation mechanism is really just and reasonable? I don't think any of us know where the answer to that question is going to be addressed, whether it's going to be addressed by the courts or by FERC, and how it's going to be addressed, but it's something that I think FERC has to think about in this NOPR. Are they looking completely to defer to majority stakeholder processes? Or are they really going to insist that cost allocation mechanisms be just and reasonable and that the beneficiaries, whether they are beneficiaries today, or they're new entrants into the RTO, whether they really have agreed to it. And I think that's an unanswered question.

Voting processes, that is one way to address this problem--to have, for those projects that are not absolutely needed, to have a mechanism where those who will be asked to pay for the project are asked, "Do they think this project is needed?" And if enough of them (and you can't just leave it to one customer) but if enough of them believe that it is, then all of those beneficiaries should pay, as they do in New York.

The FERC has tried to establish principles, rather than just leaving this completely to stakeholder processes and consensus. They've said, "Well, let's try to establish some principles." And I think these principles should help guide the process. And they are properly focused on a beneficiary pays mechanism. However, they leave a lot of uncertainty for this rule making process to be evaluated.

I'm not going to read through any of these, but these principles are high level, and there are many unanswered questions. One of those is, how do we measure benefits? We can all agree that beneficiaries should pay, but what are the benefits? Are we going to look just at renewable portfolio standards as a policy driver? Are we going to look at other policy goals in a state, whether it's job creation or mining of coal, if you have a state that wants to develop coal, because it's a natural resource. Is that the type of policy that should be considered in the benefit analysis?

FERC just focuses on one type of policy, renewables, and potentially that's discriminatory practice that FERC is proposing. When there are conflicting goals, when you have one state that has a goal, and another state that has a very different goal, but a transmission line potentially satisfies both of them, FERC will have to determine, well, how do you prioritize those? How do you quantify the benefits associated with helping a state achieve a policy goal?

And then perhaps even a more fundamental question--should the RTO or the federal government be dictating how a state satisfies its public policy goals? Shouldn't New Jersey have the ability to say, "Yes, we want X percentage of renewables, but we'll decide how to satisfy that. We don't need PJM to tell us. And we certainly don't need PJM to tell us that we're better off having our renewable goals satisfied from wind in the middle of the country."

But those are the types of issues that will be raised by this benefits analysis, and there's no easy answer to how FERC will deal with that type of granularity.

So will the NOPR result in taking away authority from the states? I think there's a very good chance that it will. That's just my personal opinion. I think this is a very aggressive step by FERC to try to get out ahead of Congress, and unless we see change in this process that results in a final rule that ensures that the states will make those decisions on how to satisfy their goals, and it's only when the state decides that they want to rely upon a region outside that the planning process steps in to facilitate that--I think unless we see that type of significant change, we will see the planning process making decisions on public policy for the states. We may see more speculative transmission projects. I think it will be very difficult to get them sited, but we'll certainly be spending a lot of time trying to get them sited and fighting over who should pay for them.

So in the end, I think we need to have a rational transmission planning process, plus the beneficiary pays analysis that goes with that. Transmission is not the solution to everything. It seems like right now we think transmission is the solution to everything. We need transmission. When you actually go to build it, nobody wants transmission. At least in New Jersey, nobody actually wants you to build transmission, but we will need some amount of it. We need to make sure the rules are established in a way that they right people are paying for the transmission that we need, and that we're not over relying upon transmission for our policy goals in the future. Thank you.

Speaker 3:

I'm going to just try to give you a little bit of background on how these issues are playing out--issues which are very difficult for anybody to deal with, but particularly for members of Congress to deal with, although they're knee deep in all these issues for two reasons.

One, the effort to try to come up with some sort of a rational response to the need to understand what to do about greenhouse gas emissions. People in the real world have an awful hard time, I think, trying to figure out how the play for their future and generation, transmission, everything, how to integrate state renewable portfolios standards into a long term plan when you don't know what Congress is going to do about carbon. And that's not the topic of today's discussion, but I think that the failure of Congress after a very big brouhaha over the issue of climate change and a big comprehensive energy bill sort of is going out with a whimper I think.

As you may know, the House pushed through a big climate change cap and trade bill in June or July of 2009. That was part of the effort to lead up to international negotiations in Copenhagen, and it feels, for better or worse, that that is all somewhat at a fizzle right now. There's still some residual action in the Senate, which did not get beyond the committee stage in reporting legislation on climate and other energy, including transmission issues. But it proved too hot to handle in the final days before the election, and those final days started about last January. But it's amazing to me, and this is the last thing I'll say on climate directly, how quickly an issue can come to the fore, be developed. Something could be put together, get voted through, feel like it was coming, and then sort of fall off the cliff. Leaving these other energy issues for us to deal with.

As I said, setting aside climate change, Congress is sort of trying to grapple with a cluster of transmission issues in the energy part of the bill that came out of the House last summer and came out of the Senate Committee on Energy and Natural Resources last summer. Transmission issues can be treated independently. You can look at just siting issues. You can look at just incentive rates, encouraging FERC to grant incentive rates for building new transmission. But I think they are likely to become enmeshed in the future.

We have three branches of government. Sometimes I think of this as sort of trying to play on three tennis courts. You never know, if you're a public policymaker whether you're going to be in the courts, I mean, judicial courts, whether you're going to be before Congress or your state legislatures, or whether you're going to be before regulatory entities. And of course, people forum shop on purpose, and also things happen accidentally. You get decisions in court that totally upend considerations at FERC, or cause FERC to have to go back to the drawing board.

Congress doesn't amend the Federal Power Act very frequently. It was adopted in the 1930s, except for a few things that recognized the state of Texas as the independent entity that it is for certain purposes. Under the Power Act, it wasn't really treated in a holistic way until 1992, when Congress authorized FERC to order transmission to prevent discrimination in use of transmission lines, and also made possible by amending PUCA [the Public Utilities Commission Act] on merchant generation to flourish.

There wasn't a lot of congressional action, again, just to finish setting the stage, until the 2005 Energy Policy Act, which gave FERC siting authority. It was called back stop siting authority, I love that in a federal system where we know we have the federal government, and we have state governments. We now have a category called "back stop siting authority." The real question is, who's to have the final say? And the real question in that area is, whether the feds can pre-empt state decisions.

The second thing that happened under the 2005 Energy Policy Act that was significant, I think, for our discussion today, is that the Act directed FERC to encourage transmission to solve and address a lot of issues, like congestion and various public policy issues, by granting incentive rates. And FERC, of course, embodied that in a 2006 rule making.

In between congressional enactments, the FERC implements what Congress has wrought, which is sometimes completely unintelligible. I think of the native load paragraph, for people who suffered through that. I didn't know what it meant when it was written. I still don't know what it means. But FERC continues under its broad authority to implement and to cope with change, and to deal with court decisions.

So with that background, very quickly, last summer in the Senate bill that was reported in July of 2009, Senator Bingaman and Majority Leader Reid are very interested in renewable energy sources and in making sure that the transmission system operates as a seamless national grid that could get particularly renewable resources from the point of generation to the point of use. And there were provisions in that bill that were somewhat difficult to understand. I think a lot of them carry over into the NOPR, and Speaker 2 did a good job at explaining how they did, but the idea, the purpose was that FERC would establish national grid planning principles, coordinate regional plans to insure that they're integrated into a single inter-connection wide plan, and authorize the FERC to reconcile inconsistencies, which brings up the question of who decides, whether it's FERC or regions or states.

On transmission siting, this is one of these cases, by the time both the House and Senate were considering legislation last year, there'd been a big decision on this 2005 Act, back stop siting authority, which would enable FERC in certain situations where a state failed to approve a transmission line that had been proposed to overrule the state decision.

The Fourth Circuit Court of Appeals looked at the statutory language and decided that it was too mushy to support FERC's assertion of…to pre-empt a state decision in Virginia not to site a line. And so that has, I think, effectively neutered the statutory language adopted by Congress in 2005.

And so what you saw in the Senate particularly was an effort to clarify FERC's authority to make it crystal clear that FERC could come and OK and approve a line, even in a situation where a state not only had failed to act within the year deadline that had been required by the statute, or withheld a decision, but also where a state had denied a line entirely, or placed conditions that were inconsistent with some national goals set out in the statute.

That's a very, very controversial bit of legislation. I think we haven't seen the end of it. It's very difficult to deal with. As some of you know, it involves the Department of Energy identifying national interest transmission corridors, which in fact don't look much like corridors. They look like blobs from, all of California, or everything from Maine to Georgia. They tend to be sort of like orbits of planets more than lines. And the gentleman who tried to do that work for the Department of Energy, really tried to do a very careful job, Kevin Kolivar, and got absolutely no thanks for his hard job.

So we got a messy statute on siting. Again, back to the Senate bill, just to finish up, the language that came up through the Senate committee, grappled with language on cost allocation, and it was much more, and this would be amending the Federal Power Act to either give new authority to FERC or curb it, or my favorite word whenever we're talking about Congress, "clarify" FERC's authority.

We saw Chairman Wellinghoff, who has very strong feelings about making sure renewable energy can get from where it is it generated to the markets where it may be needed, and again, speaking as an individual, just an observer, what struck me was that, oh, a year or so again, Chairman Wellinghoff took a very aggressive stance when he was testifying before Congress saying, "We need Congress to give us authority so that litigators and other difficult people don't keep us from siting transmission lines or allocating costs in a way that would help us get them built." Over time his comments softened a bit, and ended up being more along the lines of, "Well, of course FERC has the authority under the Federal Power Act's just and reasonable standard to do everything we'd like to, but it would be nice to have that authority clarified."

That's what you hear, and I remember this working as an agency lawyer at the Department of Energy on regulations, that's what you say when you hope you have the authority, you have some goals you'd like to achieve, but you don't want to get hung up in court, or you're really not quite sure that you're going to be able to carry it off.

So the original underlying language that was in the Senate energy bill said, "Costs shall not be allocated to a region that are disproportionate to reasonably anticipated benefits." That's pretty empowering language. That would have given FERC some comfort that it could do the sorts of things it would like to [in order] to get lines built and to allocate costs as broadly as is necessary to get the job done.

There was a surprise amendment--I say surprise only in that it carried--by Senator Corker from Tennessee, that flipped this presumption--and this is so much legal beagle language, but for what it's worth, it said "Cost can only be allocated to a region if they are reasonably proportionate to measureable economic and reliability benefits." I'm not sure I know what measureable means. I was pretty sure I didn't know how to spell it for a while, but boy, that word provoked an awful lot of concern.

The bottom line is, all of this effort to clarify transmission as well as any other kind of energy policy is gridlocked pretty much in Congress. These are pretty difficult issues for senators to manage. I've been in meetings with senators on issues and bring up things that are sort of fundamental questions like, well, have you thought about the fact that there's a lot of wind in the Dakotas? It may be the cheapest wind to generate. But by the time you transmit it and pay for the cost to transmit it to the East Coast, it might not be as competitive as locally produced renewable resources.

Everybody's for a renewable resource, and in some states it's mandated. For all the reasons Speaker 2 explained, and of course, it's a good way to go if you're thinking that there will be some sort of a greenhouse gas emission control regime at some point, good to get ahead of the curve. It can be good for jobs. I think it can be so good for jobs, it can be unconstitutional if you favor local development too much.

But there are a lot of reasons to be looking forward. But I think that one of the concerns (and you see this a little bit in the Seventh Circuit Court of Appeals case, Illinois Commerce Commission v. FERC, which came down in 2009) are it's awfully hard to figure out how to get from just and reasonable the basic statutory standard under the Power Act, without the kind of clarification that the amendatory language I just mentioned would give FERC, something more updated or specific with respect to where FERC should go in the current era. It's very difficult to sort of slosh around this statute and figure out what to do.

I'm aware that we have commissioners in the room who are much more expert on the Seventh Circuit decision probably than I, but basically it was a procedural decision that said that FERC didn't provide a sufficient rationale for its decision, so the case is back for reconsideration at FERC and eventually will probably end up on the Seventh Circuit again.

It was one of the snarkiest judicial decisions I've ever seen. Judge Posner had a fun time writing. That's a term of art, snarky, but I would not have wanted to be the FERC counsel who had to stand up and take those questions. There was also a sort of dynamite dissent by Judge Cudahy in that decision, so it was a three judge panel, and who knows which way it will go when they get out of the procedural phase, and FERC comes back, while FERC is juggling the NOPR MISO filings and this case on remand. One looks for tea leaves to try to see where this court might go in the future. A couple of tea leaves.

One, the majority of the Court said, "FERC is not authorized to approve a pricing scheme that requires a group of utilities to pay for facilities from which its members derive no benefits, or benefits that are trivial in relation to the costs sought to be shifted." Sounds reasonable. But when you get down to dollars and cents, it will be the usual difficult litigation case.

The Court also said, "No doubt there will be some benefit to Midwestern utilities just because the network is the network, and there have been outages in the Midwest."

One of the things I thought was most interesting about this court decision was, a lot of reference in the majority and minority opinions alike, sort of elliptically to the 2003 blackouts that affected eight states, 50 million customers and parts of Ontario. If you look at the US-Canada task force report on the causes of the blackout, there was no emphasis, as I recall, on transmission congestion, or on the need for more capacity and transmission. There was a lot of emphasis on the fact that at the time, NERC didn't have mandatory and enforceable authority to make its voluntary rules and best practices guidelines have legal effect, which was something else that then Congress in turn gave FERC authority to back NERC up and oversee it in the 2005 Energy Act.

But I think it's very interesting that in this decision, there's a sort of assumption floating around in the judges' minds apparently that more transmission may be needed just on its own merits to prevent blackouts.

Finally, the Court said, "We do not suggest that the commission has to calculate benefits to the last penny, but it must state an articulable and plausible reason that the benefits are at least roughly commensurate to costs." Roughly commensurate to costs. I'm going to skip over much of what I would have said, because Speaker 2 did such a good job covering the Notice of Proposed Rulemaking, but I do want to point out that on my third point here, the NOPR said that it would establish principles for allocating the cost of new transmission facilities in a manner that is at least roughly commensurate with the distribution of benefits, which echoed the Seventh Circuit decision language.

So we have a sort of back and forth between the judiciary and FERC on, I know, "roughly commensurate". I can do roughly commensurate. I'm FERC. I will be deferred to by you in the future, because if I give a very good reason and articulate why the NOPR final version comes out the way it does and applying it then case by case, if FERC does a very good job, of course, courts are obliged to defer to substantial evidence on a well reasoned record.

Let me give you just a couple of other quick observations about these excerpts from some of the commissioners' comments when the Notice of Proposed Rulemaking went out on June 17 earlier this summer, which I thought were fascinating.

Commissioner Norris seems particularly, in his public statements, to have sort of taken very seriously the fact that change is upon the Commission, and the type of questions that are coming before the Commission, particularly with respect to renewable energy and getting it where it needs to go, has really fundamentally challenged FERC in terms of what it should be doing on transmission policy. He says, "…we are asking our present electric transmission grid to do more than it was ever planned or constructed to do…by anyone's measure, the improvement and expansion to date has been inadequate," which is a big conclusion to reach. [He continues] "We are now asking our transmission infrastructure to…facilitate the achievement of public policy goals such as the expanded use of renewable energy and demand side resources… For example, this proposed rule would require that transmission planning processes consider transmission projects intended to help facilitate the achievement of public policy requirements established by state or federal laws or regulations." And then finally, "there are significant uncertainties in national policy that are beyond our control." (That's for sure.) "And that will greatly impact efforts to build the transmission system of the future. Without guidance and decisions from Congress on a national carbon and clean energy policy, it is exceedingly difficult--if not impossible--to know what future scenario the transmission system must be planned to support."

That suggests a sort of circular reasoning where Norris is I think in a very intellectual way kind of clearly fretting about whether or not FERC's transmission policy meets this future, which is coming at us, but kind of ill defined. And because Congress can't define what it's doing on climate change, in particular, or a national renewable portfolio standard, it's hard to know what to do. And I think it's a fair sort of cross section of the challenge that he sees before him.

Let me flip to another sort of opposite set of statements by Commissioner Moeller, who in fairness, I have to say, made these comments when he was pending Senate confirmation, so he may have been feeling kind of reserved at the time. But he also comes from the Northwest, a very different part of the country, and spoke really directly, I thought, to Congress. "…I am not certain that every policy in this proposed rule will ultimately be adopted." I personally thought the proposed rule was written very elegantly. As a lawyer, I thought the section on how you could get from just and reasonable to where FERC wants to go on defining benefits and public policy requirements was pretty elegantly drawn. But it will be very interesting to see, based on the comments that are filed, whether or not that stretch can be made.

Moeller said, "Given that the U.S. Congress is examining cost allocation at this time, our issuance of this proposed rule comes at a potentially sensitive time. While Congress is now considering several measures that deal directly with issues addressed in the proposed rule. I expect that the Commission will defer to the legislative branch as we move forward in our deliberations." (Hard to do when Congress isn't acting.) "This proposed rule and the comments to follow will provide Congress with a framework of the issues that we consider relevant and the opportunity for Congress to provide further guidance to us." (Well, Congress always has an opportunity to provide further guidance.) "Thus our action today is not intended to interfere with that process, but rather to add helpful information and evidence that will be useful in the formation of federal legislation."

So again, we have sort of a circular situation. We have a new commissioner, LaFleur, who is just getting into the thick of this, who I don't believe has said too much definitive yet on the topic of the NOPR, but could be, coming from the New England area, a real swing vote, or a new element.

Let me finish up really quickly. Some policy issues in the congressional debate and the FERC NOPR--the overarching question for today's topic: how should the cost of new transmission capacity be allocated by FERC? What does the Federal Power Act's historic "just and reasonable" standard mean in a world where states adopt varying policies, which may or may not be compatible, even within a region (like renewable portfolio standards) with differing strategies, some of which may necessitate new transmission, some of which will not? Who decides? Who reconciles conflicts that can't be resolved by regions? How specific a burden of proof should be required of FERC in determining who benefits from new transmission? (A difficult thing.) What benefits should FERC recognize when it allocates costs for transmission reliability? (Not many people argue about reliability, economic benefits, environmental benefits.) What public policy requirements emanating from the states is FERC authorized by statute to recognize? At what point might FERC deference to state public policy requirements amount to handing over the federal pen on interstate electricity service to the states?

There are times when there isn't a perfect filler for a gap between federal and state policy. At those times, and we've had them way back at the Attleboro case a long time ago in New England, and the Court came down at that point (a US Supreme Court case) and said, "Look, Congress can act. Congress hasn't acted. There's a gap. There's a public policy problem. Congress can act when it feels like it." My point being that there's a point past which I think that FERC can't just stretch the just and reasonable standard to fill gaps in the problems that Commissioner Norris and others see arising from the states.

So do these questions take the Commission beyond its traditional authority?

There are lots of instances where Congress has passed statutes like the Clean Air Act PURPA, the Fuel Use Act, PUCA, each of which arose under a statute other than the Power Act. They all affected the way FERC did its job, but they didn't mean that FERC implemented those statutes. So in the absence of a federal renewable portfolio standard, it's not clear to me where the division is between FERC giving pragmatic help to trying to solve problems in the transmission system and where it's starting to make policy.

On the other hand, will state regulators object to a new FERC allocation policy that could tend to be an objectionable "top-down methodology…that could result in construction of unneeded lines, and not necessarily reduce carbon emission?" New lines don't know what type of electrons are coming across them, of course, whether they're green, whether they're nuclear, whether they're coal. And I'm quoting there from NARUC [National Association of Regulatory Utility Commissioners] March 16th letter to the Senate leadership. State consumer advocates have argued that, "any allocation of cost by FERC must reflect the distribution of costs and benefits associated with particular projects, including benefits to resource developers. It must be supported by strong evidence of commensurate benefits to the parties receiving the allocations…" It's a NASUCA resolution that came out, National Association of State Utility Consumer Advocates in June. That's clearly speaking to the issues in the Seventh Circuit case.

So I'll finish with just a couple of questions. Is new Congressional authority required to deal with any "gap" in FERC's authority under the Federal Power Act? And second, depending on what FERC comes out with in January or February, whenever the final rule comes out, is there a possibility of congressional backlash to FERC's final rule?

Most bills die. I'm not suggesting something necessarily as exciting as Congress trying to react directly to a FERC rule, with statutory language that would undo it--but we have seen in the case of standard market design, some of you will remember some awfully threatening language coming out of the appropriators and the Chairman, and there are ways to have a dialogue between the legislative branch and the executive branch in the form of an independent commission that falls short of passing legislation.

And we don't know who will be in charge of that House or Senate. I think that particularly if Republicans take back the House, which is certainly a possibility, that the siting issues will be revisited again, and I don't see how you take up one of these issues—siting--without also looking at allocation policy and planning authority. Thank you.

Speaker 4:

I asked the Chair if I could go last after I had a chance to look through the other presentations, which actually covered a lot of material which I didn't cover, but I want to build on.

The interest here, just in context, is about the new conventional wisdom, putting a price on carbon, promoting efficiency and all the other things. I don't want us to forget about the old controversial wisdom, which is the debate that we've been having in this country a long time, particularly the connection to what Speaker 1 was talking about, that these market-based systems, and the general framework of bid-based, security-constrained, economic dispatch and all the things that flow from that, and in particular on development of hybrid transmission expansion and cost allocation.

What I want to do is to talk about a particular subset of the subset of the issues in the NOPR. I'm going to skip over some of these charts very quickly, just to get to it. The general context of what to build, where, who pays and who decides you could read about. We've heard enough here. I've used these slides before, so I don't have to dwell on them, but just to make the point, there's a debate about transmission uncertainty, and I have two poles of the debate here. One pole that says, "Well, we know what to do, and we should just do it," and the other pole which I like to use is the Southern California Edison experience, with the line to Arizona, and where we knew what to do. Well, then we changed our minds. And so there's a lot of uncertainty, I think.

I'm definitely on the side of [the idea that] it's hard to figure out exactly what's a good thing to do. So doing the benefits calculation and trying to think about that is extremely important. And although it's certainly very hard to do everything, we can do a lot.

This [referring to slides] is a table which I've extracted out of the PJM filings from a while back, just to illustrate where they were looking at a particular line. And if you look at that, if you look at the impacts on different locations in PJM, you'll find out, well, they're really different. And I don't think that's an unusual situation, and it's fundamental to the characteristic of transmission in particular, that if the whole point of transmission is to change the power flows, and so it changes, and it has different effects on different regions, and in some sense, if it doesn't have it, and it doesn't affect anything, then it probably isn't worth the doing.

So I think actually we can make…progress in estimating the benefits and the beneficiaries. And for reasons that I think are critical, that are very closely related to what Speaker 1 said, I think--this is just my connection to the arguments about market based systems and why that's important and why having a design for transmission expansion and cost allocation that's compatible with the rest of the market is important for making it sustainable in the long run.

The bottom quote there ["The proposed cost allocation mechanism is based on a 'beneficiaries pay' approach, consistent with the Commission's longstanding cost causation principles…Beneficiaries will be those entities that economically benefit from the project, and the cost allocation among them will be based upon their relative economic benefit…The proposed cost allocation mechanism will apply only if a super-majority of a project's beneficiaries agree that an economic project should proceed. The super-majority required to proceed equals 80 percent of the weighted vote of the beneficiaries associated with the project that are present at the time of the vote."] just extracts from the tariff in New York, is what the language is and what they actually say there. So that's all old news. It's familiar.

Let me now get to the part that I really wanted to emphasize this morning, and what I'm reading about, this part of the NOPR. And I've been talking about this with a lot of people and thinking about this for a long time. When I first read the NOPR, I just thought it was terrific, and that's partly because what I thought was going on in the context was, there was an agenda to socialize everything everywhere all the time. And that part of that agenda was, "I never saw a transmission line I didn't like." And when you put those two things together, then that creates all kinds of trouble for the rest of the market design and everything else that's going on.

And so the articulation--what I thought was a very strong articulation of the beneficiary pays principle--I thought advanced the ball a great deal. Now, there are a lot of other aspects in the NOPR that people are also concerned about, and I'm happy to talk about those, but I'm not going to talk about them today.

The beneficiary pays. The gold standard, of course, is that the net benefits are greater than the total cost going forward. And [the NOPR's] got some language about thresholds and all that. And cost sharing commensurable with the benefits, finding some way to allocate those costs, and compatible with the larger market design, as I said.

Speaker 2 made the point which I think is correct, that the NOPR takes an ex-ante view of the evaluation of benefits and the allocation of costs, as opposed to "next year we're going to reallocate." And I think that's correct, and I'll talk just a little bit more about that.

I have in mind a framework for how to do the benefits calculation, which at a very high level of abstraction is: the net benefits equal the change in the expected social welfare, defined appropriately, so security constraints are part of that problem, and they become constraints, and then you look at the cheapest way to meet them and so forth. All of those kinds of things.

And how to actually do that and how to implement that is a difficult process. I don't mean to trivialize it, but I'm not going to talk about that now. I think that's actually something that I think we can make a lot of progress in.

What I'm going to make an argument for here is that you don't have to be too precise in that process, and I'll try to explain why I'm going to say that.

There are lots of approximations from that general framework, which the NOPR does talk about, and we can get into if we want to--reliability, economic and policy issues. But I think of those as approximations of an underlying problem which aggregates into this aggregate social welfare story of what we're trying to do to estimate the costs and the benefits.

The beneficiary pays, there's a quote [on slides] from the NOPR. I'll skip it, because everybody's already said it.

There are my own quotes from the NOPR about the ex-ante perspective, which I think is absolutely critical to this. I wish they had said it more explicitly, and it has to do with the fact that it's conceptually possible to implement the maximizing expected social welfare calculation in an ex-ante sense against a counterfactual. I don't know how to do it ex-post. And I think that's a real nightmare if you tried to get into [how to allocate costs] after you built it, and then you build something else, and then you build something else, and now you're trying to do a [retroactive cost allocation]—ugh. I think that's really hard. But I don't think it's in principle that hard to do it ex-ante. I don't think it's easy, but I don't think it's, in principle, that hard.

I want to argue that the implementation, and this is the point I'm really going to try to make here, the implementation challenge that's embedded in this isn't--there are certain features of the problem that make it easier than it appears on first blush, and I'm going to try to weave together some of the arguments that I've seen about this.

Just to set the framework--the first thing is that you have to determine if the benefits exceed the cost. So that's a threshold question. If you say that we're not sure whether the benefits are two times or three times the cost, and there's a lot of uncertainty about that, well, so what? That's a big number. That's plenty. And if it gets down to where it's close to the costs, well, if you don't do it, it doesn't matter, because there's not much difference.

So the cases that are interesting is when the benefits are really a lot larger than the cost, and even if you can't estimate it precisely, you can make the decision that they're a lot larger than the costs. And then the cost allocation problem doesn't require you to estimate the benefits for everybody. It just requires you to estimate the *shares* of the benefits, the proportionality.

That, again, I would argue, is a much simpler problem. It's not trivial, but I think it's a lot simpler problem, and it actually has some features to it which may make this process work better. It would make things like the voting method in New York have a lot of appeal, as I see it. And in order to explain what I mean by this, and to stimulate an argument with people here (remember, this is off the record, and not for attribution--which means that if I say something really stupid, I get to deny it. Right?) So that's what I'm doing now. So I'm throwing this out for your consideration.

I'm going to use a stylized investment case to make this point, because, as I told [some people] earlier that I was thinking about this, and something about it was bothering me, and I finally think I figured out what was bothering me about this. And I'm going to try to explain it.

So let me take a very simple example, which is a [case of] transmission between two regions [refers to a number of slides showing supply/demand diagrams], and one is, for simplicity, the export region, and the other is the import region. And we've got supply and demand in each region. And the intersection-- it's cheaper in the export region and more expensive in the import region.

Then, in order to simplify the problem so you don't get all tangled up, (I mean it will be bad enough, as you'll see), but in order to simplify it, I'm going to reduce the export region to a net export supply curve. So you're subtracting out the local consumption, and then you have stuff that you can export. And I'm going to do the opposite for the import region-- it's a net import demand curve. So that's the picture in the middle.

So you take the two on the side. You subtract one from the other, and then you get this story in between. And what I want to do is take that area in the box and then use that to analyze and to make the point.

This is highly stylized, I agree, but I think it actually might make a point that actually matters in this conversation. So if you take that net exports and imports picture, the supply and demand, and you've got a transmission capacity, which is the vertical dark line in here. (It's colored in my application--one's red and one's black.) [So the transmission capacity is] the black line. That's the base case, and then we're thinking about expanding the transmission. That's the red line that goes across.

Now, if you look at the base case, I've drawn all these little boxes here that are going to be relevant to the conversation. But in the bid-based security-constrained economic dispatch story, before you expand the transmission--all the expected value and all that going forward--the benefits, the net benefits of the whole operation before we've done the expansion, or the areas in the triangle A and the box B and the box C and the box D and the box E, they all sum up, and that gives you the total net benefits of that economic dispatch. And they [areas A-E] are separated here for what's coming next. I didn't call them just one thing. Each one of them is slightly different.

For example, if you look at area C there, well, that's the congestion cost differential, and B plus C plus D is the congestion cost differential before the expansion. That's basically the value of the congestion revenue, right? So the TCCs [transmission congestion contracts], the financial transmission rights between the two locations. That's ex-ante. That's what they're working.

So you have to remember, that's where we started. Now we go to the red line, and we expand the transmission grid, which is going to cost us something. And the benefits from the point of view of the import region are areas A plus B plus F, and that consists of two components. One is, you can import more stuff, and then the prices fell. So you get lower prices, and you import more stuff. You add up the whole thing, and now there's a new set of benefits. And the same is true for the export region. They sell more, but the prices go up in the export region, and so the generators in the export region have some expansion. There's new transmission rights that get created, but the congestion cost goes down, because you're expanded the transmission grid, and the area G is the congestion rents that apply ex-post to the new, the incremental, expansion of the transmission rights. Now, the net benefits in this story are F plus G plus H. So that's that little area to the right there in between the two lines. That's the setup.

So beforehand, you've got all that area between the supply and demand in the usual way, which is what we now do with our economic dispatch story. And afterwards, you get that incremental little parallelogram of F plus G plus A, that's the net increment of the benefits.

So now you go to the next chart, and you say, how do we deal with the expansions of total costs and the benefits?

Well, the first thing is the regulators have to apply the gold standard, as I called it here, which is, well, the net benefits better be greater than the total cost. OK? And we heard that earlier this morning, and that's important. And the reason that's important is because we have the problem here, particularly because of the lumpiness of transmission of what the economists call the business stealing effect.

So if you take the benefits to the export region, and the benefits to the import region, and the benefits to the transmission expansion, which include all these price changes, and you add those up, it's entirely possible that those benefits from their perspective, forgetting about the generators that lost, forgetting about the transmission owners that had their payments reduced, forgetting about the other suppliers and so forth that are losers in this process, the benefits from the perspective of the individuals or regions is B plus F plus G plus D plus H, if you go into the picture. And that could easily be greater than the total cost, which is terrific, OK?

Because they just transfer rents from the generators from other generators, for example, and they capture them for the customers. But that could be, the total cost could be greater than the net benefits for the whole system. So that the whole system is worse off in that situation, but people want to go do it, because they can capture those benefits by the transfers. And that's the business stealing effect is the term of art that's used by economists. And so you can't just let people decide to do this by themselves. You have to have some regulatory process.

Now, if they weren't lumpy, and they didn't have fixed costs of putting it in, and you had continuous, everything was nice, and it could come in small units, then this problem goes away. But it's actually a very real problem in the context of these transmission grids.

Now, if you pass the gold standard, and it's not the business stealing effect, then what you're saying is that the benefits from the point of view of the people who are seeing the expansion and ignoring the losers, so you're ignoring the existing transmission holders. You're ignoring the existing generators in the importing region. You're ignoring the existing loads and the exporting region. Then the benefits for that group is B plus G plus D plus H as before. But it's--by assumption, because it's not violating the gold standard--it's greater than the net benefits, and they're greater than the total costs. So in that situation, it would be a good thing to go ahead, but you might need some regulatory mechanism in order to do that.

There is a special case that I particularly like, obviously, which I called here the strict merchant case, which is when G is greater than T plus C. In other words, the ex-post transmission rents are great enough to justify the cost of the transmission line, in which case it can just be a merchant line. And they can go do it themselves, and you don't need this kind of regulatory process.

What I want to do is to focus on those two cases, this core coalition case, and this strict merchant case, to get to the point that I want to get to. So in the next graph where I broke it out, I still have the gold standard, which we have to make sure that we're in the case of where the net benefits are greater than the total cost. That's the first thing. The second is the business stealing. If that's the situation, then you shouldn't expand. So the regulators should say, "No. We're not going to allow this to go forward, because it's reducing the capacity, the value of the grid compared to the cost, and so on. It isn't a good idea." But here's the point that I think is not always emphasized. If you go to the strict merchant case, it's easy. So if there's enough benefits, and the transmission rights, and the merchants can capture it, you just say, "Go ahead and do it." And you let them do it, and they take the risk, and everything is fine.

And then everybody beats me up. And they say, "Wait a minute. What's going to happen is, we're going to end up with so much transmission expansion that the congestion cost differential is going to be real small," and the amount that's going to be (this is not drawn to scale, this picture), so the amount in G will be real small, even though the benefits are large. And so we have these really terrific transmission investments, but you can't get them done through the merchant process. And my response has always been, "Well, that's true." It could be. That's not impossible. It's entirely possible that that's exactly what happens. That doesn't mean we want to rule out the merchant opportunity there, but it might happen.

The point here is that if that's the situation you're in, where there's lots of benefits, but there's not very much benefits for G, then it must be true that the areas B plus F and D plus H are really big, because it must be, if you've eliminated all the congestion, in effect, it must be the price differentials are really large. Those benefits I think you can make, in many, many cases here, because they apply to the total load, not just the increment that's coming across the transmission line--those benefits should be huge, even though they're hard to capture in the marketplace.

But the allocation problem, the problem of finding the proportion of the benefits that you're allocating and the allocation of the total cost of the system should mean that from the perspective of the parties, the percentage allocation of the total cost to them in that situation should be really a small part of the total benefits that they're capturing, because from their perspective, the total benefits include all these transfer payments. It includes area B and area D. Area B and area D is not an increase in net welfare for society. It's just a transfer for generator and transmission owners to customers or to other generators.

I think the scale of the numbers will turn out to be…If it is true that it's hard to have this go forward as a merchant project, because G is small, and these other benefits are large, then it must therefore also be true that those benefits are really large relative to the net benefits of the system and relative to the total cost of the system. So if we should be going forward, it should be that we will get into a situation where the benefit to the parties is actually going to be quite large, and therefore it makes it very attractive to think of voting, in that kind of a system, like we have in New York, because obviously everybody would rather that somebody else pays for it.

But if they're presented with a situation which is-- we've now done this percentage allocation as best that we can do, and we allocate them to you If it really is a situation of the type that requires this process, they should vote in favor. And if they vote against it, you should be really suspicious about whether or not the benefits are really there, because the benefits that we should be focused on are F, G and H, not these big transfer benefits that are going back and forth, but the benefits the voters will focus on will include the transfer of payments that will go back and forth, and therefore they should be quite willing to go along.

So something which is actually perverse from the point of view of making the decision about whether or not to go forward, which is the business stealing problem, actually reinforces these large transfer payments, make it easier for people to decide to vote in favor of something that the regulator is actually going to approve, because it meets the gold standard.

That's the big point that I wanted to make here, is that there actually is something about these cost allocations--so that for small expansions which don't have much effect on the price, then it should be that you can do this as a strict merchant, and then it should be easy, because the ex-post transmission rents are enough to justify the cost of the transmission line. And if it's a large expansion where they have a big impact on the price, then you do the shares, which I think you could estimate more easily than the total benefits, and estimating the shares of benefits and allocating to people [costs based on that estimate] should leave a lot of room for error, because the benefits must inherently be rather large for these people, if that's the situation, because we've moved the prices a lot compared to what they would have been otherwise.

So I think that the argument I'm trying to make here reinforces that even if it's a little difficult to estimate the net benefits exactly, that's not actually the challenge. The challenge is only to make sure that the net benefits are larger by a significant amount than the total cost. And even though it might be hard to allocate the benefits, you don't have to do it exactly, because they're huge by comparison to [costs], in the situations where that's a critical part of the story, and it should be that something like the New York system voting mechanism would be an appropriate method. And if people approve it, if it really is as good as you say it is, then they should be eager to approve it. And if they don't approve it, then you should be questioning very seriously whether or not it's as good as you say it is, because they have very strong incentives to approve it if it's as good as you say it is, and it has the kind of impacts that the major transmission expansion we're talking about…

Now, I went through that stylized example. I put it back in the box here. I could then unpack that, and I could go into generators and the exporting region, and load and the importing region, and generators and the importing area load, and then you can go to the--all that does is reinforce everything I just said. It doesn't make the point go away. It's even more true when you start looking at the real system, not just the simple example that I talked about.

The problem is, when you start unpacking, you run out of letters for all the little boxes about who's expecting things like that, and it's too confusing. But I think the basic point is that what's important here is that the net benefits, which is the gains minus the losses, and the in the export region the generator gains and the load has losses, and in the importing region, the generator has losses and the load gains, you want the gains minus the losses to be equal to the net benefits and greater than the total cost.

But the cost allocation mechanism is based on the gains, not the losses. And the gains are actually going to be a lot bigger than the net benefits. And therefore, the cost allocation should be less contentious than it would be otherwise, if you had to do it in terms of just what we often talk about in terms of the net benefits. It won't be easy to do any of these things, but I think it's actually, there's hope that implementing this would be easier than it might appear on the surface for this reason, or at least it's something that's been bothering me for a long time.

So the challenge is to determine if the benefits exceed the cost. Precision is not required, because you just have to decide whether you're going to go ahead or not. Are the net benefits greater than the total cost by a significant margin? I haven't talked about how to use standard methods to provide a good approximation, but I'm happy to get into that. Regulators are going to have to apply the gold standard, because you've got to be careful about people trying to expand transmission in a way that's good for them and bad for the market and the economy as a whole. And then the estimates of the shares of benefits for cost allocation, that's done ex-ante. And I would argue that the shares of benefits are easier to estimate than the exact benefits. Thank you.

Moderator: In the allocation, in the process of allocation, would these demand curves shift, and therefore close the gap? For example, the export region?

Speaker 4: I've got to think about it some more, but I think the answer is no in the stylized example. So they're just there. Now, it will affect the amount that's actually exported or imported. And that's that vertical line that you can't go all the way, because you don't have enough transmission capacity. But inside the region, we're just moving up and down the demand curve, or the supply curve. So the amount demanded will be different, because prices will change, and the amount supplied will be different.

Moderator: Because nothing's going to shift back to that.

Speaker 4: No. At least that's, I mean, that's the theory of the case.

General Discussion

Question: Are you talking about any type of benefit? Or are you just talking about "economic and reliable?" What are you talking about here? What benefit? Define benefit.

Speaker 4: That's another presentation, but that would take me 30 minutes in addition. [LAUGHTER] But let me give you the shorthand. The shorthand answer would be, for reliability, I would say, OK, we have a reliability constraint, and we impose that constraint, and then we find the least cost way to meet that, the way they're already doing. That folds into the same story. If you have a carbon--let's take the simple case where you have cap and trade, and we have a price on carbon, well, that just rolls into the standard production cost allocation reduction cost analysis that we do already. It will just make coal more expensive. And so in that process, it will get picked up naturally.

Question: But until ten or 20 years from now, when we finally get to something kind of carbon--I mean, there still are benefits to society for reduction of carbon, even if we don't have a cap and trade or some other carbon tax system.

Speaker 4: Right, that's another question, and I think that's actually a harder issue. Several of the previous speakers have addressed this. Is it the responsibility of the federal energy regulatory commission to make policy to reduce carbon and capture the benefits, even though we don't have a legal requirement that we go do that? And that will be contested in the courts, and then there will be an answer, and then whichever the answer is, now we know what to do.

Question: But it is state public policy. New Jersey has a greenhouse gas reduction which is law. A couple of other states do, too.

Speaker 4: Right. So, assuming that's enforceable and it passes with all these things, then the question is, how do you model it in these quantifications? That's hard, but it's not--the cost of carbon is more than \$5.00 a ton, and it's less than \$200 a ton. We can go through that and so forth, and then we end up with it, and then we'll find out that, well, it might be that this is twice as good, or three times as good as we thought before, and so forth.

I mean, I think, actually, the least interesting cases here are the cases where it's a close call, and you have to keep scrounging around for benefits until you get them above the total cost, because by definition, those things are, if that's the case, well, if we don't build it, it's not a big deal.

The things that I worry about are the public policies where it's really a good idea, but because we can't get over this cost allocation, we can't get all these other kinds of things sorted out, we can't get it done. And that says that it's worth two times or three--we heard about the net benefit calculation for Maryland with the smart meters. The benefit was 3.2. Maybe it was 2.5. Or maybe it was four. For this problem, it doesn't matter. Right?

And now you have to estimate the percentages for each region that you're going to allocate to them. And the costs are much less. They're like 1/3 of the benefit, because it was three times as much. So I don't think it's a trivial issue, but I don't think it's an insurmountable issue. But you get a pretty good approximation of what that distribution looks like much more easily than you can precisely pin down the absolute amount. But if the absolute amount is large enough, it doesn't matter. That's the point.

Moderator: If I could just piggy back really briefly, the question that was just raised is "benefit to whom?" Benefit to whom? If there's a state policy, like you describe in your state, and then how broadly to allocate it. And most importantly, who decides?

Question: I have a comment, then a question, and both are for Speaker 4. The comment I have is, you shouldn't be surprised that people are voting no against certain transmission upgrades, because the companies that own generation and transmission... So even though there might be benefits and reduction load, when they do the math, the math is very clear that the generation side sort of loses a lot more money than load benefits. So just a comment that if you're surprised why people are voting certain ways, they're voting their pocketbook. But that's just a comment.

The question I have is, you're basically stating that the benefit to cost ratio, as long as it's two times or three times or four times, then we should go ahead with the transmission expansion. But I'm assuming then that you would disagree with the FERC ratio, because in the NOPR FERC seems to imply that the benefit to cost ratio should be closer to like 1.25.

Speaker 4: Well, I'm happy to talk about that, and I wasn't really trying to make a precise estimate of that number. The point I was trying to make is that whatever the threshold is, the task in front of us is to decide whether or not we're over the threshold. And that's a quite different problem than getting a precise estimate of how much we're over the threshold.

And a lot of the critiques that I see about all of the difficulty of estimating it, I think the critiques are legitimate of estimating the benefits, but I don't think that they necessarily mean that it's hard to estimate lots and lots of cases where it's over the threshold. And whether the threshold is one or 1.25 or two is another conversation that I'm not taking a position on at the moment--we would have to talk about several other things here.

But I think that finding out whether or not you're over the threshold, estimating the total benefits, is not the same thing as deciding that the benefits are over the threshold, and that question is easier to answer. And then, second, allocating the cost doesn't require a precise estimate of the benefits. It requires a good estimate of the proportion of the benefits, and that's also easier to estimate than the precise estimate of the benefits.

And it turns out that the percentages for the calculation of the allocation of the cost are based on a completely different definition of benefits, because it includes all these transfer payments that are in there, and they're much bigger and so should make it easier to do what we're talking about. And they could easily be well above the net benefits for society.

Speaker 3: I'd like to respond also. On the first point, I'm struggling with the question, because not very many areas have a voting mechanism in place, so I'm not really sure what you're referring to, and maybe you're referring to New York. But if that is a problem in New York (I don't know if it is) but I think the simple solution is, just change who gets the vote. If it's ultimately the state PUCs or the consumer advocates, whoever is going to be the representative of the people who ultimately have to pay, I mean, identifying who should have the vote should be something that we could ultimately agree on.

But we don't have a voting mechanism in most places, and we're just letting someone who is not paying make those decisions.

And on the second point, I didn't turn to the exact page in the NOPR, but I think the 1.25 was intended to mean that you can't require that you exceed that, but I don't think FERC is saying that you can't have a project that provides more benefit.

Question: No, I think my point was, that's a very low threshold, and Speaker 4 was saying, you know, if it's two times or three times or four times, that's very easy to do, because even if your assumptions are wrong about forward commodity prices, load growth or what have you, there's a lot of assumptions that go into calculating the benefits of a transmission line, because it's reducing LMPs, etc. But FERC, actually, in my opinion has too low of a threshold, which is the 1.25.

Speaker 3: OK, I agree with that. But I guess it depends on if it's a multibillion dollar project, that can turn out to be a lot of money. But yeah, you're probably right, it's too low.

Speaker 1: Let me just comment on the voting process in New York. It's the LSEs, [load serving entities] and that's not the generators. That's the load serving entities. Just in New York City, that zone, there's like 130 LSEs. That includes ESCOs [energy service companies], utilities. There's a lot of ESCOs in New York City, so it's basically the load, not the generators.

Question: The first three panelists seemed to discuss the difficulty of planning for public policy, where the only public policy that seems to have been articulated in laws are the state RPS, and except for Speaker 1, and it's notably absent from the NOPR, no one seems to deal with the actual public policy that exists. I think Speaker 3 alluded to this, and that is there are draft EPA rules out there that are going to affect generation that are going to drive transmission.

And so it's kind of a two part question. It seems the emphasis of the NOPR is being driven by a very specific problem, although it leaves open in theory "public policy." And yet we have something that may well be very close to being among us. But the real question, if you look back to what one of the speakers this morning said, you've got a case in front of you. You have to make that decision based on the evidence on the record. But yet, we are changing what we have. We now have something much less certainly. We know these EPA rules will be issued. We'll know what they say when they say it. But we won't know necessarily a year in advance which of those 400 plants at risk in the East is going to retire, and yet it's going to come up before [the Public Utilities Commission.] And how do you see that in front of the judge? How do you see making that case, clearly state by state? And yet if you don't make that case, if you don't have the lines there, we're going to be in a real pickle, and it seems to me somebody ought to be, at FERC, when they consider the NOPR, they ought to seriously consider that and how the compliance filings deal with the problem that is honest or almost honest.

Speaker 1: Let me start with that and say that you really hit on a key issue, and it's a really important issue, and they are wrestling with it in New York. They have been doing a lot of work on those proposed regulations. They could affect nearly half of the fleet in New York. The Indian Point issue is another one. So this year they did that through sensitivity analysis, and they have this process. It's very formal. You have a base case. But in the base case, if a unit hasn't said it's going to retire, it's in there. And it's in the market, and there's a process to go through to delist and retire. And unfortunately that process is very close in. It should be like two years, in my mind. In New York, I think it's six months. I think in PJM, it's shorter than that.

So that's a real problem that I think all of us have, and we've got to wrestle with how to treat that in the planning process. In New York, they did it as a sensitively analysis this year, and the state, the environmental people really appreciate that. It's helping them see the impact of their regulations, but how do you use that to really go plan a new facility, or declare that you have a gap if nobody sent out a retirement notice, because those units that are there that haven't retired have certain rights. They have rights to the transmission system, the outlets in those areas and so forth.

So it's a pretty complex issue, and we've got to wrestle with it. I'm sometimes a command and control guy, and I just want to go do it, but we've got to make sure it gets done in an open [LAUGHTER] in a transparent process and blend in with our market. But definitely, it's a problem we've got to deal with.

Moderator: And yesterday we were told there's going to be a closing prematurely of a power plant—they are going to mothball it, actually decommission it. And there's an unamortized amount of $57 million. Plus add some operating costs and other decommissioning stuff, up about $70 million. And they will be in to ask for ratepayer recovery of the unamortized amount, close to $70 million. How do you deal with that? It's a very interesting problem, because it will never meet the new requirements. In fact, it's pretty much of a naked plant. It doesn't have any controls on it or anything. That's the kind of problem we're looking at.

But in order to accommodate and get to what you're talking about, I'm listening to the beneficiary stuff, and both the EPA and really the thrust of the first part of this NOPR spoke to public policy, which is really about renewables and clean air environment and so forth.

So it's not so much in my mind about beneficiaries as it is about cost causers. And certain states, such as Ohio, or such as those who do have renewable portfolio standards, are cost causers. They will cause, because again, the beneficiaries are really the producers, those producers of renewable energy who have just really great incentives, tax incentives, all kinds of benefits to move forward, so really, it seems--and the states don't have, I mean, they talk about regionalization, but the states have boundaries.

So if one state has an RPS standard, and the state right next to it has no RPS standard, then how can you do this on a regional basis? Not to mention the fact that if you take all of this, this logical conclusion, the whole world benefits. Right? So there's these fantastic externalities. And you don't internalize the externalities, but you externalize the internalities in this case. So there's a lot of free riders, in other words.

Moderator: Right. So at the end of the day, are we really talking about beneficiary pays type of transmission costs? It begins to look more and more to me like postage stamps.

Question: What about the person who does his sensitivity analysis, and he goes through whatever evidence he has--and I'm fairly sure within the next blank years Indian Point is going to have to shut down, but they haven't announced it yet. And if they do, in order to maintain reliability, we need X transmission. And he comes to Gary Brown and the Commission and says, or the appropriate utility does, "Please site this line, because we may need it based on these assumptions." Isn't that a difficult problem for the states? And then, of course, if the state says no, and it comes to pass, it's probably the utility that's held responsible anyway.

Speaker 1: Let me comment that some of the things I think that are working because we have a really good market structure, is that those sensitivity cases being done years in advance are sending signals to the marketplace and we do have a number of merchant generators, and some public power agencies that have some power plants that will be coming in in the next year, the next two years. If you add them all up, it's almost enough from a capacity standpoint, almost, to cover Indian Point, but it doesn't cover a lot of the N minus one issues that we all have to deal with, with voltage collapse and things like that.

And so we could be put in a position to have to do an emergency gap kind of solution, which would probably be some demand response, some maybe emergency peaking kind of resources, which New York has done before. But I just think we need to improve that process. There's a gap there.

Speaker 2: If I could jump in, it is a real challenge, all the environmental restrictions, not only the current EPA rules, but there are various state issues that will result in potential retirements. Transmission and transmission cost allocation, though, I don't believe are the main issue. One of the more important I think issues is making sure that you can predict those, and a capacity market like PJM allows you to anticipate that, at least more than you did before.

Yes, there is a 90 day notice that you have to send to PJM when you're retiring a plant. But you have to bid three years in advance your generation. And if you bid that generation, and you decide to retire it during that time period, you pay a penalty, 1 ½ times the amount. It's a pretty large number. So there's a financial consequence, and I'm glad that Speaker 1 pointed out that if you do those sensitivity analyses in advance, and you have a capacity market to send the right signals, then generation, demand response will come in, merchant solutions, rather than just immediately going to, "Oh, we may have a problem. Let's build some transmission," because then you're really going to have a problem, because now you've just affected the prices, and you've exacerbated, in many areas, the problem, because no one will be able to come in and put generation or demand response, because there will be so much import capability into that region.

Question: I think this really is a clarifying question. Does beneficiary pays also mean beneficiaries vote? Only beneficiaries vote? And do beneficiaries ever vote no? And if they do, what does that mean about the estimate of the benefits?

Speaker 1: Well, in New York, they haven't had that vote yet, but it's to the people they send the bill to. They would be the voters. And that's the load serving entities in the zones which the calculation shows are going to be the beneficiaries.

Now, why would they vote no? Some people may have doubts about the economic analysis that's being done, that we are good enough to predict the price of gas and oil over the next ten years. And they see all the sensitivities they get around here, and they see how volatile these numbers are, and they say, "Wow, I don't know that I trust all that."

Just to give you an example, [there was a case a while ago in New England], when they were getting the planning process up and going, the planning staff did a calculation on the congestion projected for Connecticut the following year, because Connecticut was the problem. And the number came out to be $300 million a year congestion. There were also serious reliability problems that had to be dealt with, but that was the congestion issue. The very following year, they made the same exact calculations, the same exact network model. The number turned out to be zero. What happened in that year is that gas and oil prices flipped, and so those kind of sensitivities are huge, and that's why somebody might vote no, because they say, "I see the study shows that I get all these benefits, but I really don't trust them because of these sensitivities."

But my opinion, when you do a lot of this sensitivity analysis, it informs everybody, and you do see proposals come forward. New England did a very comprehensive sensitivity or scenario analysis thing that Sue Tierney headed up for two or three years, and had a lot of transparency to it. And five or six merchant projects got proposed to move clean low cost energy from surplus areas to the load pockets. So I think that power is in the information that you generate.

Question: But you said on beneficiary pays, in Speaker 4's example, generators gain in the exporting region. Those generators would not get to vote on this transmission project?

Speaker 1: That's correct.

Moderator: That is a chance for me to ask the question, do generators, should generators pay, particularly in light of the fact that a lot of them are generators by virtue of public policy that otherwise wouldn't be there without the public policy to support them. So with that?

Speaker 1: Yes.

Speaker 2: And I'll say, no. I would say because certainly from an economic perspective that makes sense, because the generator is going to add it to their cost, and the consumers ultimately are going to pay. But the idea that you can build a generating station based upon financials, that you're taking a lot of risks on, and then after you're built, someone comes along and builds a transmission project and says, "You know what? This transmission project benefits you. We're going to send you a bill for several million dollars a year." To me, that's just not supportable. It's not practical.

Moderator: Well, the type of generation I guess I'm talking about is basically renewable, and no renewables get built unless they have long term PPAs, [power purchase agreements] which end up on the balance sheet of the utilities. So again, why wouldn't the generators pay?

Speaker 2: Is the question just whether renewables with PPAs should pay, or whether all generators should pay? Because I think the answer might be different. And if they have the PPA, then having the load pay directly seems to be the more appropriate solution, so you're not creating those scenarios where people can't anticipate in advance what their costs are going to be.

Moderator: I'll give up.

Question: A voice from the West now. One comment and one question, which is, in the West we actually have I think what is right now in the absence of federal legislation a situation that we can talk all we want about cost allocation, but there's some realities that the numbers that WECC [Western Electricity Coordinating Council] has crunched, is that when you look at the current RPSes, including the California 33% RPS (which is not a law. It is an executive order)--but assuming that, that the amount of new renewable to be developed in the West--I think the number is 65 to 70%--would be to serve California alone.

And that then, I'm not at all certain that a broad range cost allocation that would require everybody in the West to pay for a transmission line that is being built to come to California for our RPS that is so much higher than anybody else's is the solution to getting transmission built for renewables. And I've told this to Chair Wellinghoff because I can think of no other way that we probably get every state in between fighting over a line if it's so different, our renewable standard, versus anybody else's.

And so I think as we're dealing with a cost allocation issue, there is one way that we may want to think about it, where the situation we have now, which is the RPSes are state specific, and there's tremendous difference among the states, especially when you couple it with difference in loads within those states, versus if we really did end up with a national level of RPS that also took a look at where states were. So that's a comment that I'm interested in people responding to.

But my real question was, I didn't hear anybody in their discussion of the FERC NOPR address the provision in it that asked for comments on the subregional planning entities. I'm in the West, so we're different between subregional and regional, but the planning, the RTOs and planning entities, whether they should be required to look at non-wire alternatives.

And in the West, as part of the federal planning effort, we discovered there's tremendous undercounting of energy efficiency in demand response, because of the way, people haven't had the real technical ability until now to go in and look at them with LB&L. I'm not talking about future stuff. I'm talking about actual mandatory laws that have passed, standards that are in place, where the energy efficiency just wasn't counted.

For the entire WECC, it's come out to be about a 4% difference in the forecast looking out to 2020. So it's a very large amount to think about. If we're going to be doing transmission planning and expansion, who should have the responsibility for really delving into and understanding the demand side? And that's my question. Who do you think should have that responsibility?

Speaker 1: I think the planning authority should have that responsibility. And in New York, they have a very aggressive energy efficiency mandate from the state government, funded through the RPS. There's a lot of money available. It's administered by a really good government agency that manages this and tries to put the money in the right place. And so they track that through basically how much money they're spending, and where is it going? And they go through a very open transparent process, working with planning forecasters and each of the utilities' forecasters, and with the PUC, to come up with that estimate, and based on basically the amount of money that's spent and tracking that, the state has a goal of like 100%, and an analysis two years ago basically said "You're only going to get 33% at the rate you're going right now." And they track that. And this year, after going through it, they raised that to 50% in the forecast. So they go through that robust analysis.

Now, in New England, they actually treat energy efficiency and demand response as a supply resource in their auction. And they've been getting a lot of it clearing in their auction, so that they do it slightly differently in New England. But I think it should be the planning authority's responsibility.

Question: I'm just going to start out with a premise, and I think, Speaker 3, you touched on this, that RPS policy may be as much jobs policy as it really is energy policy. A great many states have RPS standards, but most of those states have incorporated some sort of jurisdictional preference within those standards, mandating that the purchaser not only buy wind, but buy wind that comes from a windmill within the jurisdiction.

As many of you know, there are federal lawsuits that have been brought, challenging these jurisdictional preferences, and I suspect many more will be brought in the future. And my question is, what should the FERC do when they're planning around an RPS standard that has these jurisdictional preferences? Should they be ignored because they violate federal law? Should the FERC make that decision? But in the absence of some sort of decision on that issue, should any of those preferences be respected? Or should all of them be respected?

Speaker 3: Boy, I wish I had an answer for that. There is a Supreme Court case, I think it's Alliance for Clean Coal versus, I can't remember who, but it was an Illinois case which required that a certain number of jobs be maintained in the coal business in Illinois. And anyway, it was struck down on exactly the grounds you suggest, as being discriminatory toward interstate commerce.

I don't know what you do in that situation, which is why I wonder, I think it's one of the artfully raised but not answered questions under the NOPR, because it requires, when it talks about public policy, that federal transmission policy should take note of, it refers to legal requirements, maybe legally enforceable requirements, but I know it's legal requirements.

But when FERC staff briefs you, when you go in to visit them, they say, "We're not talking about speculative benefits. We're not talking about public policy preferences." We certainly wouldn't be making it up. It has to be a requirement. But you raise a question that just isn't answered under the NOPR, because some of these are going to make it and some of them won't. I think Michigan may be in the same situation. It has a 10% local renewable requirement, and until they wend their way through the courts, I don't know how FERC's supposed to guess. I wish I knew.

Speaker 2: I don't think that FERC should be telling the RTOs or the other planning regions to try to figure out where generation is going to be built and what supply resource anyone should use, and I wouldn't ever get to the question of, should they include some that are constitutional and try to figure out which ones are not.

Because that should be left to the states to figure out. If the states have a requirement for renewable portfolio standards, whether it requires in state or out of state, the state should be the ones to figure out how to meet that. The RTOs and the planning authorities should not be figuring out for the states how to help them meet their goals by building transmission to the state. If the state wanted the transmission to be built to their state to enable them to meet the goal, there's a process for that. It's already in the Federal Power Act. Anyone can request a transmission service, and there's a mechanism that transmission is to be built in response to that. So I don't think we should be anticipating that in any event.

Question: I have two questions. One for Speaker 4 and the other one for Speaker 2. Would the generators capture benefits from the line? What about the losers?

Speaker 4: No, the generators would capture some benefit from the line. In the picture, area D, and maybe in answer to an honest question, they should be paying in proportion to the benefits that they're capturing. But explicit in all of this, and the answer to an earlier question, is that the losers don't participate. You don't compensate the losers.

Question: What about cases where a state might not want to facilitate the export of power, in order to keep in-state costs low?

Speaker 4: You mean, there might be a state commission that would say on the record they weren't going to approve this line because it might raise the cost in their state?

I mean, I think it gets right to the whole issue of interstate commerce, and I don't have any brilliant ideas. I mean, I think individual states, intervening through regulatory policy to affect interstate commerce, in order to tilt the playing field for their state against others is bad policy for the country, and the feds should pre-empt it. And if they can't, they can't. But I certainly wouldn't empower the states to--they may do it de facto. Arizona is a good example. But I wouldn't say it was a good thing. And in that case, it turned out better for California, right? At least that's what they now say.

Question: The other question I have is on cost allocation. I mean, there's a lot of transmission being built, about $8 billion last year alone, put into rate base. So a lot of this stuff is working. So there's a lot of focus on the stuff that isn't working, which is mostly regional projects for multipurpose or renewables integration, or something like that. That's sort of whether the multistate projects, that's where the hang up is. If a lot of that is driven by state policies, like renewable policies, shouldn't we all do it like the Southwest Power Pool did it and just say to the states, "You guys form a group. You figure it out. If we built transmission for renewables, you figure out the cost allocation," which they sort of did, and they analyzed the stuff, worked a few years, anywhere from megawatt mile pricing to who knows what, and they ended up just approving a postage stamp. But at least the states got together.

Speaker 4: That's not true. They don't have a postage stamp method. They have a highway byway method, so they keep reallocating the costs into the two buckets until they end up with something that people agree with.

Question: No, no, no, that's not true. The recent highway byway, the highway means everything above 300 KV is a postage stamp.

Speaker 4: Yeah, but they allocate the costs of those things …

Question: They're not. But anyway, why would we care if the states can figure out how to share the costs?

Speaker 4: If the parties who are going to pay for it agree and come forth voluntarily and say we want to do it, that's terrific. That's fine.

Speaker 2: There is a case right now in PJM where there's certainly an opportunity to do that. They have all the states involved. They'll be paying for the transmission project. And they can agree. So if you can convince them to get together in a room and agree, that would be fantastic. I heard that they tried that at an OPC meeting. I don't know if that's true, but I was told that it didn't go so well.

Speaker 1: I would comment that again, to get transmission built, it's very, very difficult. You have to have a very strong case and need for it. And even when you have that, it's very, very difficult. I like to use the term, all the stars have to line up. But you can get it done. But if you try to do it in a way where the people that are paying for it don't want it, it is not going to happen. You're just wasting your time. You're going to be in court paying lawyers. Nothing's going to happen.

I mean, even if everybody wants it, you have a chance to get it built. And you're right, a lot is getting built in places where it hadn't been built in 25 years, 25 or 30 years, and there was a good, sound case for the need, and it went through the process, and it's making it. But to try to come up with some wishy-washy language that says everybody's talking about carbon that have no laws behind it, it's hopeless. So that's a really important point to remember. If you really want to get something built that's important, you're going to have to have a process that does get everybody at the table, so they can agree and see the need.

Question: This is sort of to Speaker 4. When you say core coalitions, is that the game theoretic core?

Speaker 4: Yeah, actually, that's what I had in mind, although I didn't want to get into the game theory.

Question: And if there isn't a core?

Speaker 4: Well, then you surely shouldn't build.

Question: If there isn't a core, you shouldn't build?

Speaker 4: In this framework, right, because if you just look at that, it subsumes the net benefits. And so at least in the analysis that I'm providing here, you've got --

Question: But if you don't --

Moderator: I think we'd all like to hear that one off line. [LAUGHTER]

Speaker 3: I have a reaction, if I may, that just these two questions. It seems the discussion about cost allocation always seems to lead back to, should we be building this transmission project or not? Yet we so often want to separate them. But they can't be separated, and that's something that's really important that I hope FERC gets right in this rule making, whether for a voting mechanism or something else.

Question: If we're talking about an allocation based on benefits, beneficiaries pay, and benefits are based on building the transmission line, compared to the counterfactual, I guess, I have a question about the counterfactual.

Let's talk about the standard three different buckets of transmission. The economic one is easy. I think we know how to figure out what the counterfactual is and the beneficiaries based on the way that's done. The other two, though, reliability and public policy, if you want to characterize this, Speaker 2 did those two, there are two ways one could determine what a counterfactual is. One is that if we didn't build the transmission line, we wouldn't satisfy either our reliability criteria or our public policy criteria, and there's some cost associated with that failure, and that could be how you figure out what the benefits are, and who the beneficiaries are. The other alternative is that you take the reliability criteria, or the public policy as a given, and the counterfactual is, if I didn't build this transmission line, I'd have to meet my reliability criteria through some other means, or I'd have to satisfy my public policy through some other means, which if the transmission line is cost effective, is the transmission line's cost is less than what those other means are. Does the panel have any opinion about what is the right counterfactual to be considering for the purposes of allocating the benefits?

Speaker 4: Well, in the context of the current rules with the NERC standards, then I would say the latter method that you were talking about is what I had in mind when I said, with their standardized methods for doing this, but I didn't have time to talk about that. You might make a case that for this purpose, you should calculate the value of the reliability benefits in terms of the expected value of lost load, because we're not actually proposing that you don't, let's take the reliability case, which I think sharpens what you're talking about.

It might be that, as a matter of fact, I think it will be the case, that the expected benefits of reliability lines are less to the cost of the lines. I believe that is because basically the one day ten year standard, this is Jim Wilson, so this is the *Public Utility Fortnightly* article that Mike Telson's thesis from 1975 rewritten for the current stage, but it's the same issue. It's been around for a long time, which is the implied value of lost load in the one day and ten year capacity reliability standard is upwards of $250,000 per megawatt hour, which is probably at least ten times as much as it really is, and so what that tells you is that the incremental expansions that you're making in order to meet that aren't worth it in terms of the expected value of the lost load. So it could well be that it will be negative. But we have a reliability requirement to build it. All right? So we're above the threshold, because we have to do it. But now what's the value? This is where it comes down to, we know where the benefits are going. It's going locally here. It's going locally there. It turns out it's only 1/10 the cost of the line, but it's yours. And so now you get the cost. So the shares are easy to estimate, even though in this case, it goes the other way, which is they are less than the benefits.

Question: But in this case, I guess maybe it isn't a problem, but the benefits are much less than the cost. It doesn't really fit into the gold standard.

Speaker 4: Well, then, if it's a constraint, and you have to do it, then you skip the first step. Right? OK? So we're not doing it to benefit. It's a constraint. We have to do it, because that's the way our rules are. And that's another conversation, which takes 45 minutes.

But when you're estimating, you're separating the estimate of the shares. There's still benefits from it. It's just they are less than the costs--allocate them proportional to that. And you can do that, and it's going to be an area that's going to be curtailed if you don't do it. And we know how to do that, and that was in the PJM case. There was all that about the dfax [distribution factors] and how you allocate the cost of these reliability lines.

But if you're making the decision about whether or not to go forward with the line when you're not in a reliability mode where it's a constraint, then I would do the latter, which is, whatever the policy that they're talking about, then I would say, what are the alternative ways of meeting that, and is this less, does this cost more or less than that? And that's the benefit.

Speaker 1: Let me comment and say I agree with Speaker 4. Congress helped us when they made reliability standards the law, and we have to meet them. And so what's the lowest cost way to meet them and keep the lights on? So that's really helped things.

Now, when you jump over to the policy bucket, and you've got state policies, some of which are backed up by legislative orders, some are not, some of them, the governors come in and change them, some of them, they back off of them after they start seeing what the costs are. But we start talking about multiregional lines, long distance lines, listening to a lot of the policymakers in the Northeast, they really feel like they already spent billions of dollars to have the cleanest air in the country, with tons of brand new clean, efficient, gas fired plants. And you start talking about policy to reduce carbon and bringing in, building $200 billion wires to come in from the Midwest, many of them see that as wind sometimes, but coal a lot. And so they're having this trouble thinking about, how is that helping policy when I've already spent in my region billions of dollars to have the cleanest air in the world, and this is just going to basically back down some of my gas plants to run coal most of the time? What I would rather look at, bringing in closer renewables in their own region, and maybe Canadian hydro coupled with it, to help make it work better. But looking at all those alternatives from a policy standpoint, I think has to be looked at beyond just the state itself, but what's the impact of the whole grid?

Question: This is a question for Speaker 4. But correct me if I'm wrong. Let's assume that reliability constraints are being applied, not the reliability, but the public policy constraints being applied to this import/export case. But with the addition of a transmission line, I'm also changing the supply curve in some fashion, because now I have enabled a whole new set of megawatts of renewable capacity to come online in the export region by having this transmission line in some fashion, and effectively shifting the supply curve down.

And similarly, if this transmission line is not there, and the import regions are already there developing their own resources in some fashion, by having off shore or any other methodology, but effectively changing the supply curve also?

So the complication is not just defining who the beneficiaries are by pure supply/demand curve, but it also gets complicated by the fact of having a transmission line, now I have a whole new set of new kinds of generation that I'm picking by having this transmission line or not having this transmission line. Is that clear? I mean, am I making sense? Or am I just babbling?

Speaker 4: Well, certainly in this scenarios that Speaker 1 is running, we have to do all of that detail. New plants, old plants, there are retired plants, new things that come online. They won't build it if the transmission isn't there. All that has to be accounted for in that process.

But it doesn't change the story here, and I was abstracting away from all that in the supply curve. I've got all the things that we could build and all the things we could do in this region, and we're doing them all, and now if we don't expand the transmission line, we're not using all that generation. It's just sitting there, or it could be built, and it isn't built. But if we do expand, and it's going to cost so much, and so on, and that gets factored into the, so it's not shifting the supply curve. It's just moving up and down the supply curve. So the transmission line has a big impact on what happens, because you have more leaving the export region, and more coming into the import region. So from their perspective, it looks like the supply is changing, but it's not changing in the aggregate for the whole system.

Question: And the second question is, I might not be subjected to different interpretation of what the BCD [benefit-cost-deficit] is, because somebody in New Jersey or New England could say, oh, my benefit also includes jobs and offshore, and all that stuff. Whereas on the other hand, somebody in the Midwest, again, I'm a little unclear in terms of quantification of benefits --and if those decisions are purely being made based on the benefits that you are getting in terms of what new generation gets built, then I agree. But the decisions of how generation gets built is not based on pure production cost benefit. There's a whole set of criteria that determines what, which and how generation gets built.

Speaker 4: Speaker 2's point earlier is that we shouldn't be second guessing the states. The planner shouldn't be second guessing the states. So if they pass a rule that says, "Build generation in this state because it's going to give jobs in this state," he should incorporate that into his calculations that the generation is coming in, but not count the benefit of the jobs. And now the fact that there's generation there affects the transmission decisions that you're going to have, and he does his calculations the same way, and it's more expensive generation, but that's what they want to do, and that's what they do, if that's the constraint.

And if they don't want to do that, and they want to--there's this debate about what percentage could be RECs [Renewable Energy Credits] that come from outside the state. And so, but eventually we'll know, and then there's a REC price, and that gets calculated in the benefit calculation and the cost calculation, and then the transmission planning guys can use that. But it's a public policy decision as to how much you're going to allow or require to come from inside the state versus outside the state. But from Speaker 1's or another perspective he can, "OK, tell me what it is, and now I can do the cost benefit calculation, given that as a constraint." And then someone comes along and says, well, the benefits of that go to China, which may be true. But that's the decision about the RPS. It's not the decision, not the benefit calculation for the transmission given the RPS. And I think the benefit calculation for the transmission that we can do, we know how to do these standard methods.

Question: I appreciate that FERC in the NOPR has something about public policy, and that should be taken into consideration. Practically speaking, I don't see how it can, because there will be conflicting public policies. It is certain. And so who's going to decide on that? And if it's a planning entity, which I guess it would be, then you could have different considerations for a public policy in a neighboring planning region, and yet the NOPR says they're supposed to be working together.

So for instance, somebody had mentioned before wind. Obviously the Midwest states want to support the wind. That's part of their business deal, what they want to do. Obviously the Eastern coast states want carbon reductions --a state like New Jersey has to have mandatory reductions by 2020 and by 2050. Obviously New Jersey doesn't want coal. They get the transport issue all the time and have for years, from the coal that is in the western part of PJM.

Non-transmission alternatives is something that has been raised. It's a huge issue. On the other hand, the planning entities, and I love PJM, they run a great system, but they're controlled by the members who are generators, transmission owners, etc., etc., not exactly, I mean, the load serving entities are involved as well. But they have got their own biases. They've got to make money. It is really concerning to me that the public policy is there to make the state people feel good about it, but it can't work because of the conflict, because FERC is doing what is I think is small "p" political and letting the planning entities do their own thing. And we're going to have inconsistent decisions that will be really annoying to people who care about where we're going from a public policy point of view.

Moderator: True.

Question: So what do we do about that? It's just, it's very frustrating in the sense of non-transmission alternatives will not be a high priority.

Moderator: That's why I'm just a moderator.

Speaker 4: I'm trying to think of an example where this arises. I mean, a Midwest, I don't know, Illinois decides or wants to generate with wind and export it to the East. Good luck. I mean, that's not, Illinois can't impose that on the importer, right?

Question: It seems like definitions of RPS—what's in RPS, and it's not, things like that.

Speaker 4: Right, so they have a different definition in Illinois than they have in, and we take the Illinois definition of RPS, and we assume that it's going to be met. And then we have the New Jersey definition of RPS, and we assume that's going to be met. And then we have some--what are the transmission alternatives given those situations, so that if we don't build the transmission, they meet the Illinois definition in Illinois in some alternative way, and the New Jersey in an alternative way. And what they're doing in Illinois doesn't make any sense, given what they're doing in New Jersey, and what they're doing in New Jersey doesn't make any sense, given what they're doing in Illinois. That's inconsistency I can understand. But it doesn't affect his problem. That's a problem for those state regulators.

Question: What we found in the West is that the planning entities simply don't have access to sophisticated information on non-wire alternatives. That's not their job. And that's a huge problem. They don't have access to data.

Speaker 4: But that's a whole issue about the quality and the analysis and the availability. That permeates everything. And that's a real problem. But it's not the same thing as inconsistency.

Speaker 3: I think that if we'd had some sort of a cap and trade bill, that would have maybe indirectly started resolving a lot of these questions, because it would have ended up directing our energy policy, I think, and it would have been sort of making it more uniform. And so I think all your questions are really well posed. The difficult question with respect to the FERC NOPR, to me, is that, are the authorities FERC has and the responsibilities, means of facilitating answers to the questions you raise. Is that a suit of clothes that fits the new situation? Because that's what's really being asked, and I think that's implicit in what FERC's proposing.

Moderator: You can add one more thing, that if you had a state with no RPS, but a very, very aggressive price responsive demand program, does money drop from helicopters to them? What happens?

Speaker 3: Do they pay for money dropping from helicopters for someone else, because they're going to implement their plans by transmission?

Speaker 1: From the planner's standpoint, the question is, what can we do? Well, on this public policy issue, the problem from our standpoint as planners is, we need to have metrics to measure. And so we don't just need broad sentences that can be interpreted 100 different ways and some legislation. We need metrics. Is the metrics tons of carbon? Is it in the region, in the state, in the whole eastern interconnection, in the whole country? What are the different metrics? And there needs to be some work done on that and a lot of thought put on that. And then give those, put those as part of the standard. This is what we're talking about, these metrics. You must meet these metrics. We can do that with reliability. We have a set of standards we have to meet. But we don't in this other area. It's really lacking.

Speaker 2: I'm going to throw out an idea, and I don't know if it makes sense or not, but maybe one way to approach it is to have the states tell their planning authority what they want to consider in planning. If New Jersey really wants PJM to figure out how New Jersey's going to meet its renewable goals through transmission, New Jersey can tell PJM that and ask it to plan transmission to help it meet its goals.

Right now, we have a rule that proposes that the planning authority try to figure that out. And it's not just renewable policy goals I want to come back to, because I think that would be discriminatory. But whatever the constraints are, and you can do this in the capacity market as well. I mean, a state, I think that the RPM model accounts for this. A state can say, we want you to account for a specific constraint in this model for our benefit, and we're willing to pay for the consequences of it. So maybe something along those lines might work.

Question: I have a question, really for each of the panelists to answer, the same question. Put a quiz here. But I'll be quick.

Because the NOPR doesn't get into any of this detail, and it sort of leaves the definition of benefits, each region can define its benefits. People can have agreements inter-regional, but everybody can still use their own definitions. So do you think the NOPR is, if it came in today as a final rule, the way it's written now, do you think it would provide sufficient direction? And if not, what are the one or two things you would add or subtract from the NOPR? And you each have three minutes to answer…Well, the whole thing, but dealing with this whole benefits issue.

Speaker 3: No, I think is my answer to your first question, is it explicit on it? And second, and this is just strictly me, I think that FERC needs to ask for congressional guidance. I don't think you can solve it under its current authority.

Speaker 2: I would also say no. I think the Seventh Circuit has provided lots of guidance already on the cost allocation, and I think these other issues should wait for Congress to act.

Speaker 1: I would also say no, and again, the whole issue really is on this public policy issue, I think, and that has to be mandate backed up by legislative authority, and it should include with it, if that's going to be required for planning, then there should be a requirement that these policies also include a requirement to construct. It's that important.

Speaker 4: Well, obviously the NOPR as it's currently written is not specific enough about how to do all these kinds of things. I can imagine a version of the rules coming out that would be consistent with the current language and good, and I can imagine a version of the rules coming out that would be consistent with the current language and not good.

And one of the reasons I was trying to do here today is to say what I mean by things that would be good and what the character of some of those is. It might be easier to do than we think at first blush. But it's certainly not specific enough. If I was going to do anything, I would focus on sharpening the definition of benefits, because this distinction between the real societal benefits and the transfer payments is people are muddling that all over the place, and it's a really big deal, because there's a lot of money involved, and I, and the demand response, technical conference, people standing up there who say things like there's lots of ways to define efficiency. Let's not get hung up on this.

Moderator: I'm glad we didn't get into the issue of right of first refusal.

Question: I'm not sure it's additive, given the last several questions kind of touching this topic, but in the original order, and affirmed in Paragraph 51 in the NOPR, they talk about the need to consider non-transmission resources in both the planning process and cost allocation process.

We've gone through deregulation. We have successfully unbundled generation and retail, where your supply and your demand side resources exist. And even in transmission you have examples where there's competitive assets, or non-rate base assets, competing with the regulated assets.

If we're trying to do a planning model today, and we have these highly determinative inputs of what is the generation stack going to look like in the next ten years? And combined with that is, what's our fuel choice? Is there not a suggestion here that's pretty explicit, actually, and can we not do it without impairing all the benefits of competition to somehow, and I know Speaker 4's going hate me for using this, but reintegrating and recoordinating the generation investment decision, trying to get it closer, really integrating it into the planning for transmission, so that when we make a ten year forecast, generation isn't so much a variable. Fuel choice isn't so much a variable, and therefore the estimates of the benefits of a huge transmission investment, let alone a generation investment, all that uncertainty's decreased, and we can make better investments, and perhaps even more cheaply, conceive of and pay for plants.

Do we see then (question clarified) in the NOPR a suggestion that maybe we should be looking for ways to, again, without impeding competition, without impairing the benefits we've derived from it so far, and we might hope to get from it in the future, can we not get generation planning, as well as use these demand side resources? Can we not get them more properly coordinated and in some way integrated with transmission planning to improve decision making and improve outcomes? Or is this heresy?

Speaker 4: Well, it is heresy. [LAUGHTER] What I would say is that it's essential for Speaker 1 in doing the calculation to have a, in all of these scenarios, is this is the, we're going to have this much efficiency. We're going to have this much generation. We think it's going to be here, and it's going to be this. That's all part of the scenario analysis and the counterfactuals as the line in or out, and we do all that kind of analysis.

The important thing which I would emphasize is that one of the critical reasons why I keep saying beneficiary pays is so important and that we stick very strongly to that position, is when people want to go the next step with that, just to say, now you should also be mandating that they build this generation and mandating that they do this, and we should be paying for it through this same kind of mechanism. And I would say that's going to cause the whole thing to unravel if you try to do that.

But if you apply the beneficiaries pays properly, you don't have to do that, because that's the firewall, because it says, well, the generator is going to be the beneficiary, and they should pay for the generator. You don't have this problem of integrated resource planning becoming central planning. You have inherently, because of the transmission, you have to consider all of those kinds of things, but you're not going to go out and decide that they should be built.

Question: You don't necessarily need to do that. We're in this situation today not just because of 25 or 30 years of underinvestment in the system, but because we've suddenly got RPS. And people want to put loads of renewables, wind, no less, onto the system. And utilities are being asked to stomach long term contracts, like they did back in the PURPA days. And for the most part, they're agreeing to do this. And if the regulatory compact is not permanently damaged, and we can't have competitive procurement for generation that's taking place alongside these cycle to transmission plans, then you're not really going there. You're not really going to centralized planning. What you're doing is, you're simply trying to coordinate the market decisions for generation investment and associated choices for fuel mixes and such, and decreasing the uncertainty that goes into the decision for where and when and how much transmission to build, and as well the uncertainty for the benefits and the allocation. Can you do it?

Speaker 2: You can coordinate them without having RFPs at the regional level for generation and demand response, and without going back to integrated resource planning, although certainly integrated resource planning still exists at the retail level in many states. But at the wholesale level, the solution could lie in better coordination of the planning of regulated transmission with the markets. I don't think, even in PJM, they have that down pat yet. I mean, PJM has made a lot of progress, but right now transmission is favored in PJM. And it shouldn't be.

Regulated transmission should always be the back stop, should let the markets work. You need to re-evaluate the transmission every year. They do that very well in PJM, and that's one thing that FERC has done really well in giving transmission owners that are building these regulated transmission projects, abandonment authority at 100%, if you go in for special requests, one of these big, long lead time projects, then you take away the concern from the transmission owner's perspective, that I'm spending all this money, and they're going to re-evaluate it, because as long as you are proceeding down the path, and you're spending prudently, if a better solution comes from the marketplace, the transmission project shouldn't go ahead.

Of course, there's a point of no return where it doesn't make sense. But I do think we could do a better job of coordinating things like RPM [reliability pricing model] and RTEP [regional transmission expansion planning], and we've made a lot of progress. But for things like RPM, you only go out three years, where with transmission planning, you're going out ten years, 15 years. So we need to align those better.

Question: Well, this will be very short. It's a further follow on to the discussion we've been having about public policy, which I might say is somewhat dismal from Delaware's standpoint. But let us say, and I think this is a real instance, that you have not one state, but four states within a region who have executed contracts calling for renewable energy--four or five states, whatever it may be.

Does that influence in any way the response, in terms of transmission build out? Because what I've essentially heard is, there's actually no mandate, and so states who choose to implement public policies are essentially on their own to come about, to resolve the process. But it seems to me, if you have several states in a region working on something, there's some efficiency in looking at that from a transmission standpoint. And I'd just like some feedback on that.

Speaker 1: I would agree with that. That's a good comment.

Speaker 3: And I agree as well. I don't think there's anything prohibiting right now in the existing process from states. I think they're actually, it's written into some aspects of the federal law that states can work together to identify the need for transmission. They can, at any time, ask PJM to incorporate some constraint. You just have to be willing to pay for the consequences.

Session Three.
Carbon Emissions and Renewables: What's Ahead?

As long as there was a prospect of enacting both national carbon limits and a national RPS, there were significant questions about the efficacy and economic efficiency of having both. Now, we may be facing the prospect of having neither. While that would appear to move all of the action on the two issues to the states, on RPS, at least, the recent FERC decision to preempt California on feed-in tariffs for renewable resources raises questions about how much latitude the states actually have in promoting renewables. While FERC left open the possibility of using the provisions of PURPA, the requirement of using the "avoided cost" criteria is likely to limit states' discretion, a particular problem where states have very aggressive RPS targets. Where do those two developments -- one legislative and the other regulatory -- leave matters? On one level, there are serious legal questions as to whether the FERC was correct in preempting California? The "just and reasonable" requirement for approving rates set out in the Federal Power Act is not exactly a statutory strait jacket for a Commission that wanted to find ways to promote renewable energy. Will the US EPA, now that Congress has failed to act, become more aggressive with the authority the Supreme Court found that it possessed in regard to carbon emissions? Will the sates become more assertive in regard to carbon emissions and actively search out ways to promote renewable energy in ways that bypass FERC's recent California decision? In the midst of all of that uncertainty and legal controversy, what should prudent business decision makers do in regard to energy resource choices?

Moderator: First I just want to say, thank you for having me moderate this morning, on a topic which I'm personally very interested in, which is really the development of renewable policy in the US, what's happening or not happening at Congress, and all the activity that's going on in the various states, to some extent filling the vacuum that is being left at the congressional level at the moment. At the state level, and states are exploring all kinds of policies, from renewable portfolio standards, to distributed generation carve outs, to feed-in tariffs and rebates. I think California probably has the largest mix of tools being used, but many states are utilizing similar tools in different forms and with different effect. So this morning we're going to talk about those, and I think we have a great panel to do so.

Speaker 1: Good morning, and I know I and at least a couple of others, we don't have PowerPoints. Somewhere between we figured it's the last session, and everybody's thinking about with the storm, are you going to be able to get on the airport or not, and also I think our goal is to allow enough time for some actually questions or answers.

So let me just run through things. No, I don't know who the next governor is going to be, and therefore, I cannot say what will be our next policies. And no, I don't know what's going to happen with Prop 23. And those are the two bit uncertainties that we are facing in California. For those of you who are not aware, Prop 23 is the proposition on our ballot that would basically gut our climate change law, AB32, and actually the polling for that looks fairly good for it to be defeated. Our governor has come out in opposition. Our commission took a formal vote unanimously last week to oppose the proposition. I believe the latest is that both gubernatorial candidates have opposed the proposition, although I believe Meg Whitman has also still stated that if she were elected governor, one of her first actions would be an executive order to suspend our climate change law. And this is caught up on a debate about, will it cost jobs in California, or expand jobs? So let me start off with the first one. I don't have that crystal ball, but I'm happy to join in any questions or speculation about what it might mean.

We also were faced this year with a very unfortunate situation that once again, our legislature, our governor and the key stakeholders were not able to agree on passing our law for 33% renewables. Where things stand is, we do have a law in California that requires that all of our utilities, both investor-owned and municipal, and in California, the split is about 80% of the electric load comes from the investor-owned utilities, 20% from municipal utilities. There is a law that requires them to get to 20% renewables by 2010, which you might notice is this year. But there are flexible provisions so that the common view is, we're looking more like 2012 to 2013. And what is important about the California law is, it counts emissions from out of state power plants that are used to serve California. So it is not just the emissions within California, but any of the power plants outside of the state that serve California, which in particular are significant for Los Angeles Department of Water and Power that uses a lot of out of state coal for its customers.

So the big push for several years in California on the renewables side has been to get in place a law that bumps up our RPS. Governor Schwarzenegger several years ago issued an executive order that said that it is the policy of California to get to 33% by 2020. The California Public Utilities Commission has embraced it, as has the California Air Resources Board, which is the agency overseeing climate change in California, and basically all of the states.

But at the same time, the existing law does prohibit the California Public Utilities Commission from ordering the investor-owned utilities to go above the 20%. They can voluntarily, but the Commission cannot order them and fine them and have such things. So we are in quite a bit of a quandary in that everybody does say, we need to have a law. But there are so many disputes about how much would be in state versus out of state, what would be the definition of renewables? What would be penalties, and sort of a whole host of issues that we just, for the third year running, have not been able to reach an agreement.

And that's in the context, that efforts are going forward that are looking at the planning for the transmission grid for the Western interconnection, where the numbers are between 65 to 70% of the new renewable in the West would be developed for California, looking at where the existing RPSes are, looking, assuming that California has a 33% RPS.

So it in many ways has everybody in a state of suspension, or at least suspense, not knowing what we are planning for. And part of this great debate in California is, what is the role of tradable RECs, renewable energy credits? And we have an existing protocol, I guess I would describe it that way, for how RECs would be handled under the 20%, which is quite focused on physical interconnection to our California grid, to the California Independent System Operator.

The California Public Utilities Commission issued another decision earlier this spring unanimously that gave a little bit more flexibility and really gave more details as part of the political debate about the 33% law, which will also address this issue of the RECs for the 33%. The Commission was asked to, and did suspend the decision it had adopted, and then with the suspension, with the continuing politics around the 33%, the Commission was then asked to issue a new decision, proposed decision, that basically allowed for, I would say almost some limited use of RECs for getting to the 33%, and that decision is on hold.

Meanwhile, last week, the California Air Resources Board, which is the agency [charged] with overseeing the climate change law, issued regulations for how to implement not just the 33%, but the 20%. I haven't had a chance to read it, but I believe it provides for unlimited use of RECs for getting to the 33% and possibly the 20%.

So this is a lawyer's nightmare and play box, because we have two distinct, now, set of regulations for getting to the 20%, one that the California Public Utility Commission has issued, which I believe are the only ones allowable under the law. And then one that the Air Resources Board has also issued, which has inconsistencies between the two.

And then we have the 33% issued by the Air Resources Board, which our Democrats in our legislature have said is illegal, because nobody gave the Air Resources Board the authority to set out the rules. It needs to be done via statutory law, which doesn't exist. Our unions are unhappy because they're not sure where the job debate's going to come out. So if the Air Resources Board were to proceed with implementing it, the common view is there would be litigation. I don't know.

And then on top of all this is, we've got a gubernatorial election coming up with two quite different candidates who might take us in two quite different paths, and we have this proposition that might suspend [AB32] entirely, in which case, then, what the ARB has done would certainly be suspended.

So now you can see why I didn't bother to do a PowerPoint. [LAUGHTER] It's mainly to make you all feel whatever's the chaos in your world, it doesn't matter. I'll just quickly run through, but Speaker 3 is going to give more detail. And frankly, I'm very proud of what we have been doing for the last few years, and I've been in this long enough that I look at this as, this is just a temporary bump in the road to our longstanding commitment to renewables. But we have succeeded in not just permitting, but they're under construction, three major new transmission lines in California. The Sunrise Project, the Tehachapi Project, and the Devers Blythe Project, totaling over $7 billion worth of new transmission investment. So to my great friend, we've taken your lead in Texas. We followed the concept of RESes [Renewable Energy Standards] and REDIs [Renewable Energy Development Initiatives] and we got single minded about getting new transmission, and it's happening. And all three of those lines are built to carry renewable energy.

So in many ways, this debate about in state versus out of state I think is less of an issue than it seems, because by building these major new transmission lines whose legal purpose was to carry renewable, we're going to have a lot of development of the very ample renewable resources in California.

But we also do look to have out of state resources as well. So we've got this huge program at the utility scale of developing renewables. We are certainly trying to get our share of stimulus money to help the renewable project development, and it has been just earth shaking in California, the shakeup that's gone on in the permitting of the renewable projects, and as somebody who's been involved in transmission for years, where every single conference it is, well, why doesn't transmission line get built?

That's the big problem. It's actually completely ironic to me to be in a situation now where we've got the transmission line permitted. It's under construction. The problem is actually getting the renewable projects themselves permitted, financed and built, because that is not easy when you are looking at massive solar projects in the desert with a lot of endangered species. There are some very, very real issues. So we've got that.

We've got what's called the million solar roofs initiative, which is a ten year program to bring solar photovoltaics on the roofs of primarily residences, but also small commercial. We've got a lot of private companies who have moved into that space. And we've set up an incentive system where over the ten years, the incentives decline on the belief that we want to be forcing the price of these technologies down in the market. And it seems to be working, and even in this recession, we're still getting a lot of interest. So it is a very successful program.

So what we've been doing is, looking at what are the niche markets in between the very large utility scale solar, and the solar photovoltaic that will fill the niches? And we have this wonderful chart that I did not put up on the PowerPoint that lays out in amazing fashion all the various programs that we are launching. But they're primarily focused on, I think, two areas. One is looking at solar rooftops but on a larger scale. You take your warehouses, for example, where you have a lot of rooftop there. And I think Edison pioneered the proposal that California has adopted for Edison, Pacific Gas and Electric and San Diego, very large scale programs. I think for both Edison and PG&E, they're 500 megawatts total, of which 250 megawatts are going to be owned by the utility. 250 megawatts will be put out to competitive bid. And I'm going to let Speaker 3 give details on it, but it basically is to fill the niche of going into large scale rooftops of the commercial area, and having them used.

And then we are looking at increased use of feed-in tariffs, as many of you know, because it's on the list here. The California Public Utilities Commission had a decision that FERC did invalidate and say that wait a minute, you're running up against the limits of our wholesale jurisdiction versus yours. The Commission has not reissued a new decision, but the basic parameters are that FERC has told them that they either have to have the entities be qualifying facilities so that you can do this under a PURPA type situation, looking at avoided costs, of if you are not going to this done under the construct of PURPA, and QFs [qualifying facilities], then you need to stay clear of regulating the actual rates. And you may put in some requirements of the utilities doing things, but we have the jurisdiction as far as the actual rate setting and any type of contract that you would approve. So we're taking another look at that to see within those parameters what we might be able to do. And then we have another proposal from Edison that's actually pending before me. So I'm going to let Speaker 3 talk about that proposal. But it's also in the feed-in tariff. So that's the world of California and renewables.

Question: I just wondered if you all were focusing on storage to help balance all of the renewable that you're bringing in?

Speaker 1: Yes, actually, there was a bill that our legislature passed this last year that I think is quite good--2514. We work with the legislature on it. And it requires the California Public Utilities Commission on behalf of the investor-owned utilities, and then the municipal utilities themselves to take a look at, I think it's over the next year, whether there should be an energy storage target set for each of the utilities.

So it does not require that the Commission set a storage target, but requires the Commission to look at it, and then if they do, I think there's another period by which they would implement it. I think it makes a lot of sense to have the Commission do that sort of review and understand where things are, and potentially even if they don't have a target to get some more incentives or a game plan. I'm a little wary personally about having a target, because I'm not sure we know enough about storage and how it would fit in. But it is going to require the Commission to do a lot more thinking.

Question: I just wondered if you could see a connection to yesterday's discussion on the smart grid and how real time pricing, with all of this variable generation, could come and help provide some storage to the system?

Speaker 1: Well, this is an area that has a huge level of interest in California, that when you're talking about 33% RPS, and you are talking about the vast majority potentially, at least for Edison, coming from wind and some solar. You've got to be looking at what's going to be firming that up. And that's where we certainly have as a policy goal how we're going to use the demand side to be meshing together. But I personally think that we still have a big gap between saying that we want to use it, and what does the reality mean? And especially for the grid operators. So I personally think it's a huge focus that is needed if you're talking about getting renewable levels at the levels we're getting.

Question: I may have misunderstood your comment about the focus on the niche solar market. I just want to make sure that I understood it correctly? Are you saying that that is a focus that you think is needed because there is not a lot of activity in that kind of midsize market? Is it because you think that the other areas have already been completely saturated on the large scale and the small scale, or just needs your help?

Speaker 1: No, I did not mean that they were saturated, but it was more of where we looked at where we were offering rate payer incentives and help to companies and industries and customers. That was the area that we didn't feel was covered as much as it needed to.

Speaker 2:

The question I was given to answer was, what's going to happen next on climate change. And like Speaker 1, my crystal ball is a little bit foggy. I'm not sure who's going to have control of the House next year. Once you tell me that, I'll be able to tell you a little bit more about what might happen next year, although even there, it's going to be a little bit tricky.

The one thing I do know, though, is that in the long run, we will eventually have climate change legislation adopted in this country. It is a matter of when, not whether. The problem is not going away. The science is getting stronger, and we are starting increasingly to see more and more of the problems that a worsening climate causes. And when you look around and see things like a fifth of Pakistan submerged by flooding, fires in Russia, fires and drought that are causing 20% of the wheat crop to go under, and when I look at my electricity bills and water bills in DC from the horrible hot summer we've had, we're going to see more and more of those types of extreme weather events as climate gets worse. So we will have to address the problem. It's not an option not to do it.

We also need to do it for economic reasons. We're not going to be able to grow a clean energy industry in the US if we don't have domestic demand for clean energy. And if we don't grow a clean energy industry here, we will wind up losing competitively to China and other countries that are putting domestic policies in place to grow their clean energy industries. So it's not a question of [whether]. It's a question of [when].

We've done a lot of work this Congress on energy and climate change legislation. The House passed a comprehensive bill. The Senate Energy Committee passed an energy bill, and the Senate Environment Committee passed an environment bill, but nothing yet has gotten to the floor of the Senate in the climate energy space.

In the lame duck session, when they come back after the elections, it is possible that they will have at least an RES come up for a vote. Senators Binghaman and Brownback, Democrat and Republican, have been putting an effort together just the last couple of weeks to really push an RES. They've stripped the RES that was in the Senate Energy Committee bill, and have introduced it as a standalone measure, and I think now have 30 sponsors for that, including four Republicans. So they are going to try to push for it. They're trying to make it a standalone measure. They think that's the greatest chance for success.

Even if it passes the Senate, I think there's going to be a question about whether the House and the Senate can reach agreement on a bill. The Senate version is weaker than what the House bill is. So I don't know what's going to happen with that. They have very long uphill climb to try to get something passed. And there's going to be a very short time period to do it.

Assuming that nothing happens this Congress, what happens next Congress? And again, that's where the crystal ball is really foggy. People are just now starting to think about what the legislative strategy is going to be for next Congress, and they're thinking, they're kind of looking at options. One option is to continue with a comprehensive climate and energy bill, something akin to what Waxman-Markey did.

The other thing that I've seen in the last week is talk about moving "chunks." Apparently that's a new technical legislative term, "chunks" of legislation. President Obama, in an interview with *Rolling Stone*, said that he was going to continue working on energy and climate policy, but was amendable to moving chunks. Several of the senators have also said they think it might be easier to get pieces through than to get a comprehensive bill through, although I was amused by Senator Rockefeller's response to that, which was, we tend not to be very good at chunks. But then you could argue, we tend not to be very good at big things either. [LAUGHTER] (One of the House's favorite activities is to bash the Senate.)

One of the chunks that's under consideration is an electricity-only bill for greenhouse gases. And I think there are a couple of big questions that will come up if that's, as people are deciding whether to try that approach or not. It was discussed some in the senate this summer when Senator Kerry and Lieberman were looking at trying to get something to the floor. One of the big questions is whether it would be a multipollutant bill or whether it would just be greenhouse gases. The environmentalists, at least over the summer, were adamantly opposed to a multipollutant bill. They wanted it just to be greenhouse gases.

The other red flags that came up this summer when they looked at electricity-only actually came from the manufacturing industry, which I think took some people by surprise. And there were really two different pieces or two different concerns that they had. One was that for some industries, the steel industry is probably the biggest example, they're worried that it would create competitive issues. There is a segment of the steel industry that buys most of its electricity, and their indirect emissions would be covered by an electricity-only cap. There's another segment of the industry that generates all of its own power, so none of its emissions would be covered by a cap. And there is a concern that that would create a competitive disadvantage for the segment of the industry that has to buy its electricity.

The other big issue that they had was that they are not comfortable with the mechanism that the senators were looking at for protecting consumers from large rate increases. What the Senate was looking at was what had been done in Waxman-Markey, which is, you take a significant percent of the allowances and provide them to the local distribution companies. You then tell the LDCs [local distribution companies] that they are required to use those for the benefit of consumers. And anything the LDCs do with that has to be approved by and done under the supervision of the PUC. We felt like that was the best way to protect consumers. That's what the state PUCs are for. That's how the state set it up.

The manufacturing industry does not trust the LDCs or the PUCs for protection. That may come as no surprise to you. They are very concerned that the allowance value that should go to them would get siphoned off to the other types of customers, other customer classes, or that it would wind up in the LDC's coffers. So I think that's one of the big issues that people will need to be looking at and thinking through if we move forward with an electricity chunk.

That's kind of a summary of what's happening legislatively, as much as you can talk about it right now. I also wanted to talk about what's happening regulatorily at EPA, because that's a very major piece, and that is a lot more certain. There will be regulation of greenhouse gases from large sources, particularly power plants, starting January 2nd of this year. Until Congress passes new tools for greenhouse gases, EPA should and is required to, under the Clean Air Act, to use their existing tools. Contrary to some of the rhetoric that's floating around, this is not unelected bureaucrats running wild, grabbing authority, doing things that Congress never intended. Instead, the Agency is doing precisely what Congress told it to do.

In the Clean Air Act, Congress did not limit EPA to regulating specified pollutants or to regulating only those pollutants that have only a local effect or a regional effect or a national effect. Instead, what the Clean Air Act tells EPA to do, what Congress told EPA to do through the Clean Air Act, is that if something is an air pollutant, and the Supreme Court has very clearly said that greenhouse gases are air pollutants, if something is an air pollutant, and the agency determines that it endangers public health and welfare, and the agency has now made that determination. It was required to make a determination one way or the other under the Supreme Court decision. And given the scientific evidence, there is no decision they could have made other than that greenhouse gases endanger public health and welfare.

So if something is an air pollutant, and EPA determines that it endangers public health and welfare, then it is required to regulate. Now, there may be, I would say there is a legitimate policy debate about whether EPA should have that authority. But on the legal question, there is no doubt that EPA does have that legal authority now, unless Congress takes it away. So EPA is doing what it's supposed to be doing, what it's required to do under the Clean Air Act.

Now, we would be the first to admit that the Clean Air Act tools are not the best tools for regulating greenhouse gases. That's why Chairman Waxman and Markey in the House passed a bill that gave them a new tool, a cap and trade program, and took away some of the existing tools. The tools, however, that it does have under the Clean Air Act are reasonable and serviceable. They are tools that have been around for 30 or 40 years. They are tools that allow the Agency, in fact, require the Agency or the permitting authority to take cost into account in setting the standards.

I actually think the biggest problem with the tools is that they aren't going to get the reductions we need as fast as we need them, but they're not, there are some parts of the Clean Air Act that do not allow EPA to take costs into account. The parts of the Air Act that they're using for greenhouse gas regulations not only allow but require them to take costs and economic impacts into account.

But the two programs that are at issue, that they're using, are the new source review program, which I know your industry really loves, and the new source performance standards. New source review will kick in first. It starts in January. It will apply only to large sources. It will pick up power plants. There's no question about that. It applies to new plants and to plants, existing plants that are making modifications. So there will not automatically be greenhouse gas regulations for all power plants, but just for those that are new or making major modifications.

The big question, and this is a big question, is when the permitting authority goes through, and for a new plant, or an existing one making changes, when it has to have the greenhouse gas limit in its permit, the permitting authority has to determine what the best available control technology is (BACT). And in deciding BACT, normally there is guidance from EPA that the state or local permitting agencies can rely on. That guidance is not yet out there. EPA is supposed to be putting that out in the next, soon. I don't know if it will be a week or two, or another month. I keep hearing that it's next week, next week, next week. But they will be getting that out soon, and the big question is, what's going to be in there?

I think one thing that we can certainly count on being in there is a very heavy emphasis on energy efficiency at the plant. Whether it will require more than that, whether they will be looking at fuel switching or carbon capture and storage, we don't know yet. We won't know until the requirements come out, or until the guidance comes out. But if I were betting, I'd probably bet that primarily what it will be is a focus on energy efficiency.

The other program that's at issue is the new source performance standard program. And that's a little bit different approach than what we see in new source review. And actually, the new source performance standards on greenhouse gases will work differently than they do in other areas, or for other pollutants. First, EPA will be, once it starts issuing rules under this, will issue rules for specific source categories and for the source category it will cover new and existing sources that make major changes within that source category. What's different here is that after EPA issues the rule for the new and modified sources, states will then be required within a year to adopt regulations for existing plants. So under the new source performance standards, despite the name "new source," ultimately we will see regulation not only of new plants but also of existing sources. And again, when EPA sets those standards, and then when the states set them, they will be required to take costs and economic impact into account.

EPA has not yet set a schedule for when it is going to start issuing rules or issuing proposals under the new source performance standard. I think that we will see under NSPS, well, certainly, first under NSR, we will see source specific controls or limits. There really isn't a way under NSR to allow trading from one facility to another. Under new source performance standards, historically they have been source specific emission limits that did not allow trading between sources. I think EPA is looking at trying to get a little bit more flexibility and allowing some trading at least within source categories. There are attempts to block the EPA regulation in court. There are four different actions that EPA has taken related to regulation of greenhouse gases. All four are being challenged in the DC circuit, and from what I can tell, they are being heavily lawyered on the side that are challenging them, and I assume will be heavily lawyered both on EPA and with interveners trying to support them. We likely won't see a decision. I don't see any way we'll see a decision on those within the next year.

My guess is it will take more like two years or perhaps longer before we have a final decision on those. And historically, when EPA's rules are challenged in court, they stay in effect until there is a decision from the court. So I would expect in this case to see the same thing, that the rules will stay.

There are also efforts in Congress to block EPA regulatory authority. The first effort, which was a congressional review act resolution from Senator Murkowski failed in the Senate. It would have undercut or reversed the endangerment finding, but that failed, so that's no longer an issue. Senator Rockefeller and Representatives Boucher and Rahall in the House have introduced companion bills that would block EPA regulatory authority for two years, regulatory authority of stationary sources on greenhouse gases for two years. Rockefeller's has been promised a vote on that in the lame duck, although he recently said that given everything that needs to happen during the lame duck, he's not positive that vote will actually happen. He said that even if it happens, and if somehow it were to get on the floor of the House and pass the House, he understands that the President would veto it, and that therefore it is really more of a message bill rather than something that, or a way to send a message, rather than something that would actually stop EPA regulatory authority.

And then next year, I assume, again, whoever's in charge, but particularly if the Republicans take the House, that we'll see a lot more efforts to block EPA regulatory authority, and my guess is that there will be pitched battles over that in the House and the Senate next year.

Question: Just for clarification, could you describe a little more the attributes of the multipollutant bill that you were talking about earlier?

Speaker 2: Yeah, I think with a multipollutant bill, I think what they would probably do is take a cap for greenhouse gases, and then Senator Harper has been pushing a multipollutant that would be sulfur dioxide, nitrogen oxide, I believe mercury. Mercury is still in there. And there may be something, I don't know whether they're looking at something for acid gases. But it would definitely be a cap and trade for SO2 and NOx, which I think would help, given some of the clean air transport rules, the limitations that EPA has on the extent to which they can allow trading for SO2 and NOx. This would take care of that issue and allow more national trading for SO2 and NOx to meet the --

Question: The limitations currently don't allow trading?

Speaker 2: During the Bush Administration, they issued the Clean Air Interstate Rule, which established SO2 and NOx trading programs, or tightened them for the eastern part of the country and allowed trading, just like you can under the acid rain program, anyone in there. The DC Circuit, when it overturned the Clean Air Interstate Rule said that EPA was not allowed to allow trading between states under that particular part of the Clean Air Act, or at least could do it in only very limited ways. So when EPA proposed the Clean Air Transport Rule, which they proposed earlier this year and will finalize next year, their primary option was to allow intra-state trading, and then a very limited amount of interstate trading, which is not their preferred policy approach, but given the constraints of the court, they really didn't have a choice on that.

Question: Thank you for that. What is the magnitude of CO2 reductions that you anticipate from an NSR rule that relies only on energy efficiency at power plants?

Speaker 2: I haven't seen the estimates on that. It will be far less than the 17% reduction we need, that we have been aiming for in 2020. But I don't know what the numbers are on that.

Question: I was going to ask the same question, and I'm not sure that there was kind of this set up that EPA regulation was going to have this interim effect that was going to spur Congress into action to save the industry. And based on everything that has, based on new source review standards, unless they do something with fuel switching, or something fairly significant in exploring some cap and trade mechanisms under the existing Clean Air Act, I don't think the EPA regulation of carbon is going to amount to much. And obviously we haven't seen it. If they say you can't burn coal anymore, and everybody has to switch to natural gas, then that's going to be a big change, but I'm not hearing that that is in the, I'm not sure…if you have any thoughts on the fuel switching issue.

Speaker 2: I'd be very surprised to see EPA require fuel switching. I mean, one of the, in the debate over the Rockefeller bill, and I look at some of the rhetoric on how EPA is a bunch of Gestapos that's coming in and taking over industry, and I look at everything EPA has done or not done on the greenhouse gas front, and it looks to me like they are moving very deliberately and methodically, and if anything, I think too slowly and not aggressively enough, which doesn't square at all with what we're hearing in the, from the senators that are pushing the two year delay.

Moderator: OK. I think we're going to switch gears back to the state level a little bit, and have Speaker 3 comment on people that are actually experiencing all these various policies and regulations.

Speaker 3:

Thank you. I do have the distinct advantage of having a couple of people describe the clarity of the rules and roles going forward, and so now that that's all clear, I wanted to talk a little bit about some of the experiences we have. One of the questions posed in this particular panel was, how much latitude the states have in promoting renewables. And my suggestion is that they have quite a bit. And in fact 37, I think 37 states now have renewables portfolio standards of some form or the other.

[I'm going to begin by] looking at feed-in tariffs. And we've had the advantage of doing many, many different programs, and I'm going to give you some of those insights. Did I get it right? All right, that's great.

So I [have had conversations with developers interested in feed-in tarrifs] and as I explored what that meant, it usually meant long term contracts with fixed prices, an identified buyer, guaranteed transmission access, predefined contract terms, and cost recovery. And that at least in most places meant a federal program through taxation. And so as I explored what that meant with them more, what I really found out was that it meant high prices and low performance standards, not exactly the best type of contract when you're a buyer. But so the question is where do FITs fit in our environment?

And so I tried to think about it, because not everything in Europe fits very nicely in California or elsewhere in the United States. And so my thesis is that feed-in tariffs are best suited for vertically integrated utilities outside of regional transmission organizations, and I will walk you through why that is the case.

The first is, with open access tariffs, there isn't one buyer, and that's a little bit different than where most feed-in tariffs work. [Large buyers buy from all over the place, and not just from projects that are interconnected to their service area]. So multiple buyers. Also retail choice means that not everybody's necessarily paying, unless you're very careful about how those feed-in tariffs are established. So that's another difference. We have jurisdictional challenges, and that's that renewable programs are state run, and transmission access and wholesale prices are federally controlled. So when you talk about guaranteed access, you actually have some jurisdictional problems, or even streamlined access can be problematic as what we've seen is very large runs to go after the queues, both in the large generator interconnect and the small generator interconnect.

So everything that you would hope to have established through a feed-in tariff can be problematic as you try to implement it in a place where it doesn't necessarily make all that much sense. So it can be done. It's just something different. What they call feed-in tariffs I would just call another form of contract, and you have to try to make it work in your particular environment.

So to address the PURPA issue, I've got a couple of different options, and this is what part can the state play in regulating and being involved in feed-in tariffs? And so on the left we have avoided cost and competitive prices. And across the other categories, you have with PURPA and without PURPA. If you have PURPA, then you have avoided cost, and that's one option that the states have. However competitive prices also can be used to define avoided cost, and there's nothing wrong with that. It fits very nicely within PURPA.

But we also have the possibility of no more PURPA. With the Energy Policy Act of 2005, some utilities do have the ability to eliminate the mandatory purchase obligation under PURPA, so with avoided cost, you still have the ability to set prices under PURPA for projects less than 20 megawatts. And there's actually a pretty significant burden for utilities to prove that they don't have access to markets. And so what that requires is each individual project the utility would have to go after and say, this project has access to the market, or it doesn't. That's a big burden. It's different if they're greater than 20 megawatts, where the projects themselves have to, and the developers have to prove that they don't have access to markets. And so there the burden is placed on the project proponents themselves.

So that's what it looks like, and it's a little bit complicated, but you can use avoided costs outside of PURPA, at least for projects less than 20 megawatts, and there's a pretty good, at least from my experience, a pretty good way of making that work.

However, competitive prices always work outside of PURPA. And in fact, they *must* govern, because that's where the states simply don't have the pricing authority.

So [to use Southern California Edison's programs as an example], I put Southern California Edison's programs here. I'll to keep this very simple. Southern California Edison has at least two programs. They have the voluntary feed-in tariffs in the middle, and their renewable portfolio standard. In California, by the way, there's an S, so it's renewables portfolio standard, a little bit different than everywhere else, I think, in the country.

But the way I would describe it is that the contract terms and prices float, and the program quantity is relatively fixed. For voluntary feed-in tariffs, Southern California Edison has contract terms and quantity that are fixed, and prices that float, and for typical feed-in tariffs, the contract terms and prices are fixed, and the quantity floats. And I think that's probably the simplest way to describe it, although these are very, can get very complicated as you look at couple of levels down.

The biggest problem Southern California Edison has with feed-in, the typical feed-in tariffs, which they have seen as they have implemented some of them in Southern California, is that when you are picking a price first, you will most certainly get it wrong. And it will either result in oversubscription or undersubscription. So you have to be prepared for that. And so the reason for voluntary feed-in tariffs is to have them as bid, and so that's a way of both making sure that the quantity and price synch up, that you're not either overpaying, which is to the detriment of customers, or underpaying, which will serve no one any good, because you're going to get no renewable project built.

So I got a little benefits and drawbacks [list]. I won't go through that. I'll leave that for some of the questions later on, if there are any. And give you some evidence of what's going on.

So the question was, what latitude did the states have. And here's some results showing that these states have a lot of latitude. These are just for Southern California Edison. You can see from the renewables portfolio standard Southern California Edison has contracted 8,900 megawatts through competitive procurement. So this is ones that they do take a fairly long time to do. Most contracts take about 12 months or so to put together. Remember the terms and the prices are both negotiable. So those things are floating. It's not ideal for some of the smaller projects, and that's why Southern California Edison created their own voluntary feed-in tariffs, simply because the administrative burden on many of the smaller projects kept them from participating in Southern California Edison's solicitations.

You can see that Southern California Edison has signed 36 contracts, and the average contract, capacity for contracts is about 247 megawatts.

So these are very large projects. Many of them have optionality associated with them, so they have expansion options, or the online date may float based on transmission availability. These things cannot be done. They're very custom, because they need to be custom for that size project.

In the voluntary feed-in tariffs category, there are 46 contracts. Average capacity is about six megawatts, so these are much smaller. They include some rooftop solicitations, as well as some variety of other projects across all renewable technologies. And so I do expect that this is going to grow considerably, even in the next couple of weeks as there is a new solicitation that has just come in, and they have received quite a bit of competitive prices through that program.

The mandated feed-in tariff --that's where the price has already been set. Southern California Edison has one contract for 1.1 megawatts. I don't see this growing very much. It's just, it's not the right combo. The biggest issue with the mandated programs is, you go through regulatory process to set contract terms, and in order to change them again, you have to go through another regulatory process. So they tend to be relatively inflexible. The advantage of the two bars on the left, and I have to recognize that Southern California Edison is a very willing buyer, so they are constantly trying to modify their contracts to make sure that buyers and sellers are finding common ground. And so they were able to maneuver those a little bit more quickly than they do through the regulatory process.

So what's my suggestion? The first is that feed-in tariffs really play a complimentary role to broader renewable programs. The large scale solicitations are best for the largest volumes. When you take a look at our overall contracting since 2002, the top five contracts probably constitute about 60% of the total volume. So it's really the large projects that bring the volume. The standard contracts catch all of the smaller ones that probably wouldn't participate in these large solicitations anyway, so there is a role for feed-in tariffs. The less than 20 megawatts can still fall under PURPA almost in any scenario. So I think there is an advantage to having a no negotiation of terms, predefined performance standards, and just letting the developers price that into their bids, and then hold them to their bids. We do suggest competitive pricing for all programs that at least deals with the oversubscription/undersubscription problems that you have if you try to predefine the prices, and multiyear goals, which allow some flexibility so that you're not tied to whatever you get at any price using the competitive processes. So that's kind of a probably three levels down from my colleagues here, but it gives you a little bit of the insights of a practitioner in this particular space. That's it. Thanks.

Question: Would the feed-in tariff program that Speaker 1 I think mentioned in terms of doing the 1,000 megawatts over the next two years, would that fall under the second category? And would you qualify, do you think that's a feed-in tariff, the one that uses the renewable option mechanism?

Speaker 3: Yeah, so I think that fits very nicely. I think this is something the California Public Utilities Commission has done using competitive prices in order to price the feed-in tariffs. So I think it fits very well with the recommendations I'm making here. One area where it's a proposed decision that's out there, and we've been a little bit critical, is that the Commission has set a price cap. And when you set the price cap out there, it does encourage the bidders to not behave. And they will try to bid relative to the cap, rather than relative to each other. And so it does have an impact on the market, and it's almost instantaneous. You can see those prices change immediately if you're active in the market. And it's not something that we support, but we do support the RAM FiT proposal that, as a pricing mechanism that the Commission has established.

Moderator: Just so folks know, can you just say what the RAM, I know what it is, but it's an acronym that may not --

Speaker 3: Yes, it's a reverse auction mechanism. It's a competitive solicitation to set the pricing.

Question: Two questions, one is with the competitive bid process, it looks a little bit more like an RFP more than a feed-in tariff. So if you can explain to me a little bit of the, how that works as a feed-in tariff. And then number two, listening to Speaker 1 and all the things that you guys have got going on in California from the solar rooftops on down, what problem is that feed-in tariff solving for you? Is there a section of the market that's just not responding that the California Public Utilities Commission and you all have identified? And how is that feed-in tariff addressing that problem?

Speaker 3: So I think that's exactly right. So the first question was, are broad competitive solicitations--how is that a feed-in tariff? And I would say it's not. That's not the point. But what it does do, that provides really the significant volumes that are required to meet the goals that the state has set. That's where the bulk of all of the volumes comes from. They come…Southern California Edison has signed 1,500 megawatt wind contracts, 900 megawatt wind, 1,300 megawatt solar. When you're doing that large of a contract, it has to come with a lot of flexibility. It doesn't fit within the FiT very well, if that makes sense.

The second question was about feed-in tariffs. I mentioned that they do present a complimentary role to the volume procurement that is done through competitive solicitations. And what happened is, as Southern California Edison started going after these very large contracts, many of the smaller ones would drop out, because it was administratively a burden. It takes as much time to do a two megawatt project, a contract, as a 200 megawatt contract from a legal fee standpoint.

And so what is done with feed-in tariffs is at leasst try to pre-establish those contracts, so it's administratively less burdensome, both for us, the developers, and for the Commission to approve them. And so it is addressing that element of the market, and so that feed-in tariffs are ised for 20 megawatts and less, and also includes the solar rooftop program, which is just another form of feed-in tariff for very small scale rooftop solar programs. The main focus there was to get development early that didn't require transmission, because most of the projects in California are transmission constrained. And by doing the local rooftops, it opened up earlier development.

Question: My question relates, I think, a little bit to the last question, which is, with the bidding, are you meeting the needs of the developers who are looking for a very easy way to sort of plug and play, as it were? What is the feedback you get from the folks who want to be the recipient of the feed-in tariff?

Speaker 3: So we listen to developers as we develop the contracts themselves. So we have prebidding conferences, and we spend a lot of time up front trying to make sure that the standard contract works. But we've received very positive responses from developers, usually the ones who win, by the way. But actually, even the ones who don't win very much appreciate our process. And what we've seen through our processes is the number of proposals has doubled every single year. So it has actually become very competitive in California, and part of that is due, I think, to listening to developers and their needs.

Question: So the prices that result from the auction, they are not feeling like those prices are too low to meet their needs?

Speaker 3: They are proposing them. So that's, they have to live with them. And in the feed-in tariff program, because they are so small, the contracts are so small relative to our overall portfolio, you have to manage and administer them and hold them to their prices, because it's just not worth the effort to do anything other than that.

Question: Is there any concern about rate impact for other customers? Or is it because this volume is small enough, it's not significant?

Speaker 1: I'll say in the California Commission there have been significant concerns about just adopting wholesale. I mean, the Commission gets pressured all the time to do, OK, there's Germany, and there's Spain, and they're getting all this solar. So just do the same thing. And at a commissioner level, they are very concerned, because that can result in very high rate impacts, and you're not driving the market costs down in the way you want to.

So what we're trying to do is to get the fine line between having prices and certainty and the contracting process sufficient enough that developers can come in, but that we are also protecting rate payer interests, because unlike energy efficiency, renewable do increase rates. And new transmission lines, they may provide benefits, but they have rate impacts. And when you're talking about going to the level of development infrastructure we're talking about, it's talking about having rate impact. So Commissioners are pretty darned sensitive to this. It's not just a wide open door. So that's where they look very closely, and I echo what Speaker 3 said. What's looked at is are people participating? Are they getting robust responses to these competitive solicitations? And are they using a competitive process?

Speaker 3: So I have to tell you that the Public Utilities Commission is very supportive and has been helpful throughout the process.

Question: I was trying to parse the numbers there, but this is 8,900 megawatts, but this is megawatts, not megawatt hours, renewables. What's the capacity factor? Because that's a lot, 8,900 relative to the peak of the system. What's the capacity factor for that?

Speaker 3: Well, you know it really depends. That's a grab bag of different technologies. You know, geothermal produces at 90% or more. And if you look at our overall portfolio, about 60% of it comes from geothermal. I would say most of the contracting we've done is wind and solar from a capacity standpoint. So those are going to be on the order of 30% or so.

Question: But most of it is geothermal?

Speaker 3: Most in the existing portfolio is geothermal. It's about 60% of the portfolio, of the renewable portfolio.

Question: Megawatt hours.

Speaker 3: Geothermal, that's correct.

Question: Not megawatts.

Question: I have a clarifying question. We have a process in Colorado which sounds similar, although I think our prices are a little bit, our payments are a little bit lower as I understand them. On your small system FiTs, are you paying that on a performance basis? Or are you paying it on a capacity basis? How does that work?

Speaker 3: Everything's on delivered energy.

Question: So all of it's metered?

Speaker 3: Yes.

Question: In Colorado, we pay a certain amount per installed watt. It's $2.40 at the moment, using a projection of output over the 20 year life of that. That's how we do it, and it ends up being, these are net metered customers, and so they're actually getting the benefit that way.

Speaker 3: So that's a slightly different program. We're not talking about the net metering. That's a separate program that we have in California. These are all wholesale deliveries with Southern California Edison as the buyer. So a little bit different. And we have quite a bit going on in the, that's the California Solar Initiative that's taking place in California.

Question: But all of your small systems are performance metered and performance based.

Speaker 3: Yes, every contract is paid based on deliveries.

Speaker 1: Again, to clarify, we have 1,000 megawatts coming in under the type of program you're talking about. This is on top of it…3,000 coming in.

Speaker 4:

I'm not sure I am really going to use the PowerPoint presentation. It's got a lot of very small graphics on it, which I don't expect you to actually be able to see. They're more for ambiance. Maybe if I hand them out, they're worth something. I think it's easy hearing Speaker 1 and Speaker 2 talk about the complexity and uncertainty in the future to get a little depressed thinking about the future of renewables and climate policy.

And there is certainly I think a really risky period coming up for us. On the other hand, on the plane up here last night, I happened to sit next to a woman, a VC investor from California who had been in DC working on policy, and was coming up to Boston for another conference today on climate and clean energy. So there's a lot going on in the space. And without a doubt, I think we all sort of take this for granted in this discussion, but it bears saying that climate is a really big challenge. It takes a lot of solutions on a really enormous scale, and renewables are going to play a critical role in that.

Efficiency: obviously, the cheapest, fastest, most important thing we can do to reduce all sorts of pollution and keep our economic strong.

But we also are going to need renewables. So we need to figure out how to make them work. And we've been lucky for the last five years or so, well, going back now a few years, before the economy started to tank, we really have experiences some really impressive growth in the renewable sector. And it was very encouraging and added a lot to the system. But we're really, I think at this point, looking, as I mentioned, at a pretty serious rough patch ahead, unless we take some serious policy steps.

Everything (and again, don't worry about trying to understand all these little graphics) but natural gas prices obviously have come down substantially and are looking like they could stay low for quite a while, and that makes renewables look much more expensive compared to the alternatives.

The economy has taken the wind out of a lot of people's sails in very serious ways, not least of which, just taking, reducing the growth in demand, and therefore the need for new power also, and I think we heard it from Speaker 1 expressing concerns about rate impacts. Obviously all regulators, even in the best of economies, are concerned about that, but the ability to accept high purchase power agreements, or purchase power agreements with high prices, I think is probably at certainly at a many year low right now.

And really, the major policies that have pulled the renewables sector through, particularly the federal policies that have pulled the renewables sector through the last few years, and have done a pretty amazing job at keeping it vibrant, considering how bad the economy was, are pretty uncertain right now, not the least of which is the Treasury grant program, which is in a state of uncertainty right now.

And then there's a host of challenges across the country that are somewhat individual to the geographic regions, some of which are, can be, you can describe them as renewables being a victim of their own success to some degree--integration challenges, permitting challenges as some of the easiest, lowest environmental impact, least controversial sites have been taken up already.

But every state is a little bit different, and so you really do have a sort of a patchwork of challenges for the industry to face. I would highly recommend, and a lot of these graphics come from Bloomberg New Energy Finance's presentation, I think, in front of maybe the House Committee on Energy and Commerce. I'm not sure. Just recently, in any case. The website's on the slide if you can get that offline, and it's a great deck with lots of interesting stats about where we've been and where we're going. And this is another set of graphics from that.

But I think there's a really interesting story, and every time I talk to anyone who's following this sector, we end up talking about China quite a bit. And two stats here, in the top one, China's at the top, is the largest investment. It's a new asset build, and China's just taken away the prize hands down. We're not even investing, building out as much as the UK, which is kind of an astounding statistic to me, given the size of those two economies. On the other hand, and maybe that's why I happened to run into a VC person and not an equity investor person last night, we do really well in VC. We're innovating. We are really driving the sector forward on new technology in a way that a lot of the rest of the world isn't. They're building it out, they're putting it into action. We're creating the new technology.

But what I take away from the discussions that always come up about how fast China is building this out is how they're getting to that level of development. And it's not that they are doing one silver bullet piece of policy.

Absolutely a climate bill is, as Speaker 2 put it very rightly--it's not whether, it's when. We absolutely have to get an economy wide cap on our carbon and investment in clean energy in a green economy. But that alone is not going to solve or make the United States a winner in the race for a clean energy economy, or build out our renewable energy sector at the scale that we need it, at the pace that we need it. It's going to take, I would not really use the word so much "comprehensive," because I don't see the political will for a comprehensive industrial policy in this country. People shun me when I even use the term "industrial policy." But we need a multifaceted approach. We need to come at the issue of renewables and climate at every level. We need to have federal policy absolutely. We need to have state policies, absolutely critical. We need to have local policies. And they need to be all different types of policies. It's not just deployment policies. It's manufacturing policies. It's job training. It's economic development that's really about clean energy economic development. We need to be sort of throwing the whole kitchen sink at the sector. And that's what China is doing, if you look at their mish-mash of policies.

So that's what I want to just tell you about, a little bit about the mish-mash of stuff that is happening now and needs to be happening now at the federal and state level.

Obviously, again, climate regulation, I just can't say how important that is. Right now, Speaker 2 pointed out how critical EPA's ability to act is. It's not going to solve the problem, but if we don't have at least that going on, then there really is going to be very little impetus for anyone to try to negotiate on this. And I think both from it, the down payment it makes, and almost as importantly, the political, the fire it puts under the political feet of folks to keep working on this, I can't say how important that is.

Renewable electric standard, Speaker 2 mentioned a snowball's chance in LA, and it snowed there last year, even though it was 113 last week. So some chance, but not a lot, that we'll get that passed. Targets aren't high enough. The biomass definition is really nowhere near strong enough. But I don't think we can underestimate how important it is to the industry, both the utility industry, the transmission industry, and obviously the renewables industry to have that certainty going forward, that at least sort of business as usual is going to keep happening.

And I mentioned the Treasury grants earlier. We need to get an extension of that. It's a short term fix, but it's a critical one. We need, after the Treasury grants, really to figure out what the long term fix is to the tax equity market. About, I've heard numbers anywhere from 10-50% of the value of tax equity ends up in the tax equity market, in the bank's pocket basically. So we're spending, or forgoing a lot of federal tax dollars, our tax money, in a very important but very inefficient tool right now that we I think could do a lot better if we either found ways to make that market substantially more liquid, or found some other tool, and there may be other tools that could accomplish the same thing.

Loan guarantees and other financial tools, particularly for this, the innovation pipeline. There's a lot of talk about the Valley of Death between what you can do in the lab, what you can do at the pilot scale, and then getting that first or second commercial scale facility out there for new technology. That Valley of Death is a totally standard and important market screen, so we don't waste a lot of equity dollars on crummy technology that doesn't really work. But if we want this sector to move fast and grow quickly, we need to figure out ways to speed and help technologies through that Valley of Death. So this is I think a very appropriate public policy intervention point. If we decide as a public policy need, which I hope we all agree, that we need this sector to move quickly.

A lot of agency problems at the federal level. BLM [the Bureau of Land Management] has no organic authority to regulate renewables on BLM land. They are using right of way policy that was designed to build ditches back in I think the 1930s--no, actually, 1890s, I think. It's totally nutso stuff. And that's, they can give what they can, they're using that authority to let solar projects and wind projects on BLM land. They can take it away just as easily. It's a totally inappropriate way to be regulating and permitting and siting renewables on federal land.

The agency formally known as Minerals Management Service, I can never remember what it's called now, has publicly said that their permitting process for offshore wind power for a greenfield project will take nine years. Everyone knows and bemoans the length of time that Cape Wind has taken--ten years now. The agency's new regulations will take nine years. That's just, it's not protective of the environment. And it's not any way to get an industry built out. So we need, there's a lot of the federal regulations, agency regulations.

And then we really need to introduce a much more sort of sweeping set of policies around manufacturing incentives. Let's get job training, industrial manufacturing incentives out there to really continue to drive forward that engine of innovation that we have already.

Transmission policy, renewables integration policy more broadly, storage. We talked a little bit about that earlier. Is it a demand response? It is a load balancing? Is it a transmission asset? We've got to figure where it fits, and we've got to encourage it, because we need it more.

So that's a sort of shotgun approach overview of federal policy.

The same sort of picture at the state level, a real mish-mash, but that's what we need at this point, and given the real I think shakiness of our political system these days, and particularly how difficult it is to get anything done in the Senate, and with a lot of states under a lot of economic strain, I think it is important to be really thinking about sort of the kitchen sink approach to this. Let's move a lot of stuff forward, because only some small amount of that spaghetti will stick.

Renewable portfolio standards, or renewables portfolio standards, critical. We've got to get that 33% in California.

Low carbon biomass, and the fact that we're here in Massachusetts, I feel that it's important to highlight this, really cutting edge thinking going on in biomass here that really needs to be propagated around the country. Biomass is a double edged sword and can easily undermine a lot of the carbon benefits we're trying to get from a renewables policy. We've got to figure out how to get it right. We can, but it doesn't happen intrinsically in the marketplace.

Regional low carbon fuel standards is sort of the fuel side of the picture. We're not really talking about that today, but I just, it's my personal area of substantive expertise, so I always throw it in there. Finance incentives, tax credits, the whole package of voluntary feed-in tariffs, mandatory feed-in tariffs, all these sort of tools that we have. I actually think that states can obviously purchase power. That's a critical tool that they have. They can also really, actually, states are, even with our constrained budgets, you can make a dent on the cost of a pilot facility and really help innovation, either through your universities, or just through direct investments in those pilot projects. A really big pilot project might only cost $5 million, and a state, with a grant or some investment tax credits can really make a big difference on that sort of a cost.

And then the whole clean energy economic development, whether it's clean energy development parks, or real estate tax breaks, or investment tax credits, giving energy, free energy efficiency audits and investment tax credits is a nice way to give economic development aid that actually also improves the efficiency, improves the efficiency, improves the economic competitive of the industries in the states, job training, regional low carbon transmission planning, and environmental impact analysis and the REDI process from California is a really top notch example of that. It's unfortunate it doesn't seem to be getting used as much as it should, given what a smart and thoughtful process it was.

Last, and just to give a pitch for a piece of policy that I think fits into this sort of a, let's think comprehensively, or at least broadly in terms of the policies, a solar policy, solar bill that we've been working in New York, really trying to integrate or bring together a package that would help both everything from large scale utility owned independently owned, and small scale or midscale and small scale solar, using a, setting a requirement, trying to get to five gigawatts in New York by 2025. I think it's about 2 1/2% of load from solar. But you can see we're trying to get it from all the different parts of the solar market.

Don't bother trying to read this now. Again, hopefully, we'll pass it out. But a lot of the parts of it were used SRECs [Solar Renewable Energy Credits], we used feed-in tariffs. We used requirements on the utilities. We allowed the utilities to invest in a certain part of the, for a certain amount of this to own and operate. Really just trying to bring together all the tools, what we've learned from the leadership in California and New Jersey, in Massachusetts, and bring those tools. So hopefully the rest of the country can start to play catch up.

Question: Thank you for your presentation. Just a quick question, because I get calls literally every week from Capitol Hill with regard to negative LMPs [locational marginal prices], basically wind running in the middle of the night, at times when it's not needed, solely to get the Treasury grant or the successor to the production tax credit. How is your office dealing with this issue, and sort of some of the perverse incentives that are being created because of that structure that we've got, we had with the production tax credit and now with the Treasury grant?

Speaker 4: Well, we have probably the most, the largest team in the NGO community working on transmission, from our folks in the land community out in California. Obviously we were part of the sustainable FERC initiative. So I think the right solution, and ultimately the most important solution is to figure out how to build out our transmission system in a sustainable way, so we're not putting transmission lines through sensitive areas, not building out more transmission than we need.

Question: I'm sorry, my question didn't go to transmission, though. It went to the production tax credit and wind running in the middle of the night on the grid, and negative prices, basically. That's what I'm getting at. Has your office dealt with that issue? Because that's becoming a bigger issue. It's more of a storage issue. There's no place to put it. Right. And the incentive tax structure incentivizing people to put wind on when it's not needed.

Speaker 4: No, I don't think we have dealt with that.

Question: Take a look at it.

Speaker 4: Yeah, OK.

Speaker 2: I will say that I know, having been involved in New York, in the New York legislation that Speaker 4 mentioned, people that you would have thought would have been supportive, just generically, we didn't get too far in the conversations, which would be independent power producers, actually felt very threatened by having a raised RPS because of that issue, because clearing prices are at zero anyway, and they're threatened by more generation being brought online.

Speaker 3: One solution that some have posed is investment tax credit rather than production tax credit, so at least you don't go to minus 30, because minus 30's about where many, what many of the wind developers are willing to go to and still produce.

Speaker 4: I would say—and there is some role for investment tax credits--I worry about investment tax credits. I think we can look at the current grant, Treasury grant program and its impacts on the capacity factor of projects that are coming on. It's degraded them, and there's no doubt about that. So we're not getting as high quality projects as we were when it was a pure production tax credit. So you might solve one problem and end up spending a lot more for less, lower quality projects. I think, I haven't heard about this as being a major policy problem.

Question: What's the degradation?

Speaker 4: The capacity factor of projects coming on today, versus before the market.

Question: What about the investment tax credit?

Speaker 4: Yeah, it's a grant up front.

Question: You get it just for coming online, but they don't have to run.

Question: I have two very short clarifying questions. But first I want to say that I hear that MISO has had to curtail wind 1,600 times so far this year--manually, and 1,100 times last year. This is a huge problem.

OK. My questions are, just for the New York solar bill, where does that stand, and who's, and that kind of thing? And then secondly, on the Minerals Management Service, or whatever they're called today, is anybody actually doing something about this insanity about nine years to permit for off shore wind, when in England, or in Europe they do it quickly?

Speaker 4: Right, thank you. Thinking about your first thing, which is, this map actually does I think a good job of capturing where this transmission problem is a real critical bottleneck. On the New York bill --

Question: It's not a transmission problem. It's a, there's too much wind in the system, and therefore you have the negative rates. And the tax credits.

Speaker 4: Right. I mean, I think that acts as a bottleneck to bringing more on, right? Because we don't want in these states --

Question: No, because the tax credit goes to anybody who puts it on.

Speaker 4: Building new projects?

Question: It's not a problem for the producers of wind. It's a problem for the independent system operators.

Speaker 4: Right, but I think it ends up being a problem for the producers trying to build new projects in these states.

Speaker 3: There's no place to put it.

Question: They're still getting paid. They're still getting paid. The producers are still getting paid. So they're going to still build unless the system changes on how they got paid.

Speaker 4: Right. OK, on the New York bill --

Moderator: Who's the sponsor of the bill?

Speaker 4: I don't remember the sponsor's name, but it didn't get passed this year, but it got very close. And I think the assumption is that we have a good running shot, depending on what happens in this coming year with the election and what not. And then the other thing is, we're hoping to use it as a model bill in a lot of states that haven't adopted sort of comprehensive policies. Would you say that's maybe too optimistic?

Speaker 2: No. I guess I would just--we were heavily involved as well with NRDC and others. I would just say that we saw a window of opportunity in the spring and tried to take advantage of that opportunity, meaning they weren't getting anything else done in New York, no offense to anyone that is from there. And it was brought to our attention that it might be a good thing for the election process if some legislators had a victory, a positive thing to say that they passed. So within, I don't know, 12 weeks time, we worked hard, but we had more work to do with some of the utilities and the IPPs [independent power producers] that I mentioned in others. So we got pretty far, and a lot of education. But didn't quite have enough time to get it out before they got out and got tied up in their budget nightmare.

Speaker 1: Could I ask, were the consumer groups supportive?

Speaker 2: They weren't necessarily involved at that point.

Speaker 1: I'll just throw out, and I know this is out of order, it's really important to bring in the consumer group. They're paying for all this stuff, and especially to our environmental friends, talk to them.

Speaker 4: Oh, we do, we are, and the balancing act that we're trying to do and working closely with offshore wind developers is, how do we rebuild the ship of MMS regulations without going back to Ground Zero. The regulations we have right now took three years, I think, to get in place. Maybe even longer. They were part of the 2005, so it's more like four years to get in place. We don't want to start that clock all over again, especially for projects that are going. So how do we get them to change their approach? And I think a sort of critical part of it is going to be combining steps like marine spacial planning, where you figure out where your, which zones are sort of safer and which ones are really more risky. New Jersey's got the most comprehensive baseline done already, so they're sort of in the best position to do this. It seems to have stopped there. We're not quite sure why they haven't taken that baseline and proposed some zones. So that's the sort of balancing act we're trying to do, but we are absolutely in there trying to do that.

General Discussion

Question: Thank you. I have a question for my friend, Speaker 1. Speaker 1, you said something that jumped out at me, which is that the legal purpose of the three new transmission lines in California is to carry renewable generated power. That begs a whole lot of questions for me. As we all know, electrons obey the laws of physics, and not necessarily the contractual agreements. What measures, if any, are there in the law to make sure that renewables actually flow, renewable generated electricity flows over those lines, rather than non-renewables, or at least in preference. I'd like to know what the criteria are. And what measures does the law take to make sure that happens? What restrictions are there, if any? And then what enforcement provisions are there?

Speaker 1: Well, the great news is, we have changed the laws of physics in California. [LAUGHTER]

Speaker 3: We repealed those a long time ago.

Question: You must have gotten Dr. Rosenfeld to do that, right?

Speaker 1: Right. That was, thank you for bringing that up, because that was probably too much of shorthand, but in California, the Public Utilities Commission (PUC) actually look at when they are asked in their permitting procedures, their certificates of public convenience and necessity, CPCNs. They look at transmission, proposed transmission line need through three separate lenses, through reliability, through economics, congestion relief, and then the third one is renewables, in order to meet California's renewables goal. And they actually have these as specific criteria.

And without going into all the complexities of the law, the PUC can look at things in terms of the renewables, and they can permit something based on a need for the line, even if it were not needed for renewables or economic congestion.

But in general, and I think this is true for all the lines, the PUC has found a multiple need for the line. So they have not, there has not been a legal test of, could the PUC permit a line that was not needed for reliability, was not needed for economics, and was solely needed to meet our RPS. So I think that that would withstand challenge, because we are so clear on our renewable need, and the PUC has something called back stop rate making authority, that if FERC does not allow CalIso to recover the cost of the transmission line that the PUC has found needed to meet our RPS, the local utility is allowed to put it in distribution rates. And that's called our back stop permitting authority for transmission.

So the sort of flip side is for the three major transmission lines that the PUC has permitted in the last couple of years, Sunrise-Tehachapi and Devers-Palo Verde, they were all found necessary in order to achieve the state's renewable goals. The PUC thought about it, but they did not try to require an actual attachment. They must carry renewables, because the PUC has not changed the law of physics.

And it varies for each of the lines, but for example, Tehachapi is being built out into an area that is rich in wind and some solar resources, and so there is a great deal of permitting going on, and certainly Edison is monitoring this, and the PUC staff is monitoring it as well. And the same thing with the Sunrise transmission line. It will access projects in the Imperial Valley in California, which are very rich on geothermal and on solar, and again, the PUC is following closely where is the permitting going on? The PUC has not to date set a specific requirement that there shall be preference given, but I think, I'll say at this stage, they are feeling comfortable that they are getting the projects coming into the contract process, hopefully then coming online, because they're seeing the larger ones starting to get their permits that will then be filling up these transmission lines with renewable projects.

But the PUC is in unknown legal territory. They are in unknown whatever else territory of, what if we ended up at the end of the day with these lines, three major new transmission lines, not carrying renewables and in deep trouble on our renewables portfolio standard, and carrying fossil fired power. I don't see that happening. I think that we're OK. But it's an area that nobody has figured out where that legal boundary is of what the PUC could require or not require.

Speaker 3: So just to add on to Speaker 1, while she mentioned appropriately that the basis may be for renewable power, we do have open access tariffs. So anybody who wants to interconnect, we have to interconnect. Now, when you're building out to Tehachapi, if you're ever been out there, it's wind turbines for miles in every direction. So it's highly likely that most of the power will be renewable energy. But there's no guarantee that it must be, and no requirement that it must be renewable energy.

Question: I have a lot of questions to ask, but may I ask one question to each panel?

Moderator: Two questions.

Question: OK, two. Well, I would have liked to have asked Speaker 4 a clarifying question, but that can wait. So for Speaker 3 and Speaker 1, going back to California, maybe more specifically to Speaker 3. When you procure renewable energy, like you were just mentioning, do you do it by capacity and then divvy up by technologies? Or do you think of a generation amount, and then you calculate what the capacity would be for, say, wind, solar, and then geothermal and do it that way? I'm just kind of curious how that process works.

Speaker 3: So with everything I have a multipart answer, so for our bulk renewable competitive solicitations, we're technology agnostic, so we're really looking for what's the lowest and what we search for at the lowest renewable premium. So we take a look at all of the offers that are out there, regardless of technology, subtract out all of the benefits that might come from energy and capacity and all those other goodies, and come up with a renewable premium, and we try to find the lowest cost. But we do have a solar rooftop program, so that one is very specific. Well, it's not so specific as to say what type of solar, but it does specify a special carve out in that particular solicitation. So the answer is yes on both.

Question: Because it looks like in the RAM [renewable auction mechanism] process, they're going to do it by different categories. It's going to be non-peak, peak and base load, if I'm not mistaken. Is that somewhat --

Speaker 3: I don't think that's a huge difference from what we've done. So I'm not anticipating that that will be a constraint within the solicitation. Of course, Speaker 1 might disagree with me.

Moderator: But she can't say that right now.

Question: My second question goes to Speaker 2. Going back to how, you said the House will probably revisit the climate bill. And just given the heat that a lot of the Democrat members are getting now in the elections because of voting for Waxman-Markey, I mean, how do you think, I would assume if any bill comes out, it will go more to the center, or even slight to the right, and one probable way of that happening perhaps is with an RPS that adds nuclear as a compliance source. Do you see that as being a real possibility in terms of trying to get more votes, or at least something passed in the House, just looking at the RPS portion of it?

Speaker 2: Well, first, let me point out that for the 1990 Clean Air Act amendments, which took about ten years to get through Congress, that those got progressively stronger as they went along, and just one in particular.

At one point, Congress or Chairman Waxman was supporting something that would pay for a lot of scrubbers, so that we could meet the acid rain requirements. The utility industry turned him down on that, and they wound up, when the '90 amendments passed, that it had a tighter requirement on acid rain and no money to pay for scrubbers. So I don't think the assumption that things will get weaker as it goes along is necessarily a good assumption.

One of Chairman Waxman's principles on legislating is that when you compromise, you don't compromise on your principles. You compromise on how you meet those principles. So again, I don't think it's going to be getting, I don't think it will necessarily be getting weaker.

Chairman Markey, I think also Speaker Pelosi, would have I think very, very serious concerns about putting nuclear energy in an RPS and making it more like a clean energy standard. If you cap carbon, nuclear has a benefit that way, and there were some other provisions in there to help nuclear out. But I mean, I think a big question for next Congress, assuming that the Democrats keep control of the House, I think the big question is going to be, what can get through the Senate. I think that's probably going to be the focus since they were unable to get anything through, or it looks like they were unable to get anything through this year.

Question: I have a proposition that I'd like to get a response from the panel, and it starts with Speaker 2's premise that it's whether, not when, [rapporteur: this was probably intended as "when, not whether"] in terms of climate and greenhouse gas emissions that we need to deal with that. I agree with that.

But I do think when is important, and I would argue that two examples of prominent policies we have here are deeply evil. So one policy would be the EPA process, where we're imposing bureaucratic costs, and there are other kinds of expenses, accomplishing almost nothing, and providing comfort to people who want to delay, because I say, somehow that will provide the second best way of approaching the problem will help us get there. And we have to keep pushing this.

I would argue that RES standards are deeply evil, at least for a long period of time, because what they do is hide the costs associated with what's actually going on here, and produce counterintuitive and unintended consequences.

So for example, one of the things that's happened in Europe, according to many studies, which I think were actually quite right, is pointing out that if you have a program with relatively modest, it doesn't take huge numbers, relatively modest out of market purchases, and you pay a lot of money for something that's out of the market, and then you dump it into the market at low cost, then that tends to depressing the energy prices in the market, which then creates things like increased demand for electricity. And so it works in the opposite direction of what you're trying to achieve. And that's actually happened, if you look at the studies in Europe. Because of the solar tariffs and all the other kinds of things that they've had.

And we're not going to solve this problem dealing with greenhouse gases in my view until we get ready to eat our spinach. So this, trying to pretend that there's a cheap and easy way to get this problem solved, I think, is delusional.

And my own view is that dealing with climate change is going to be expensive, but it's worth it. And until we start sending that message and focusing on doing it, so that your first priority there, which is the carbon cap across the whole economy and all that kind of thing, that's what we really need, where we start charging people for producing carbon, not subsidizing people who don't do it, and then they're creating all of these unintended consequences. And I think that the second best strategies are actually counterproductive. And I think it would be better to abandon them and argue against them, and focus on what we really need, which is this carbon cap across the whole economy.

Speaker 2: I heard the word evil twice.

Moderator: Why don't we start from the left and move right?

Speaker 2: First, just an anecdote. When I was talking to one member of Congress explaining to him carbon cap and what the economics were, and what we were doing in terms of LDC allowances to try to cut back on consumer rates and telling them that we're having some problem with actually from some economists at the White House, who were not happy that they really wanted the carbon price to go through. And I said, let me explain this to you twice, because I know it will take you twice to understand it. Economists want you to raise electricity rates, because that will help decrease demand. That will send the cost through the economy. And I said, again, they want you to raise electricity rates. And he looked at me and said, "There aren't any economists in Congress are there?"

So whether, and I think some of the, I mean, there's a lot that we did in the bill that actually limits the cost initially and phases it in over time, rather than having it hit all at once. And I think that's because having a big price shock hit all at once would make the bill, even if you could pass it, I think would make it politically unsustainable in the long run. So I think you need to be thinking about what is best from an economic perspective is often not what's best from a political perspective, not only in terms of can you pass it, but can you maintain it?

I also disagree that the EPA regulations are deeply evil. And set aside the utility industry, because there's been a lot more thought on the utility industry as to what you need to do to reduce greenhouse gas emissions. In the manufacturing industry, there has been very little, relatively, thought given to what you actually have to do to reduce emissions. And from talking to the experts at EPA, my sense is that there's actually a lot that can probably be done just in terms of changing the controls, slightly changing processes, that there are a lot of reductions, but that no one's had to think about it yet.

And I think one of the big benefits of particularly the new source performance standards as they go through category by category, is that it will force people in the industry to work with experts at EPA and in the environmental groups and other stakeholders, to really think about what it is you do at a facility to reduce the emissions. And what they found with the acid rain program, when they started looking at it, was that there was a lot you could do just in terms of changing knobs, fine turning processes. So I think that there is a benefit from the EPA regulation in that sense, that it makes people think about something that many industries have not yet been thinking about.

Speaker 4: I guess I would also challenge the notion that there's anybody out there that is happy that EPA is regulating greenhouse gases, because they get to avoid a vote or that there are pro-greenhouse gas regulation, but happier to have EPA do it than Congress do it.

There's nobody in Congress that, the people in Congress that are supporting EPA regulations were the ones that were pushing for the cap. The people that are anti-EPA regulation are the people that were trying to keep us from doing any regulation. So there's no--EPA may be second best to cap, but there's no--we're not taking any political winds out of the sails of a carbon cap by going to EPA. If anything, I strongly believe that EPA's regulation is keeping the fire under the seat of the people that would otherwise vote for delay to keep them at the table.

I also, and this is an old debate that I know you're well aware of. I disagree with the idea that the best way to get response, energy efficiency response or renewables investment necessarily, is to raise the price of electricity. It's the same thing in the transportation sector. There's a lot cheaper ways to get reductions in carbon emissions through investing in reducing barriers and bringing new technologies into that market.

The current market collapse, and the effect that had on demand, both in the transportation sector and the electric sector, clearly shows that there is demand elasticity there, at least some short term, and we'll see if it changes any long term infrastructure investments. So no one would argue that--no one who was paying attention would argue that prices weren't important. But whether that's the best economic way to get to a cleaner economy I think is a very active debate, and I personally [think] that you can get there a lot cheaper and certainly more politically more sustainably way by investing smartly, rather than just trying to jack up prices.

Speaker 1: Three quick comments. I do agree with you, this is going to cost money, and too often I think there is a fear of saying this is going to cost money in the sense of, then we lose the entire debate, and there are ways to do it smarter so it costs less money, but my particular belief is making a major transformation of the entire US economy towards decreasing carbon is not going to be free, and we need to recognize that. I think it's the only solution we can pursue, but I believe it's going to cost money.

That's why I, then many, many, many times say, you've got to have energy efficiency as your number one priority. That is not going to happen if your number one priority is getting a cap and trade system in place, because doing serious large scale market transformation energy efficiency takes very sustained knowledgeable policies. They take strategic planning. They take a whole lot of things that are separate from, we're just going to send a market signal out there.

So that's sort of my number one, is it's going to cost, and the best thing we can do to reduce the cost is energy efficiency, but as Speaker 4 said, it's not going to happen--this sustained long term energy efficiency we need--just by saying we've got a price signal. It takes a heck of a lot more to do successful energy efficiency on the large scale that we're talking about.

My second point of agreement is carbon reduction matters. And in too many of the metrics we have, they still are based on the energy centric world, and we're looking in California. Right now we're doing $1.7 billion a year annually in rate payer funded energy efficiency. Except for China, we're running the world's largest energy efficiency program. But the metrics that we're using for determining performance and accomplishment is still savings, energy savings, because it's rate payer funded, and we use it in our resource procurement decisions. And so we're looking at, we need to layer on top of that a new carbon reduction metric as well of are we actually, through these massive amounts of energy efficiency investments, making the California economy less carbon intensive?

And so, and the same thing on the renewable side. We, this whole debate about when you're building these major new transmission lines, and you're bringing wind in for us from Montana and Wyoming, what exactly is firming up that power? And what exactly are you doing on the carbon reduction? I think these are very important questions that too often the state level RPS is not addressing.

In the Western United States, as part of this big DOE transmission planning effort that we have going on, I'm very pleased that one of the scenarios that we are doing is a carbon reduction scenario. So we are not looking just at how much renewables we're bringing online, or how much energy efficiency, but what does it really mean to be bringing down carbon? And I think these are exactly the type of questions we need to answer.

And then the final thing I'll end with is, there is some value in the real world on all these RPSes that we've been doing. And that is, it's really difficult to build large scale renewable projects. Many of them are using technologies that we've never done. The permitting process, looking at the environmental issues, trying to mitigate impacts. These are difficult, difficult questions, and so I'm sort of operating in the real world, and even if there were a more perfect way of doing things, we'd still have to figure out which renewable plants I think need to be done in a way that is conducive to avoiding as much environmental impact as possible, and it's taking years of getting us through that process to have lessons learned, and I personally am glad we've been doing that particular work now, rather than saying we would wait for a more perfect world, and then embark upon what is a multiyear effort on how to actually get these projects built.

Question: This is extremely important, and it happens a lot. It happened a couple of weeks ago, when Connie Hedegaard was here from the EU. What I'm saying is that raising the price of carbon in the economy is necessary. I am not saying it's sufficient. I'm saying it's necessary. And that means if it's necessary, if you are not doing it, you're not solving the problem.

Speaker 1: The PUC has used a carbon adder in California for over five years in many of their decisions.

Question: It's in your decisions that this is important. And that's expensive, and we don't want to do that. That's not raising, that's not imposing the price of carbon on the market, so that you get all the inventions and all of the changes of behavior and the changes in expectations and so on. It's a completely different thing than saying, "I'm going to choose this technology because it's not carbon, and that one is." Those are very, very different kinds of programs.

And I'm saying it's necessary--to solve the problem on the scale that we're talking about within a timeframe that is, I mean, if you look at these, the two degree number, and what we have to be doing. I mean, we're talking about over these timeframes, trying to get the electricity sector to being a zero carbon emission kind of activity. I mean, we have really got to get going. And we ought to get going sooner on a much larger scale, and a necessary part of that story is raising significantly the price of carbon that people see, raising the price of electricity, getting better representation of the cost over the day, so that you can get storage and all the other kinds of things in there, all those kinds of things.

And I think we're just whistling in the dark walking through the cemetery when we say, "Well, I can't get people to face the political reality of raising the price, so I'm going to around and do all these other things," which are themselves not bad things if we did the things that were necessary. But they're distracting us from doing the things that are necessary, it's counterproductive and deeply evil. [LAUGHTER]

Speaker 3: All right. So I think you've got to agree that we have to start with a federal program, because what we have now is a lot of states acting independently of each other, and it's impacting some sectors and not others. And that's a problem. And so I think that's an area of agreement.

But let me tell you, if you ever walk into Sacramento and say, the only purpose of the renewables program is for greenhouse gas reduction, you will get beat up. They will say that there are 27 different reasons for doing this program, including jobs and hedging natural gas, and a variety of other benefits that just, that don't all relate to greenhouse gases.

Let me give you another perspective, and it may include some other evil, at least in California. And that's the practical reality of meeting demand. And when you take a look at the menu of options that are out there, we have a law that essentially prohibits new coal. We have a law that prohibits new nuclear. Hydro is sort of out of the question. And so that leaves us with two options, natural gas and renewables.

With natural gas, we have our state water board, who is threatening and set out a plan to shut down 40% of the state's capacity, most of which is natural gas, and we have air emissions requirements that actually required a governor's signature every time we need a new natural gas power plant built.

So just from a path of least resistance standpoint, there's a role for renewables, whether it be part of renewables portfolio standard, or any other reason, just to meet demand. It's the one area, and Speaker 1 did talk about the challenges in getting some of those permitted and built, but at least those ones don't require a commissioner's, excuse me, a governor's signature in order to get them through. So from a, I always have to bring everything back to California. The California issue is, it's renewables or nothing, and so it's not so evil in itself, because it at least is getting something built when we desperately need it.

Moderator: I'm going to say one quick thing, and it isn't just California. We still have a states' rights problem, and the states don't all want a federal solution. And that, in part, is one of the biggest challenges we have. And there's, they still want the 1,000 flowers, just like we had with deregulation, and it's the same issue exists of jurisdictional boundaries and states, some of the IOUs [investor-owned utilities] wanting to keep things close at home. And that makes it tough.

Question: I have two part comment or two part question and comment. The first is with respect to the speech that was just given, I certainly agree with most of it. I'm going to offer a friendly amendment. I think at least for a while, EPA is our friend. Now, they're somewhere between a, I was trying to come up with an analogy, somewhere between a stalking horse and a Trojan horse in my view. It's only--in my view--if Congress sees action at Congress as the lesser of two political evils that they will move. And I think it's going to take some scary stuff coming from the EPA in order to make something like Waxman-Markey or the KGL [Kerry Graham Lieberman] proposal in the Senate become law. Now, is that a perfect solution? I'm sure you would find serious problems with the legislative approach. But that's absolutely the best we're going to do at a federal level. There's no doubt about that at all.

Question: The problem with the EPA's plan is that it's not scary enough.

Question: The bill is not?

Question: The EPA. That's the problem. It would be better if they *were* scary.

Question: I think Speaker 3 just said it, I think a lot of the movement on renewables, and by the way, it's not all crazy expensive renewables. Speaker 3, what are you paying for wind? Can you tell us?

Speaker 3: I would not be allowed to do that based on Commission rules. It's a competitive market. We prefer not to, well, we don't disclose this.

Question: Well, I'm going to tell you that the last contract entered into by Excel Energy for 175 megawatts name plate of wind was $61 a megawatt hour. And that's levelized over 20 years. So it starts out at $55 or something like that. That knocks out gas. It just does. And it is the most economic. And there's a lot of wind in this country that's that cheap. Granted, there's a federal tax credit involved, but we take that horse without--I've got so many horses here. We don't look that gift horse in the mouth.

So I think a lot of what state commissioners and other policymakers are doing under the rubric of renewable portfolio standards and such is actually attempting to socialize the concept of carbon reduction to customers in their states.

That's what we're doing. Now, is it the most efficient way? Of course not. We never act in the most efficient way. So sorry.

But in Colorado, we have a 30% renewable portfolio standard. By 2020, we're going to meet it. The vast majority will be wind. There will be some geothermal and some solar. We're going to do that at a cost to end users which is acceptable in our state. And we will along the way have made reductions in carbon, which will actually exceed the Waxman-Markey goals. So that's the 2020 picture in Colorado. It works for us. It isn't the same as raising the marginal price of energy to the marginal cost of energy. I'll grant you that.

Moderator: Comments?

Speaker 3: I would just point out that the $61 for wind is not, I mean, it's not going to be directly comparable to the gas, because it is providing a different service. And recognize I am a supporter of renewable energy. I'm just point out the facts that you're going to have integration elements.

Question: No, we actually add that in in the selection of the contract. I'm just telling you what the contract price is, but we agree. We actually go through the analysis, and that's selected only if with adders of $10 a megawatt hour for integration costs are in there, I mean, in there for the selection. And there's no capacity value imputed on the system. It's an energy basis.

Speaker 2: This is, my comment is more going back to the first part of your question and also to the earlier question. I mean, the real reason, I mean, I absolutely agree we need a carbon price, and we need to do it fast, and we probably need to do it more aggressively, even than in Waxman-Markey. That would be our preference. The problem is, we have, out of the what, 21 or 22 Republican Senate candidates, there's *one* that's willing to acknowledge climate science, climate change science.

I mean, if you say we are going to do this solely for greenhouse gases, solely for climate science, we've got far too many people in the country who don't believe that it's a problem. And I don't know what we do about that. I mean, I know it's something that the environmentalists, and many who are concerned about it, are spending a lot of time thinking about, but it is a huge problem.

So if you don't put additional reasons for doing this, I mean, that's why, if you go to Sacramento or other places, that there are lots of reasons for doing things. You need those additional reasons, because if it's just climate science, and it's not just the Republicans. There are a lot of people out there, an amazing number that don't believe in the climate science--and when I look at some of the polls that have 20 or 25% of the country not believing in evolution, if they don't believe in evolution, I'm not sure how you get them to believe in climate science.

I mean, we've got a major, major problem I think in getting people to understand the problem, and it's different from air pollution problems, because air pollution problems you see on a more day to day, or you feel on a more day to day, year to year basis. Climate change, with the extended problems, it's harder to get that across to people.

The other thing I wanted to comment on is, EPA is, I think EPA right now is in a very, very difficult position, because if they are too scary, their authority will be gone. If they're not scary enough, they don't move legislative, we wind up not pushing legislation. And it's, I'm glad I'm not at EPA trying to figure out what to do. But I know that they are very aware that if they push the envelope too hard, the authority's gone, and then we'll wind up with nothing. People won't be, won't have a reason to be looking at how you reduce greenhouse gas emissions at all.

Speaker 4: Just to build off of what Speaker 2 said, because I think she is absolutely right. Here we are in Massachusetts, part of RGGI [the Regional Greenhouse Gas Initiative], some of the most progressive active debates on climate policy and thinking, energy efficiency, renewables. The polls are tied here between a candidate, with a candidate that doesn't believe in human induced climate change--in *Massachusetts*. So you raise the specter of people hiding behind the EPA's regulation, I think there's a lot of people that are hiding behind the idea that we can get some sort of perfect bill and some great beautiful high number, and get people to swallow high costs, because it's good medicine. I agree, it's good medicine, but it's not politically realistic. And it's --

Question: It's not going to happen.

Speaker 4: Well, neither is your bill. Neither is your vision going to happen. So at least some of us are down in DC trying to get it done. So I think you've got to try to figure out how to get something done rather than say it's not perfect. …So what are you going to do about it?

Question: Air capture. Move away from the coast, things like that. Adaptation. Right?

Comment: …You also can start with a program once you get it in place, and you may have the ability to tighten it, or there may be a lot of banking early in the system that will help us out that would then allow us to tighten it down the road. If you look at the SO2 program, they've actually been able to tighten it in part because there was so much banking, there was so much work done early on. But if you don't get started with anything, if we go with nothing for the next two decades, you lose the ability. I think politically, it's easier to tighten something once it's in than to try to get something very high-price done initially.

Question: I'll make it a little easier. Going back in your memory of the last 30 years, Clean Air Act, PURPA, are there any standout lessons or memories that are useful, and you find are common references or useful guidance for the things we're doing now, which are analogous, including renewables, procurement and then emissions regulation for greenhouse gases? Jimmy Carter in a sweater, things like that?

Speaker 1: [You can look back to] the very first Jerry Brown administration, when the the California Energy Commission was writing the first round of building standards, and when the state denied the Sun Desert Nuclear Project, where suddenly you were looking at alternatives for the first time, and the first round of solar water heating programs in California over 30 years ago, and we had this peak of stuff, and then we, prices plummeted. Political will fell, and we lost three decades.

And in some ways, that's the big worry that many of us have now. We've had a heyday of five years of building all of this up. Now, I'm hoping we have passed the turning point, that we have so many people invested in the renewables space. We have so many people invested in energy efficiency. We've got this nebulous thing called "smart grid." But the biggest lesson that I have from the past is, we can have a lot of momentum, a lot of policy support, even laws, and we can, through a combination of factors, lose decades, and in my mind, we can't do it a second time.

Question: So the lesson there is, the policy cost-out is a big danger. Is that, you started out saying, well, prices went down and all the good thinking kind of went away.

Speaker 1: I mean, the lesson is, we've got some tough elections coming up in just a few weeks. These elections matter hugely. Prop 23 in California matters hugely--getting it defeated…. And if we end up with a changeover at sort of state and national of leaders who support clean energy and climate change policies, we've got to redouble our efforts. I mean, there's a whole political aspect to get involved, as opposed to, oh, gosh, it didn't work out. Somebody else is going to be in charge of saving us.

So that's my lessons learned. …We're all in this together. And if we do see setbacks in terms of support for climate change and clean energy in November, we've got to really start working again really hard on these issues.

Question: So the lesson, just to crystallize your comment is more not, what are the policy cost-outs, but remember, the problem doesn't go away just because prices and political wills ebb and flow. OK.

Speaker 4: And I think the other really important part was, get engaged. I mean, it's not going to happen because Congress decides it's fun to deal with. They're not going to do it unless we are down there pressing them, and we're not, states aren't going to keep moving with their pieces of the puzzle, which are really important, unless we're in the State Houses. So it's not something that any of us can afford to be observers on.

Moderator: My lesson learned, having worked on restructuring and the experience from that is, some of the things that need to happen actually have to be structural to the electricity industry--how rates are structured, those sorts of things.

I'm saying to my members who, where the anxiety is palpable of the political change, and the fact that natural gas prices are likely to continue to go down, and the fact that some markets are clearing at zero. People are anxious about the impact of that, and the momentum we've had around solar. And my response to them is, we need to focus on actual real structural change in the electrical industry, both physical and policy stuff, rate structures, interconnection rules, all that stuff. That may create more permanent and sustainable change that isn't subject to the whims of what's going on in the macroeconomic world, or kind of political changes every four years.

Speaker 3: I would say what, when I take a look at it, at all the policies--first of all, incentives work, and from a regulatory standpoint, set up the incentives and then get out of the way would be my descriptor. And I look at PURPA, where I think an entire industry has been created, evaluating what avoided cost is, and a buyer and seller don't have a one on one relationship when the regulator can intercede in between. It gets very, very messy, and we're only now trying to get our way out of that. It's a real challenge.

But when I compare PURPA with the renewables portfolio standard, the big difference is that the buyer and seller have mutually agreeable terms in our contracts, and the Commission really doesn't have a role other than approving the contract, and I think that's a bit improvement for everyone. It's got to be a headache for the regulators, a headache for the buyers and the sellers.

Question: Don't forget he lawyers and the economists, who's paid for grad school for me here.

Speaker 3: Well, yeah, so there are some losers in that process. The lawyers do just fine. They just happen to be transaction lawyers rather than regulatory lawyers.

Question: I just want to make an observation about, remember the high gas prices a couple of years ago, for your car? Prices got above $4.00? What happened? SUVs stopped selling. People started riding in cars together. Behavior changed. So that's kind of in support of what the earlier questioner was saying here.

Now, the other issue I wanted to raise to you all, and the whole group, is the issue of having too much wind. It's not just needing more wires to bring more wind in. There's no demand at 2:00 in the morning when all the wind's blowing. And so we've got to figure out, entice, back into the earlier point about prices, we need to send signals to customers that that's when they need to use electricity, not at 4:00 in the afternoon.

Now, tying back to transportation, you all didn't talk much today about transportation. But I've already got three--and the building I'm in is 62 parking spaces--three of them already have been wired up for electric cars. But right now, the prices are the same price for 4:00 in the afternoon versus 2:00 in the morning. And with all of these negative prices that are going to be coming more and more and more as we get more renewables, we're going to need to allow people to take advantage of these low prices at night and charge their batteries at night, so we can use the wind, rather than spilling the wind and not using it at all. So there's a lot of regulators in the room, and every time we talk about this, there's pushback from the regulators on real time pricing. But we've got to do some things like that to let the price signals work, and people will react and change their behavior.

Speaker 3: So I absolutely agree. I mean, we ought to be doing things to make sure that people have the economic incentive to use power when it's the lowest cost. I mean, in Germany, actually, I think they're paying people to use electricity, to keep their lights on, because there's so much wind, which is a challenge. But that doesn't solve the problem of having, of generators having incentive to produce at negative $30 a megawatt hour. That just shouldn't happen. We need to make sure the incentives are right for the generators also.

Question: If the price of carbon is really $30, and we price it in the marketplace at zero, then the price of wind *should* be minus $30. If we don't price carbon, this is what happens. It should be minus $30.

Speaker 3: The minus 30 is actually because of production tax credit, not because of carbon.

Question: But actually, negative prices, in the world, we don't price carbon, negative prices for wind are probably a good idea from the social welfare sense, because it's not …

Speaker 2: It's like nuclear. Free electricity. Yeah.

Speaker 4: The system won't run as long as we let it stand is. And part of the problem is we're trying to integrate wind into a fossil fuel system, without changing the system. It's a time problem, right? If those prices, I mean, there is a reliability concern about lines overheating. That's a real important short term issue. But there's a signal being sent there about the need to reconfigure the system so you can deliver that power to where it's needed. How do we do that without drawing those lines over coal beds and encouraging people to put a lot of fossil fuel power in that same system. I think it's a real challenge. But I get it. It's a short term price problem, and --

It is a short-term problem, because eventually the system would change if we let it. Right? If you had that sort of really cheap power somewhere, people are going to use it.

Question: You buy twice as much wind as your load demands?

Speaker 4: The demand is there somewhere in the system, right?

Question: No, it's not.

Speaker 4: It is somewhere on our system. Or it would be, if we sent the signal to people that they should use it, then. Charge their car at 2:00

Question: For the panel, or for …, I'm just very curious, especially with Connie Hedegaard from the EU just having been here, you were mentioning the, everyone looking at the elections, and being very concerned in terms of potential long term effects on the issue of climate change.

One of the things that has been written extensively about in the last three to four months is that Western European leaders know what to do substantively and on the merits but are very afraid to do so, because of the politics and the upcoming elections in Western Europe. Clearly, we're up first in November, and I'm very curious about a comment on that, if anyone on the panel or …, if you have one.

Speaker 2: On Europe, and there may be some people here who can speak better to it, there are adjustments being made in the feed in tariffs that have been put in place in Germany, Spain, France, potentially Italy's up next, where they haven't gone as far as people thought they might, to put the pendulum the other way. But they're adjusting them within the, yeah, I think with some political strengths. But watch it very carefully. There's a lot of analysis going on by folks like Lazard and Bloomberg and that. They're being tweaked, maybe not as much as some people think they should be, but they have been.

Speaker 1: One of the deficiencies that many people in Europe and the parliament and the European Union recognize is that while they put a tremendous amount of emphasis on cap and trade, and they do have a renewables standard, they don't have any mandatory energy efficiency standard in the European Union, none. And yet everybody I think on some level does say, energy efficiency is a top priority policy that needs to be really pursued.

So one of the biggest issues, in fact, I'm watching in Europe, is whether they are going to be able to turn what is essentially now the voluntary energy efficiency goals of each of the member countries into any type of a mandatory approach. It would be differentiated by countries, but then actually set up a monitoring system, and having some level of enforceability. But that's a major gap. And of course, we have the problem here is that depending upon where it is, energy efficiency either is not part of what's being discussed as a national standard, or it gets rolled into the RPS, and then we have all sorts of issues on that level.

Moderator: I want to bring us back to the interesting debate that we were having a moment ago. It really was interesting, and I have a comment and then a question. It seemed to me very circular, kind of where we were going. We don't have national policy. We probably are not going to have it very soon on carbon. A lot of debate about what it will look like. Yet we are certainly encouraging renewables. The renewables are coming on. We're seeing these negative prices. A lot of people are saying, the solution is, let's build transmission. But the transmission just enables the coal and the other fossil fuels to keep running, and if we don't have a carbon price that makes, that puts pressure on those, or rules that put in place requirements for them to ultimately shut down, we have a reliability problem, because we need something to run when the wind is not running.

We haven't really figured out the storage problem yet. Coming back to the discussion about the ITC/PTC [investment tax credit/production tax credit], and my question is, is one temporary solution to this current problem, and I know it's not the long term fix, but to have an ITC that has certain requirements in it that gets you the kind of products that you say you get under a PTC, but you don't get under an ITC. So why couldn't we have an investment tax credit that focuses on the right kind of projects, if that's what the NRDC's concern is with, and why they favor a PTC.

Speaker 4: Well, I mean, to be clear, right now, you opt from the PTC to the ITC, and then you opt from the ITC into a grant. Right? So the grant, actually, right now, people aren't, new projects that have got that grant aren't opting into, aren't running just to get the grant. Right? You've got your functions like in ITC.

And we are actively lobbying for an extension, a two year extension of that grant provision. So I think a short term, for the short term, the new, the incentive structure we have right now shouldn't be exacerbating this problem that we're talking about.

I think long term…the most efficient policies are ones where you pay for what you want, not, we don't want investment, per se, we want production. And so I appreciate this debate, and I think we need to deal with transmission head on.

Obviously the cleanest, best way to deal with transmission would be to have a carbon policy that was pricing that, so then you could start dealing with some of the barriers to regional transmission without having to worry about whether you were also going to be driving lines to new coal mines. But I guess my sense is that it, I don't think we should be in the long run, we don't want to be sort of taking a second best policy option on the incentive side in one area to avoid a problem that we have to fix anyway in the other area. Let's get the transmission, let's get the, let's get storage in there, integrate the system in a way so that we can really distribute the resources when they're available in a much more effective way.

There may, again, almost certainly going to run into continuing time problems here. The two year tax credit grant extension, we may not get two years. We may only get one year. We may not get anything. What are we going to do then?

So it's not, I wouldn't say that we have like an iron clad thing that we would never consider that as part of our thinking about what the right solution is in the short term interim, but certainly as a long term policy, I don't think we want to move away from production payments and production incentives, because that's the most effective, most efficient way to get what you want.

Question: I think I'm going to try to pick up on what a Speaker 2 in the Transmission Cost Allocation session said, and it ties into yesterday about transmission. Transmission can help an awful lot by distributing the wind at night to a larger footprint and balancing the system. The problem I don't hear in the debate is the one Speaker 2 in the previous session was saying, and we're starting to see it in the Midwest now, is that you're simply getting more generation at night during spring and fall than there is load.

It's going to take a long time to build those transmission lines to balance the whole system. It's going to take a long time to figure out storage. We've been working on batteries for what, 35 years? They're not there yet. Having a carbon price would be great, or having real time pricing that people understand. They should--well, I don't think we're going to get the washing machines running at 2:00 in the morning, either. I think when you look at this, and with the product cost credit, you need to see that this is going to pretty soon have a massive effect on the power system. And we're going to run it to the point, we're going to have to do emergency things just to keep the system operating. And they probably won't be optimal. They'll be done one at a time, or two at a time.

But if I need to build a transmission line to deal with this issue, which it's likely we will, it's one thing for me to go to my Commission and say, I need to build this line to keep reliability. I could probably go and say, I need this line so I can keep operating. But it's a pretty hard sell to say, I need it, so the Eastern interconnection can balance, because someone from Iowa is deciding to inject all this wind in there, because they got tax credits. And I guess the answer, I'm answering my own question, is too complicated for Congress to understand. And it's going to come back to us to solve. But I think in all the political debates, you may get something done. I think pretty soon, at least some of us are seeing real, serious problems on operating the system.

You can't just take a coal plant down at night and snap your fingers, and it will be there the next day. It isn't always. I don't know what the solution is, because you don't get lines built overnight, either. So maybe I'm asking you to comment on that, or just say, it's up to the engineers to solve it until we get can better policies.

Speaker 1: The only thing I'll say, and it's certainly not a panacea, I think state commissioners are starting to look at these types of issues and starting to get educated in a way that I haven't seen. Much of the time our focus is, let's make sure we get RPSes and energy efficiency and sort of the policy in place. And I'm hearing more and more a focus on understanding, and we're certainly not running the systems or running the grid, but we feel like we need to understand these issues of what are the impacts with all this variable renewable generation coming on? What are the limits on storage, short term? Where can we go longer term? What type of policies do we need to put in place? So it's not a panacea, but I will say that a lot of commissioners understand this is a very important issue, if for no other reason, they know that it's going to come back to us in terms of looking at what are all the other things that need to be done that are going to cost money to keep the reliability going?

Speaker 3: So let me just say, we've seen this before. When the PURPA QF were building up in California, we had a number of plants. The first impact was, their capacity factor was being reduced. Then they were cycling a whole lot more than they were. And then also the startups and shut downs happened more frequently. So we can expect that this will happen again.

From a market standpoint, you've got a challenge, because as was previously mentioned, many of the, much of the power may be dumped into the market, lowering the wholesale market, and also lowering the revenues to these generators. Their costs are going to get up, because they are being operated in a less efficient manner. And also the additional startups means that they're going to be operating differently than what they were originally designed. And that's a likely scenario in my opinion, and something that we need to be prepared for. We also need to be thinking about what new power plants are necessary to make sure that you have sufficient flexible resources to go around all the inflexible resources that are coming.

Moderator: And don't forget, solar's very different than wind. I wish I could put up a little chart showing how they, different issue if you're doing large scale solar, too.

Question: I want to pick up on something that Speaker 1 mentioned in passing, and then …noted was different from what he was talking about in terms of pricing carbon. But maybe that is, there's a step there.

And let me say, …, I'm going to come work on your campaign. I completely agree. Way in the past, I actually tried to get the Nehru Conservation Committee to pass a resolution in favor of a carbon tax, and it didn't really go anywhere.

But in the meantime, I work for …, and we're an international company, and internally we're very committed to addressing climate change, from our CEO on down. This is a major focus for us. And in fact, in the UK, we have for some time been using what we call a shadow price of carbon. As we make business decisions, whether to buy a new truck, a new transformer, different kinds of conductor, there's a shadow price of carbon that's been imputed based on a UK number that was roughly translatable to about $50 a ton.

I just was talking this week with one of my colleagues, and in the UK, the government has actually endorsed what we're calling a true price of carbon, I'm not sure how that name came up, but it translates to about $80 a ton. And what happened for us as a company is, as we made decisions about what to do, we looked at whether it made a difference that we were imputing a price of carbon at $50 a ton or not.

And actually, at $50 a ton, it didn't make much difference in terms of what choices we made. We might buy a more efficient transformer, but really, because it was more efficient, rather than it was, and the economics were there as opposed to this $50 a ton adder really changing the decision. But as we start to talk about that number being higher, at $80 a ton, we're starting to think this could begin to make a difference in the decisions we'd make.

And what that would mean is, when we come to our regulators to say, here's our investment in our T&D system, and this is, we're actually buying these pieces of equipment, and--I'm not an engineer, which is why I can't get any more specific than I'm getting right now--it will cost the customer more. But here are the benefits associated with that in terms of carbon reductions, and there will be benefits associated in terms of greater efficiency and operational considerations.

But one of the things that we're debating internally, and our folks came to me and regulatory was, how do we go and explain this to the regulators? Because it will mean that our capital investment may be, it will be some amount higher than it otherwise would have been. So I want to pose that question maybe to you, Speaker 1, but even to other regulators in the room.

And the other thing I want to note as I say that is that we've been posing this model of, if we have a carbon price, it will raise the price of electricity. And so that's why we're pursuing these other policies. But we need to be recognizing that all of these other policies are also raising the price of electricity. And I think some of what may be behind what you're saying is, perhaps for a less efficient outcome, a higher price, given what the objective is, if it's reducing carbon.

So I guess what I'm asking is, it's just a step. It's one company, or several companies. But as you impute a price of carbon in your decision making, causing you to make different decisions in terms of investments that cause different costs for customers, how receptive might regulators be to that approach to addressing climate change in carbon, in addition to, or perhaps as a substitute for some of the other steps we're taking?

Speaker 1: Well, at a minimum, talk to your regulators first before you file the application to answer that question. And I actually think it would be good to see if we can get a survey of what state commissions do. We call it a carbon adder. Do you use carbon adders and for what purposes? My memory is that the California PUC certainly uses it in their assessment of cost effectiveness of energy efficiency. And they also use it in assessing the supply side, and they do a review of long term procurement plans of the utilities. Do they do an explicit one on the RPS? I don't think so, because you're just doing the renewables.

So those are the two main areas on the demand, on the energy efficiency side, and then as I said, on the long term procurement side. And the PUC doesn't then actually pay it through, but it does affect their decision making. I am not aware that, for example, I translate this in California's terms into, a utility came into the PUC with their general rate case and said, where were investments that we were proposing to make on the distribution side, and we can show by doing this, we are avoiding carbon emissions. Would you OK this? I think the PUC just is still using it on the supply side. There's no reason to think that they might not be open to it, because it just fills in another gap, but certainly at the California Commission and probably elsewhere, you'd want to start talking with the staff early on. They would look to their staff to do some sort of a white paper and prepare them for really thinking this through.

Question: And I am talking about just that distribution investment, because you know, frankly, as you said, you don't need it on the efficiency side, the renewables factors, but I'm talking about as we look at investing in the T&D system.

Speaker 1: And not to belabor this, but your investment would be basically more efficiency in the distribution side, which would then carry through less on the supply side. And then looking at the cost effectiveness of the distribution efficiency measures could you put in an adder, so that things that, if you don't have it, that might not look cost effective, would essentially bump you over the edge.

Question: Right, because what we would be doing is --

Speaker 1: It's an interesting concept. I am not aware that it's been presented to the California PUC.

Question: We also use a carbon added in virtually every decision we make. It goes into cost effectiveness of demand side management energy efficiency programs. And also, again, it's a vertically integrated utilities. It goes into transmission and generation selection. We run sensitivities on carbon, so we use low, medium and high carbon estimates, and we're basing it on what the energy information administration priced out Waxman-Markey at. So it doesn't hit, because the utilities have an earnings cap, it doesn't hit prices. It doesn't actually show up on prices, but it does affect resource selection, which tends to put a thumb on the scale for renewables and put half a thumb on the scale for gas.

Question: I have a question on that, just specifically for you guys, California does that for transmission lines as well? And does any other state do that for transmission lines? I'm very interested in this. Is any other state, other than Colorado?

Speaker 1: I think we do. The one that I've not heard of is on the distribution investments. But I think we do.

Question: Can I ask a clarifying question here? When you say that you use this adder on transmission investments, are you using the adder to evaluate whether the transmission, plus whatever generation on the other end of it, might be more or less costly than an alternative?

See, what I'm talking about is something that I think is a little different, which is, as I go out to choose what conductor I'm going to put up when I do this new transmission line, do I choose a conductor that's more efficient and can carry more power and sags less in the heat, that costs more than another conductor? They both might carry the same amount of power and the same generator might be connected on the other end. But the consequence of me building, using the more efficient conductor, as I understand it, is that I will need to generate less on the end of whatever it is, because in fact I'll be carrying it more efficiently.

Question: That's exactly the sense in which we use it.

Question: OK, thank you.

Question: Just real quickly, when we're talking about anything that's going to be impacting the bottom line, the prices that our consumers are going to be paying, there's a discussion that needs to be had with our different consumer advocate groups, because it's educational. I mean, if you just say, oh, it's a carbon adder, or whatever it is, we see this with energy efficiency. We have a state mandated energy efficiency. It's on everyone's bill. Do the people on the street know what that is? Probably not. But it is state law.

If it is in the context of a rate case, and there is no explanation, it's the evil Commission that has given the company all this money for doing this mysterious thing. So it's a conversation that needs to be had at the very foundational level, so everyone knows what you're doing. And I always say, people want to be green, but green costs money. Green costs green. Explain it so that everyone--they can be against it, or they can be for it, but they understand it. And if you don't have that dialogue, you're going to have problems.

Moderator: I'm getting a little bell ringer, and I promised my panelists I would let you get out of here. So …, last word.

Question: Actually, it was just in response to the previous question. The Ohio commission actually had this situation with a pending acid rain legislation, where the same issue came up in regard to SO2 issues. And the Commission generally told the utilities, err on the side, on the assumption that that's going to be regulated and be cautious. So I think that's an analogous issue.