FEDERAL ENERGY REGULATORY COMMISSION

STATE POLICIES AND WHOLESALE MARKETS
OPERATED BY ISO NEW ENGLAND INC.,
NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.,
AND
PJM INTERCONNECTION, L.L.C.

TECHNICAL CONFERENCE

FEDERAL ENERGY REGULATORY COMMISSION
888 FIRST STREET, NE
WASHINGTON, DC 20426

TUESDAY, MAY 2, 2017
9:00 A.M.

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SESSION IV

PANELISTS

KATHLEEN BARRON, Senior Vice President of Competitive Market Policy, Exelon Corporation

THAD HILL, President and Chief Executive Officer, Calpine Corporaton

JOHN HUGHES, President and Chief Executive Officer,

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LISA MCALISTER, General Counsel for Regulatory Affairs, American Municipal Power, Inc.

RICHARD MROZ, President, New Jersey Board of Public Utilities

ANDREW PLACE, Vice Chairman, Pennsylvania Public Utility Commission

MICHAEL POLSKY, Founder and Chief Executive Officer, Invenergy

BRIEN SHEAHAN, Chairman and Chief Executive Officer, Illinois Commerce Commission

ABRAHAM SILVERMAN, Vice President and Deputy General Counsel, Regulatory, NRG Energy, Inc.

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SESSION V PANELISTS

PANEL 1

CLIFF HAMAL, Managing Director, Navigant

WILLIAM HOGAN, Research Director, Harvard Electricity Policy Group, Harvard Kennedy School of Government

LAWRENCE MAKOVICH, Vice President and Chief Power Strategist, HIS Markit

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PANEL 2

JEFFREY BENTZ, Director of Analysis, New England States Committee on Electricity

STU BRESLER, Senior Vice President, PJM Interconnection, L.L.C.

RANA MUKERJI, Senior Vice President of Market Structure, New York Independent System Operator, Inc.

ANDREW PLACE, Vice Chairman, Pennsylvania Public Utility Commission

SCOTT WEINER, Deputy of Markets and Innovation, New York State Department of Public Service

MATTHEW WHITE, Chief Economist, ISO New England, Inc.

P R O C E E D I N G S

(9:00 a.m.)

MR. QUINN: Good morning and welcome back to Day 2 of our Technical Conference on State Policy and Wholesale Electricity Markets. I would like to welcome our panelists and all of our guests.

A couple of housekeeping announcements to start out with again today actions that purposely interfere or attempt to interfere with the conducting of the Conference or inhibit the audience's ability to observe or listen to the Conference including attempts by audience members to address the Commission while the Conference is in progress are not permit.

Any persons engaging in such behavior will be asked to leave the building. Anyone who refuses to leave voluntarily will be escorted from the building. Also a quick housekeeping announcement -- yesterday at the end of the Conference a few items were left behind we have a jacket, an umbrella and a water bottle.

If you were personally attached to any of those things please see our security staff we have that. I wasn't told how nice any of those three things were. So Commissioners I think any opening statements?

CHAIRMAN LA FLEUR: I'm ready to plow in.

MR. QUINN: Alright let's plow.

So yesterday's conversation was regionally focused -- the desire and the hope yesterday and I think largely accomplished or at least I'm declaring victory was to understand the objectives the states were pursuing, the perspectives market participants have on that pursuit and also to get a sense of urgency for whether the Commission needs to take action or the Commission kind of wait and allow regional conversations to continue on.

Today's focus will really be on completing the picture on the long-term paths forward. I think it is fair to say that in pre-Conference statements and the discussion we had yesterday there was -- I would say 4 or 5 broad paths forward that were discussed.

I will try to lay those out. The hope for today is to kind of walk down each one of those paths one by one, understanding kind of the complete sense what that path involves, what the implications of those paths are.

So I think path number 1 that we heard about was probably defined by no or limited minimum offer price rules. So a request that the Commission roll back the minimum offer price rules to either something like only those things that are pre-empted under Hughes or to nothing at all.

Path number 2 I think looked like accommodation mostly in the way ISO New England talked about it -- finding some way to allow state supported resources to get at capacity supply obligation but still reset the price in the capacity market so that it reflects what a competitive market would have produced, but there are probably alternative versions of that accommodate or you know a little bit of deference path.

I think the middle path is a hybrid path that we are probably on right now. It's an attempt to identify some state actions that we will apply our minimum offer price rule, some state actions that we won't apply that minimum offer price rule -- fairly active litigation about the boundary between those two points.

The path -- moving along the spectrum towards putting more things into the market I think we had a conversation in New York and in PJM about trying to identify the attribute that the state policy is targeting and seeing if we can get that attribute incorporated into the market.

Largely that was a discussion about environmental attributes and carbon pricing. We didn't talk a lot about what else happens what the capacity market rules are in that situation you know whether our MOPR rules change or stay the same.

And then I think the extreme version you know within the market is everything is either in the market or there's a strong minimum offer price rule that says any state support is going to be incorporated into someone's bid and if you don't -- if you have got state support and we put in your bid you don't clear the capacity market, you just don't clear the capacity market and that is going to be extreme within market path.

Probably our variance along the way there are probably little off-shoots of each one of those paths. What we would like to try to walk through those paths this morning I think they map fairly well into acting Chairman LaFleur's doors.

I think we would like to talk about whether the two extreme versions that I laid out devolve into different versions of re-regulate. Clearly that middle path is the litigate door and then either side of that middle path is the kind of find a negotiated way to move forward with some balance between the wholesale markets and the states.

So that's the plan for this morning. I was going to say we are going to kind of walk through each one of those paths one by one. I'm pretty sure that each one of you probably have a favorite path and I imagine we will find out about that as we walk along that path but we really would hope to have the focus be completing the picture, understanding the implications.

This is a long panel it is about 3 hours. We will take a break at some point. I'll target about halfway through. If I or anyone up here starts to fall over we will call it a little earlier but with that we will get started.

So I would like to start with the extreme -- kind of further along on the deference or kind of accommodation side of the paths to start. So I would be interested for all of your perspectives on that kind of no MOPR path.

So very limited MOPR, looks like pre-emption -- if you go down that path do we need to change our market rules? Does the capacity market stay the same? Do the energy markets stay the same?

CHAIRMAN LA FLEUR: Arnie just to give them a route should we introduce the panel for the people watching.

MR. QUINN: Oh I'm sorry.

CHAIRMAN LA FLEUR: We have a two minute reprieve to answer that question.

MR. QUINN: That's right. I have in my notes right after take a break introduce the panel. So thank you. So obviously thank you to our panel for being here.

We have from Exelon the Vice President of Competitive Policy Kathleen Barron, from Calpine the President and Chief Executive Officer Thad Hill. I'm sorry wow I'm off this morning it's going to be a long day.

We have John Hughes the President and Chief Executive Officer of the Electricity Consumers Resource Council. We have Lisa McAlister the General Counsel for Regulatory Affairs for the American Municipal Power, Incorporated.

We have President Richard Mroz from the New Jersey Board of Public Utilities. We have Andrew Place the Vice Chairman of the Pennsylvania Public Utility Commission, Michael Polsky, Founder and Chief Executive Officer of Invenergy.

Brien Sheahan the Chairman and Chief Executive Officer of the Illinois Commerce Commission. We have Abe Silverman the Vice President and Deputy General Counsel of Regulatory NRG Energy and Mark Vannoy, the Chairman of the Maine Public Utility Commission.

Alright thank you all and again I apologize for not introducing you to start out with. So walking down the no or limited MOPR path -- to the extent that you have thought about that path we would be interested to know what market rule changes you think would be necessary walking down that path.

I would also be interested to know what you think the implications are of walking down that path for either -- for the things that you are responsible for -- for your business model, for the policies that your state has to set, for the you know -- the business decisions you have to make.

And just please again as yesterday if you want to talk raise your tent card. We are not going to probably walk down the panel at any point we will just let folks talk when they think. Thad?

MR. HILL: Sure thanks sorry I wasn't here yesterday but I'm glad I got that right. Look you know the Chairman's 3 doors I think you are asking about -- I don't know if I quite have this right the door number 2 -- door number 1 is where the states do what they are going to do and there is some kind of accommodation made to protect the markets.

And door number 3 is a full re-regulation recoverage of cost and there are all kinds of you know issues there. Door number 2 is just you know, let it go and don't worry about and there are some pretty good examples of what happens in that case which I think was one of your questions.

You know and I'll tell you it does not work if you want to have a competitive market. You end up with layers of subsidies and then once subsidies help somebody else you end up having to have another layer of subsidies. In some ways it's not that different than what we are dealing with in the wounded west.

Although it was not a state action the federal deduction tax credits which led to a whole bunch of wind getting built, led to the nuclear issue that our friends at Exelon had in the first place and their solution was another subsidy. Well that will lead to another.

We have seen that happen in NYISO the recent capacity market clearing in NYISO's own fort you can argue was at least in some way tied to the subsidies, the nuclear plants in Illinois received.

There are examples in different markets. But let me tell you the most applicable one I think people should recognize it's the State of California. I would say today operates their market effectively in door number 2.

And you know there has been literally there's a mandate-driven effort where the state legislature or the PUC under mandate passes and they procure very specifically things as they do. As that happens it has caused all other capital to pull back.

In fact I'll tell you, you can argue it has encouraged investment in the last 11 years, 10 years there have been 10,000 megawatts of gas built and 20,000 megawatts of renewable.

However, every single one of those was built with contracts at prices that sometimes are four or five times above the market price. What does that drive in Pacific Gas and Electric territory? Consumers pay and consumers pay almost a 40 cent kilowatt hour rate. They have got the highest rates in the lower 48 and they actually have very low energy prices.

That's the definition I think of a failed market where we have really high consumer rates and very low wholesale power rates. By the way this also creates liability risks. The California ISO just put out a study that they view I think the number is 8600 megawatts of assets that are in the risk of retirement that are actually required for reliability they would argue.

It creates a real issue. Finally, it creates some crazy things. I will tell you right now in California and this is pretty interesting -- because of the state mandate to build a whole bunch of solar without any kind of you know restraint there, we actually now have negative prices in California in the middle of the day.

The only place in California where we are spending capital right now and it is pretty amazing is we are figuring out every way we can to waste heat in the middle of the day. Let me tell you if you haven't thought about this to actually go out and get a room full of engineers that have been in the power generation business their entire career and tell them that the highest EPV project we have a company right now is to waste heat in the middle of the day because prices are going negative because of the state mandate.

And so you know it is a cautionary tale and you can bring up Germany -- there's some others as well. But if you are going to go down the path of no MOPR and have a mandate driven world where whatever happens at the legislature happens, if there is not some protection in my view you need to go straight to door number 3.

There's retro-active rate making, there's cost recovery and I think you are going to have to go that way if that's actually the path you are going to pursue.

MR. QUINN: Lisa?

MS. MC ALISTER: Thank you. Thank the Commissioners for having this important event and for staff. I appreciate your efforts here today. I would say that one of AMP's major concerns with a type of hybrid approach is that the RTO's are going to continue to be forced into a reactive role where they continue to change the market rules to address policies that are initiated by the state.

And the results can prohibit true market behavior which is really manifested by bilateral contracting where willing buyers and sellers are able to get the products that they are looking for.

And we think that applying the MOPR to existing units is really contrary to the basic economic theory where existing resources, rational bid is to be a price taker. And using the MOPR really takes more of the process behind closed doors where the RTO's need to administratively determine the price and we really think that any blanket proposal that replaces a lower cost offer with a higher administratively determined offer has more to do with maintaining existing solar side market power than really tailoring a real solution to a real problem.

And one thing that we heard yesterday and you know you are in interesting times when AMP agrees with both NRDC and AEP. We heard some of the value of bilateral contracting and we agree with that.

And under that approach we think that NRTO could retain its role of developing the resource adequacy requirements for its footprint. And then we are not actually advocating for NYISO and PJL.

I think there are a lot of different ways that you can support bilateral contracting and I don't think we have reached the level at detail that would actually result in any kind of construct but states could have a choice whether they wanted to allow the retail electric reliabilities entity to enter into long-term bilateral contracts to satisfy their obligations as determined by the RTO's or they could continue in the mandatory construct.

So it is kind of a hybrid approach but I think it is a lot more flexible than the current capacity construct which right now really is just focused on one type of resource to the detriment of all others.

MR. MOREHOFF: Thank you Lisa. Following up on that question the description that PJM would retain its resource adequacy role under that construct, can you talk a little bit more about that recognizing that we haven't gotten into details at this point but relative to I think in some regions I think we heard yesterday there's a view that there should be a clearly defined entity, whether it is the RTO or the states or the group that are responsible for resource adequacy.

In your description it sounded like there are many entities with that role in resource adequacy. If you could talk a little bit about who is accountable under those circumstances?

MS. MC ALISTER: Yes and one of the things that we heard yesterday is how important defining the objectives are and I will say that AMP is typically their ship role in PJM to try to have a stakeholder process where we have these important conversations and it took about 6 months just to get the stakeholders to agree to have those conversations.

And we are now in the process of talking about the objectives. So I don't think we are there yet. I think we have -- we are batting around 77ish in objectives of what a capacity constrict should look like.

But one of the things that we have thought about is we agree that it is a federal and up-tier role to have the adequacy construct or the adequacy obligation. But other folks can do their part in meeting those goals so the RTO's would continue their current process of determining what's needed and then it would be up to different entities with different responsibilities to go ahead and get the resources to meet those obligations.

MR. MORENOFF: Lisa to you but also to others -- recognizing that there are situations already where states have that kind of complimentary role -- do people have a view as to whether that works better in a vertically integrated construct or how does that work in a restructured environment?

MR. SILVERMAN: If I can I think the answer is it doesn't. Coming back to Arnie's first question -- if we eliminate any kind of MOPR really and what that really translates as is allowing states to pursue any type of objective whether it is zero energy credits, whether it is renewable energy credits, whether it is dirty energy credits, whether it's job externalities.

And if we do that we have to recognize that we will lose the benefits of competitive markets. I mean you know the idea that competition drives down prices, increases innovation, protects rate payers from excess costs is something that's been you know really enshrined in the Federal Power Act since the 1935 in fact.

And if we are going to move towards a system where the states are allowed to take 20 - 40 - 50 - 60 - 80 - 100% of the market and insulate it from competition I frankly don't know what the Commission's job is anymore.

And I certainly don't see how the Commission can meet its statutory obligation to ensure the captive rate payers are getting just and reasonable rates if at the end of the day the Commission has no role in evaluating the sales of energy and things that directly affect those sales.

So you know we think about where we are going to end up and you know this is not an abstract concept. Competition is the right way to drive down prices. And you know I often hear these discussions from state actors and I think why are you voluntarily signing up your rate payers to pay more than the market actually wants for that product?

And we can talk about how to integrate the right products into the market. In fact I think Arnie sort of jumping ahead to your 4th question and your 3rd and 4th ones -- you know those are all stations on the road that we need to go through.

And ultimately you know we do want to get to the point where the wholesale markets facilitate the state desires to meet the environmental externalities and the other externalities that they want to price into the market but we can do that better through competitive markets.

You know I heard a lot of talk of cooperative federalism right? Cooperative federalism works when there is a give and a take and a push and a pull. And thus far I mean I hate to say it but I think the Commission has abandoned the field. They are not pushing back and there's not that healthy tension about when state programs directly affect or aim at or target the wholesale market.

Those are appropriate places for FERC to come in and exercise jurisdiction. And you know it made sense over the past decade to let the states be the laboratories of democracy to pursue environmental initiatives that perhaps couldn't be done at scale or you know on an economic basis, but these are now increasingly mature technologies and we will all be better off as a nation if we are ruthlessly efficient in using the competitive market to deploy that capital.

And to say that FERC has no role there I think really does mean the death of competitive markets and the time line has to be very quick if we are going to stop that from happening.

MR. MORENOFF: Richard Mroz do you have an answer to David's question?

MR. MROZ: Without coming back to the main question on the table about the different constructs David to just respond to your question I'll come back to a couple of things I mentioned yesterday and maybe just put a finer point to it which is that as I mentioned state's Commissions find themselves in a place where though we want to protect our role in resource adequacy responsibilities we don't have the tools to do it and what has been missing at least in PJM is that construct is how the individual states and the states collectively, along with PJM can ensure that those responsibilities at the same time focus on the reliability issues along with the grid operator.

In other RTOs priced by other ISOs it's easier particularly with the one state ISOs so there were some commentators yesterday talking about that FERC may need to look at this differently in different regions within different ISOs so I just want to come back to the question you just raised in reaction to that.

Because in PJM we see a variety of issues that are in need of attention to get to the resource adequacy issues and the planning aspect going forward. States are reacting to -- clearly in the various states that have adopted legislation they are speaking out because they are making that policy decision that they feel that there is not an appropriate focus on resource advocacy of a particular type.

That's the reaction you are seeing and I think it is a reflection to the fact we don't have an appropriate construct to capture that responsibility and manage it.

MR. MORENOFF: Thank you. A related question -- if the option number 1 as Arnie describing it is in some way significantly reducing the traditional tools that FERC has used and therefore the ISOs have had available to ensure resource adequacy. It seems reasonable that there would be some sort of complimentary step to make sure that someone else does have the adequate capability to do that -- to fill in whatever gap there was in return for FERC having less tools available there.

Do you see that as something that would be primarily a question of additional market rules, are there additional responsibilities that would need to be done in the states through legislative or regulatory action in order to fill I guess -- 1 -- is there a gap and 2 -- is it something that could be filled through tariffs or is it something that needs to happen at the state level?

MR. MROZ: I haven't thought through the specifics of that or any particular proposal but it would seem to me it probably is both. It's probably a combination of efforts both here at the FERC at the state levels and along with the RTOs or the ISOs that we would have to undertake.

MR. QUINN: John do you have a reaction to the initial question or David's follow-ups?

MR. HUGHES: First I want to thank the Commission and Commission staff for allowing me to participate. I have the privilege of working with companies that are large power buyers all over the world and all over the United States so they have quite a bit of experience with all of the ISOs and the different variations of ISOs and RTOs that exist.

And generally there's dissatisfaction with almost all of them for one reason or another and much of it has to do with the way they have been implemented or continue to be implemented. There doesn't seem to be a steady state in the way these markets are designed which creates considerable uncertainty which my members don't like.

But if they had to pick one that they thought that they could live with the most it's probably ERCOT. It's an energy-only situation. It's more complicated because unlike New York, Massachusetts and California Texas is very business friendly and they welcome heavy industry.

Billions of dollars of new infrastructure in the form of new manufacturing facilities are being constructed there. And the market down there does not get in the way of doing that either with very energy intensive facilities -- they consume both a lot of natural gas and electricity.

And Texas and the ERCOT market, is also more friendly with respect to buying the mere generation which is a critical resource you know for many of the manufacturing sectors in the United States, especially those that are capable of benefitting from the fracking revolution.

So you know I think the energy only speaks volumes about what the -- what our opinion would be on MOPR and that has kind of been recognized for many years as not having very much to say positively about any of the capacity markets.

In fact we don't like the fact that they are even referred to as a market. And these are you know very Frankenstein like constructions of administrative procedures. They are just convoluted old-fashioned regulation and then I think in some sense some of the problems that are on the table here for this two-day Conference are created by the fact that the capacity markets, you know, don't work.

And so as I have stated in my pre-filed statement I think the Commission has a responsibility to undergo a thorough inquiry and what's the right way to do this if you can do it at all? And I had a last statement to the effect that I think it is dangerous to go down the path of trying to accommodate state policies in competitive wholesale markets.

The competitive wholesale markets if designed properly will be an excellent mechanism by which states can implement their policies and use that. And they not only should be encouraged to do so -- if you have the courage yourself to design these markets properly you are going to insist that they do so.

Because otherwise I think they are violating the Federal Power Act and you'd be telling. So that would be my statement.

MR. QUINN: Thank you, Michael then Thad.

MR. POLSKY: I would like to thank Commissioners and the Commission for inviting me to be here. I represent -- I'm a founder of a company named Invenergy. We develop about 10 gigawatts of wind close to 7 gigawatts of thermal plants and a number of solar as well as storage facilities.

I personally have over 40 years-experience in the power industry. I was one of the first independent power producers in this country dating back in the early '80's, witnessed the creating of competitive markets and obviously now I see sort of complete destruction of these markets.

I wasn't here yesterday but I am sort of observing what's going on here and we kind of tried to lump up sort of state policies all together and talk sort of in generality states do this and do that and I would like to mention a couple of things.

1 -- when we created markets, particularly multi-state market each state I remember this cost benefit analysis by joining PJM I am going to save a billion dollars

and this is a good thing for us and we have -- we need much lower zero margins because we can rely on the larger pool, there are plenty of benefits there so I would join the markets.

So after they joined the markets after a few years now each state started to come in and say do you know what, we joined the market, we have all of these benefits. We are not talking about this but let's tweak this market.

And states can do a lot of things. They can create their own tax policies, they can you know they can you know deal with the real estate tax and so on but they cannot directly interfere with the markets.

Particularly, you know and we do a lot of renewables which we rely on state RPS's for example which is a competitive product and everybody competes you know for the lost cost, you know in our renewable energy for example. This is available to everybody okay.

But there are state policies and subsidies particularly related to nuclear with Exelon that given to one company, to one plant or several plants and it is completely anti-competitive. I mean how we can sit here and say that the states can do this kind of stuff. It's anti-competitive not in the electricity market, in any market.

You can't just subsidize one particular

individual company you know because they want to be in business. They want to stay in the market, this is just anti-competitive and we have to distinguish this kind of action from generic state actions okay.

And particularly, you know nobody talked about you know, ZECs versus RACs. It is a completely two different -- we can't lump things together we have to approach this thing on an individual basis.

For example RACs is a competitive product, it's competitive with bid, it reduces costs to the consumers. Look what happened with the renewable energy. The prices -- when I started renewables in early 2000 you know prices now are probably 20% of what they used to be because of the innovation, because of the competitive nature.

Nuclear plants -- the prices are going up. It was too cheap to be there now we are talking about 40 years later through subsidized plans because it is not enough. We have to understand and if FERC would not interfere in this we have no market.

So for us to sit here and prevent -- we can certainly agree how can we accommodate certain state policies? There are some states policies just we can't accommodate. We can't accommodate dumping power by individual plans because somebody wants to provide several thousand jobs in a particular state. This is just anti-competitive as it is.

MR. MORENOFF: Following up on that going back to Arnie's sort of original five possible paths it sounded to me like that is a -- you'd support the path 3 there would be some things that we should be willing to accommodate and others that we should not when there would be different tools that we could use.

And I know we will be talking more about that in some detail. I guess one question I would have for you is it sounded like the distinction that you would want to draw there is between anything that is company or plant specific is unreasonable but something that is generic would be okay even if it is generic in a way that is narrowly to a certain field and therefore in some ways arguably discriminatory against everyone who is not in that field.

Is that a fair characterization of your position?

MR. POLSKY: You know states have and they always have certain rights. For example they can exempt power plants from paying real estate taxes located in the state. They can impose sales tax.

In one state you pay sales tax for the equipment and other states you don't. Those are state policies but completely subsidized power in percent of kilowatt hour for power. You know basically what Illinois says to Exelon you go sell electricity for whatever price, even if you lose money and I'll pay you the difference. Okay that's what basically we are talking about China dumping, look at this. What more dumping we can talk about than this.

MR. MORENOFF: So maybe when we come back to the 3rd of the paths talking about ways in which we would distinguish about what kinds of state policies are legitimate as we talked about yesterday and which are not, maybe we can come back to that in more detail.

MR. QUINN: Thad, Kathleen, Mark and then you.

MR. HILL: Great and I think Mr. Polsky makes a very good point until he spoke recruiting all state policies is kind of equivalent in the discussion we were having and the fact is they are not.

I mean if we actually do parse this out there are environmental policies and there are other policies which are meant to protect jobs. And we know that in the nuclear discussions for New York and Illinois and certainly the ones that are underway in the state houses in Connecticut, Pennsylvania and New Jersey are subject you know -- these are plants that have been fully recovered their cost twice once during restructuring, a second time when high gas prices -- they are asking for full recovery a third time.

Many of these plants are even profitable and we don't have to have that debate here but certainly we feel that that's the case in Connecticut. And the effort here is about jobs. There have been discussions about jobs and we can be cloaked in environmental and we all know and I think the record will show that these were about jobs.

It doesn't seem that it's in the best interest of competition and FERC and the Commission having the right to oversee competitive wholesale markets when one state is trying to subsidize directly for jobs in that kind of way is one place.

Environmental attributes are different. Our point on that and this gets back to your questions about the hybrid approach is to price carbon. I mean it's an externality -- I think that's what we are going for. I do think states are trying to pick so much wind or off-shore wind or so much solar, so much hydro are going to end up in a very different place and we have wholesale power markets.

We think the best way is to price carbon but actually at least here there is an objective of state policy which is environmentally driven versus ones that are jobs which is a zero sum game with the states that surround them.

And I think that's a distinction that has to be made here on all state policies on RECs are equal.

MR. QUINN: Thank you Kathleen?

MS. BARRON: Well, finally called on me, I appreciate that. There's a lot to say and I would like to get back to your first question Arnie but just on the question of are all state policies created equal -- and you all know this. But obviously we have RECs, we have SRECs, we have ORECs, now we have Zero Emission Credits. All of these programs because they have no alternative are choosing a technology and deciding that that is a technology they think because it is zero carbon will displace emitting generation and will de-carbonize their fleet.

That is the goal of all of these programs and you can look at them objectively and decide for yourself which ones are lower cost and which ones are higher cost. And by any measure is your emission credit programs in both New York and Illinois are the lowest cost option to de-carbonize the states, would not have taken the path that they took had that not been the case.

And you can ask Chairman Sheahan or representatives from New York, they have had plenty of plants retire over time that they have not stepped in to support. Those are emitting plants they have let them retire. They have stepped in to support a number of nuclear stations because they were not suffering a little bit they were at risk of retirement.

They had been losing money for years, they were cash flow negative and they were going to disappear along with their environmental benefits. The state stepped in because it was cheaper to do that than to bring on new clean generation.

And they didn't stop at that of course they are going to try to pursue new clean generation through RPS programs and other mechanisms but what they did going back to your question Arnie is take the guidance from this Commission.

And respectfully I would say we are in path 1 right now. The thing that we use the MOPR to address, are exercises of market power where someone is pushing generation into the market just for the purpose of lowering the price.

That is not what the states did here as I just described. So what they looked at and as you know we have been here talking to you about the impact of state policies that I have mentioned what's been going on in California as a result of a number of things that have happened in state policy and through price formation.

And what we have gotten -- I mean two years ago we had an order on a complaint that ITNY filed about an emitting plant that got an RMR because it was needed by the system but it wasn't picked up in the market and the question was should that unit be able to bit its cost, including the RMR payments into the capacity market.

And the Commission -- I don't think it's fair to say that the Commission has had no role. I think if you have done what you could to be thoughtful about these cases but in that case you said the market was not pricing the thing that it needed through the capacity market, the RMR represents something outside of the market that it was fair for the generator to reflect in its bid.

Similarly with an order you issued in the California ISO when they asked to drop the bid floor from $30.00 to $150.00 the Commission said, "We are going to do that." Renewable units in that case have legitimate opportunity cost representative reduction tax credits and RPS payments that they should be allowed to put in their bid and therefore we are going to drop the price war to allow them to do that.

So these are choices that you made to say when something is not priced in the market that it is fair and it is actually economically efficient for a unit to recognize those costs when it is making its bit into the market. So we are at path 1.

And so the states that I referenced earlier have taken your guidance, they have come up with a program that is not keeping us true to our costs. I mean we should tell the truth here, these are attribute payments in the case of Illinois. It's $11.50 a megawatt hour.

If prices go down ZEC does not go up. If our costs go up the ZEC does not go up, it's a capped payment based on the environmental value that the units are providing to the state. So they are following your guidance, they are doing what they could do in the absence of path 4 which is absolutely as we discussed yesterday and which we are hearing from a number of these panelists the place we should go.

We should be pricing on the attribute but you can't change the rules on them in the middle of the game until you are willing to go down path 4 and you know, if you did go down path 4 parenthetically all the units we are talking about here would be in the money so it is not skewing the market to keep them going while you work on path 4.

MR. QUINN: Going back to the question on path 1 though in your view markets just stay where they are though? The energy markets continue to work the way the energy markets worked, capacity markets continue to work the way the capacity markets work or do we need to move to along path 1 a residual capacity market?

Do we need to change the way we do energy markets at all?

MS. BARRON: I don't think we need to change the way we do energy markets although there are proposals to address the negative pricing phenomenon which in American you shouldn't be paying someone to take your stuff. So let's fix that problem.

But I think it is a fair question. Would we need changes down the road in the capacity market whether the kinds you heard today or others, to adjust what we define as capacity or how much capacity we are buying? Those are potential changes if we sometime down the road find people unwilling to invest and we need to -- like New England has done, add some sort of price lock mechanism.

Those are all things that if you stay on path 1 and you decide not to try path 4 that the RTOs -- if some day in the future there is a challenge in the capacity market bringing in new resources which we are not seeing right now. We are seeing people coming in well below the cost of new entry, then it should be considered and those would have to -- we would have to have those proposals come forward from the RTOs.

MR. QUINN: Acting Chairman?

CHAIRMAN LA FLEUR: I just want to ask a question about something you said which described the program of zero emissions credits as kind of a forcing function that the states had to do because the markets hadn't done what they were supposed to do which was price the attribute.

Because today I am very focused on process you know there are all of these ideas but how do we get from here to here. So I guess if the forcing function is that the state doesn't like what the market is giving it, it can just start doing things because it really cares and it really doesn't like what the market is giving it so how will we ever get on a path to preserve the market if that -- you know make the market work for reliability if that's what we want.

Because I think the minimum offer pricing rule is a little bit misnamed. It's really a question in the market out of the market. How will we ever get on a path should the forcing function be the other way -- assuming we have a quorum.

If we did something and then brought people to the table to redesign the market because I'm just wondering how will you ever redesign the market? I think the state having the forcing power might just lead to the end of the market is my concern. I mean I'm just worried how do you get from that -- how do you ever get it back, does that make sense?

MS. BARRON: It's hard to face the mic and face you at the same time. Well I tried to signal a little bit of this yesterday and I know it makes people uncomfortable but I don't think we restructured the markets overnight without a fair amount of work going into the give and take in terms of what's the benefit, what's the cost.

We certainly didn't move to capacity markets without a huge amount of pain and suffering and an amount of time that went by. In both cases the Commission was involved to some extent. That's different from what we are seeing now in the pending MOPR case where someone dumps a complaint on you and you are just supposed to figure out what to do.

It obviously needs to be more comprehensive than that in terms of the process.

The last point I was just making though is you don't have a crisis in front of you. You are hearing a lot of people say that there is a crisis in front of you in terms of we are not going to get investment. And you just read the analyst reports about what's expected next week in the PJM option.

They are expecting 4 gigawatts of new capacity to come in with the ZEC bill having been passed in Illinois. So take your time to figure out what that process is. Don't feel like you have to jump into something that is going to be -- you can characterize it as a forcing function, excuse me, or you can characterize it as changing the rules in the middle of the game but take the time to follow that process and see if you can get somewhere.

You had a lot of state Commissioners here yesterday talking about willingness to sit down and do it. I say take them at their word.

CHAIRMAN LA FLEUR: Just a couple of comments. It made me nervous in your written testimony and what you just said of like you don't have a reliability problem so wait until you do then do something because I feel like unless -- I don't want to throw the resource adequacy ball unless I know someone is -- I don't want to be Tom Brady unless I know for sure someone is going to like catch the pass and I'm not just going to throw an interception or something. I want to make sure somebody took it you know.

And I absolutely agree with all of the people who said talk to the states and all that. I worry -- I was a little bit worried yesterday that this was going to become like a 3 year NERU collaborative where like every May we would be saying what state should we invite in July?

What are we going to do? And in the meantime it would just be such a slow process. That's why I mean I guess we have a disagreement on maybe on the urgency but I am just worried about and I'll shut up and let you get back to the questions, how you get from here to somewhere.

MS. BARRON: I would say and Jaime somewhat tried to go there yesterday. So what are your principles? What are the things you are going to worry about first?

CHAIRMAN LA FLEUR: Getting a quorum would be high.

MS. BARRON: After that -- number 2 you have a sense of urgency on my side of the table too Chairman. We would not have been in the place we were at in Illinois and New York if there was not a sense of imminent danger to stations shutting down but obviously the states would not have taken the steps they had if they did not believe that were true and that they were going to lose that zero emission benefit.

And so the question is should you step in to stop the states from having done what we all agree would be the economically efficient thing to do which will have the consequence --

CHAIRMAN LA FLEUR: Does you all agree with that?

MS. BARRON: I think if you look at the map that the cost per ton of carbon abated by a nuclear support program versus a wind, solar, rooftop solar program in Illinois you will have the answer to that question.

So the question is do you want to step in and stop the states from acting in that way now which will have the consequence of having the stations retire when you don't have an imminent problem in front of you.

And I am not suggesting that you wait until the lights go out. I'm suggesting that you look forward to the signals in front of you in terms of what kind of investment with this program in place you are seeing and use the time that you have -- not years and years to take the action that the states are asking you to take.

And if you are going to try to choose among the problems in front of you don't choose to mitigate the one that's the least cost alternative for customers.

CHAIRMAN LA FLEUR: Well thank you. The only verb is what I want to do. Sometimes we have to do things that we have to do, and that's why I'm hoping to get good proposals. I'll shut up for a while.

MS. SIMLER: I've got a follow-up question for Kathleen if I may. So sitting here listening to the conversation it seems like there is some angst over how we have managed through a transition and what steps could be taken for there to be more of a comprehensive look at some of the states' interest.

I think President Mroz you mentioned yesterday that there's -- at the time of integrated resource framing states sat down, you figured out what you needed and that that's a little bit missing.

We also heard a little bit yesterday about principles and having some sort of idea of where we want to go and so I'm wondering Kathleen if there's an opportunity for states, industry, Commission staff in the absence of the quorum to try to work on the idea of what common principles could be?

Whether that would be helpful for getting ahead of the acting Chairman Commissioner Honorable -- but for some statement of that if anything like that would help address what again -- the tension I am hearing of states will continue to do what they need to do given their policy objectives and FERC will continue to react unless we have a way of addressing both of those things.

MS. BARRON: I -- if your question is should we work on some principles collaboratively to sort of guide the dialogue as we go forward I think that's a great idea. You know obviously there will be decisions that have to be made down the road but if you can sort of put out some guide posts on the front end I think that makes sense.

I think the problem of course is you know, getting some alignment on what all of those principles should be. You laid out some good ones yesterday. Are we taking into account the cost of customers? Are we dealing with the service wide situation is another one that came up yesterday.

I would add are we acting in a way that's economically efficient? Are we reducing discrimination among sources of zero carbon resources that some are getting support, some aren't? You'll hear some of the suggestions from my colleagues in terms of what those principles should be but you know I see no reason why we shouldn't go down that path and try to work on something like that.

MR. QUINN: We'll get back to the line -- Chairman Vannoy?

MR. VANNOY: Thank you I appreciate the opportunity to join the discussion. I appreciate FERC's convening the technical session. I have to go through a little disclaimer very briefly. I'm Chairman of the Commission, my views here are my own, they are not the view of any of the other Boards or Agencies I serve with.

I think it's helpful in hearing the discussion that's going around the table right now and I don't want to retread yesterday but in Maine's experience you know we went through restructuring, we very much supported markets. We had a good experience there going forward with markets.

We are getting good results out of markets. I go in front of our legislature every year new session, every 2 years and I go through this conversation on markets and the importance of markets. And at the end of the session we get, you know, we used to do integrated planning, we don't anymore -- but that now happens at state legislatures.

At the end of the session we have a lot of bills that relate to the out of market purchases of various types of resources for a whole variety of reasons other than just carbon and I want to make that very clear -- a whole lot of reasons for those other than carbon.

So when we talk about the no MOPR path going back to the question that's in front of us here I think this becomes -- this becomes very integrated with how we've progressed in the capacity markets today.

I think we have taken a bunch of little incremental steps to accommodate and I know there was laughter at or I shouldn't quite put it that way, but there was some laughter at bringing up the idea of an energy-only market.

But there are some parallels here that I think are important because when you look at what ISO New England has done with scarcity pricing, you know one of the reactions was against scarcity pricing but if you combine what we are doing with SCM penalty factors.

If you combine what we are doing in reserves, if you combine all of those we are approaching $9,000 in ISO New England for scarcity pricing. So there's an overlay that I think is useful to think about between what we are doing in a capacity market to get price signals, to get performance because it was dampening performance and it was dampening pricings.

So I don't -- I think we have to look when we look at new MOPR we have to take a deeper look at all of those rules and what aspects of that we can bring forward in market rule changes in the face of an overlay that we are facing of legislative action and legislative action that's looking at PPA's for a whole variety of reasons.

When you look forward to what these markets are going to look like you know we have done some studies in New England -- one of the studies looked at capacity markets. You know right now we are maybe 1684 capacity versus energy.

One of the studies looked at a future that's more like 45/55 capacity 55 energy. Well that's just going to bring this whole issue of how capacity markets work to the forefront. And where that issue becomes I think very important is when you look at price signals to the players in the market and the on-going discussion between the states of administrative socialization of costs we get into all kinds of cost questions among the states -- how we are going to divide up these things.

And I think in the capacity market future where you see 40-45% in that those discussions are going to become even more important and so maybe part of our discussion here should be focusing on what that future looks like with reserves, ancillary services and more of price signals in energy markets.

CHAIRMAN LA FLEUR: I just want to say for the record I wasn't laughing at energy only markets. I was laughing when somebody said what's a good market and they chose the only one we don't regulate -- I was more groaning.

COMMISSIONER HONORABLE: And I dittoed that. I was laughing because John would raise the one that we have no jurisdiction over.

MR. QUINN: I know there are other folks that have comments. I would like to ask you to move on just because we have a bunch of stuff that we are trying to cover today. And move more toward -- we have heard a lot about any accommodation is bad accommodation and we will get to kind of the other paths.

But for the kind of next step over where we could accommodate some state actions -- we find some way to accommodate some actions. My sense is from pre-filed comments from the process folks have been going through already that some of you that really don't like the no MOPR path are a little more comfortable with the let's find a way to accommodate where accommodate again is allow a resource to get a capacity supply obligation so the customers get the benefit of those states important resources for the purposes of capacity.

But when you are saying the price -- set the price as though that state support can occur. So I would like to kind of explore that path a little bit more, get a sense for what that accommodate market design looks like and if you weren't comfortable with MOPR but you are comfortable with that accommodate path, what makes you more comfortable?

And then again a little bit on whether that's a stopping point, whether accommodate is the end of that path or there's a need to move to another path eventually, Abe?

MR. SILVERMAN: Yeah great thank you. So we have a five part policy prescription -- before I put it in 3 I'm going to make it into 5. And the first is to admit that we have a problem. You know this gets back to the jurisdictional issue. I completely disagree with Kathleen that nuclear is de facto, the cheapest source of carbon abatement.

I have my own numbers that show you could do it -- replace all that nuclear that's at risk in New York for half the price with renewables. It's 20 or 35,000 megawatt hours of batteries for the same price. That's 10 billion dollars of rate payer capital that we are committing without using any kind of competitive process or testing it against the market.

So the first thing to do though is to put that question where it belongs which is at the Commission because I don't expect you to believe me or believe her, you'll probably believe her, she probably knows more. But the first thing we have to do is say that this is within FERC's jurisdiction so that we can actually come in and step up and say -- and look at these programs and say our captive rate payers getting access to just and reasonable rates and non-discriminatory, not unduly preferential.

That's not an option. That is the directive. It's the Commission's duty under the Federal Power Act to make that analysis. And so the first thing that we have to do is look to the Supreme Court and say the programs like the nuclear that target or aim at or directly affect the wholesale market are within FERC's jurisdiction -- so that's step 1.

Step 2 is that we need like the 6 month time frame or really the day after we get a quorum back to step in and staunch the bleeding. The Commission needs to come out very strongly and say that out of market actions will be MOPR'd. That's not an end though, that's a middle step -- that's the let's restore just and reasonable rates as quickly as we can.

I was shocked to hear the President of the New York ISO say yesterday that he doesn't really think the rates are just and reasonable but it is okay. We have three years to work out a solution. No! No we don't. This is something that needs to happen almost immediately.

And I think without those kinds of actions we are not meeting our statutory obligations. The third is to really direct the ISOs to begin incorporating the state objectives into the wholesale market.

Pete Fuller, you know you are probably all sick of hearing us talk about two-tiered pricing. Well that's a way of protecting and ensuring that incumbents get just and reasonable rates and accommodating the state.

But even that's not the end of the road because the next step is how do we achieve -- how do we use competitive markets with the FERC oversight to facilitate the actual objectives that the states want?

And this comes back to the cooperative federalism role that we talked so much about yesterday. We need the states though to come to the table and say, "Hey we don't just want that power plant, we want the attributes of that power plant."

And once we have identified that or translated those statutory goals into a market product, we can redesign the FERC market so that's the 4th step.

And then the 5th step which we haven't even talked about which is kind of funny is the adapt to a future where 50, 60, 70% of the wholesale market is a zero marginal cost resource wind, solar, nuclear are going to be on the margin quite a bit if all of these environmental goals go through, so that's the 5th step.

So it's not one or the other, we need to move through that risk but with the goal of eventually bringing in those state mandates, incorporating them, putting a price on them and allowing everybody to compete.

Because that's what we need to do to attract private capital, to avoid putting burdens on rate payers and having them take technology risk and risking a generation of stranded cost. So you know again it's that 5 part process of which the immediate accommodation is to MOPR the nuclear and MOPR other resources like our own Dunkirk in New York which is a fossil fuel resource that was kept around by the state with a contract for jobs and taxes.

And it is appropriate for FERC to come in. In fact I say that it is mandatory as the Federal Power Act to say that those resources are within your jurisdiction. If you say it's not I just don't know where we go.

MR. QUINN: Just to follow-up on accommodate what I just heard you say about nuclear and your own plant both of those are existing plants. Do you have a different point of view on whether we are accommodating just new resources or we are accommodating both, new resources and existing resources?

And maybe this goes back to a little of the discussion that we had yesterday about what role we need the capacity market to play and whether the primary role is just organized exit or whether it is bringing new resources.

MR. SILVERMAN: Exit and entry are both two sides of the same coin. You know it is the cycle of life right birth and death, you need to have the two married together and you need to treat them the same.

This idea that somehow we want to get away from what's a legitimate state goal -- I hate that term. I may have used it in my testimony if so I apologize but it's really a bad term. What we need to do is come in and say that every state initiative has to be run through the wholesale market in a way that respects the state's goal but also meets the Commission's statutory mandate to ensure just and reasonable rates.

So what does that mean for a project that's being kept around for either price suppression or job benefits or you know it has a veneer of environmental. That needs to come in and be accommodated in a way that assures just and reasonable rates, both for the rate payers and for the suppliers -- and unless we do that, and that's going to take comprehensive reform, but that's easy -- you know that part is relatively straight forward.

In fact there are complaints that have already been filed at the Commission asking you to do that so as soon as we get quorum back I think we can do that. It's the next step where we actually invite these resources in and try to make them part of the market. Again I think two-tier pricing does that right because it allows the resource to take on a capacity supply obligation without completely cratering the price so we get the benefits of competitive markets.

It's true it is a little less lucrative for us, we don't like it, it's a second best solution but it is a marriage. It is a cooperative approach and I think some of the other ideas that ISO New England has floated, you know are sort of getting at that same idea. PJM is thinking about something similar.

And then sort of you know the next step -- once we get that solved is to actually co-optimize the forward procurement of all of these resources. I liked Robert Stoddard, I think he is going to be on the panel this afternoon, I hope he will talk more about his you know integrated REC and the capacity procurement.

If we co-optimize and secure for all the various constraints that the states want, I think that's the ultimate path forward but we have to save the competitive markets first or else we are going to lose those benefits. And just like the nuclear it goes away it's not coming back.

If competitive markets go away they are not coming back either.

MR. QUINN: Thad and Lisa do you guys have comments on our accommodate path?

MR. HILL: Yes and I will and I'll use the -- I'll comment on New England and the draft proposal because I think that's an example of an accommodative path and probably a less tangible one that's out there right now.

Before I do that I do want to add though it is very clear in an $11.00 subsidy to one plant over another plant and by the way we are low carbon too, we are a much lower carbon than a bunch of coal plants but we are not getting subsidies.

I will tell you all in our sector right now capital markets are not allowing any of the public companies to invest one dollar in these markets because of where we are. So I just want to be clear there was a little bit of a case Kathleen made for what's put in place we will have time to figure it all out.

There is irreparable harm that is occurring right now to our companies by this action where you are going to keep things in the market. It is very different. We have existing resources that have been planted under the same rules than it is in markets where they are not.

Just because Exelon was more successful in Illinois than AP or First Energy were trying to save some coal plants and nuclear plants in Ohio does that make it right? You all have the authority as FERC it is your jurisdiction and please step in. This is whims of -- you had political power in one state for an existing asset to save jobs and threaten jobs -- this is not about environmental policy.

But anyway you asked about accommodated,

accommodated policy let me talk about the New England policy for a minute what they proposed. We thought it was a reasonable step and you know the idea -- my quick characteristic of what they were trying to accomplish is an asset that is subsidized, has to more or less buy its way in to a capacity market on a commitment.

So you have got assets to retire you put it in place that prevents over-build in the markets. It also permits negative impact from the existing generation what somebody was going to leave otherwise. So it's a pretty interesting first step to begin dialogue.

There are a couple of issues with it though that I think we should point out practically. First off the current proposal does nothing to prevent energy market price discrimination. Specifically if we are talking about bring 1,000 megawatts of hydro in from Quebec, if we are talking about 800 megawatts of off-shore wind or whatever else might be talking about there is going to hammer the energy price and there's no feedback.

Now this gets a little more detailed and you can already use it in a combined cycle reference, a number of CT, there may be a feedback loop there. You can also think about other energy market corrections but it is a reasonable first step and you have to protect the energy market.

The other place again specifically where we are a little concerned about it is that it creates a problem once you enter in you are always going to get zero if you are a subsidized asset. But we actually think with those two kind of points where we think there needs to be some dialogue and work, it's a pretty reasonable step towards accommodation which is the states are going to do what they are going to do if they are willing to pay that price and we think it will be a high price, but it also protects reliability and it gets with my caveats in place gets you a lot closer to just and reasonable than just actually going out and you know effectively exercising buyer side market power and crashing the market to other assets that invested in a different refrain.

So I mean it's a place to start for sure.

MR. QUINN: Thank you, Lisa?

MS. MC ALISTER: Thank you. So when you are talking about accommodating that is the easier of the two steps compared to doing something further down the line but what you are essentially saying is that we are going to have to make determinations on what is a legitimate versus an illegitimate state policy.

And I think I heard Chairman LaFleur yesterday she doesn't want to be making those calls. And the other step that you have to do is then you have to create a construct that does fold in all of these specific things that we want through two-tiered pricing or some other mechanism.

And you are making an already very complicated market even more complex when I think you have an opportunity to do something that is very simple and that also targets and allows the states to solicit the types of resources that they are looking for specifically which again is bilateral contracting where you have got a willing buyer and seller who are looking for particular attributes, for particular resources and allow them to go out and purchase that.

But we heard Kathleen say that the states are doing things because they don't feel like they have a choice. And I agree with her. I think that the current capacity constructs have gotten so inflexible that they are only relying on the market designer's vision of what the marginal unit is as a reference and it doesn't accommodate anything else.

So I think it is going to be a challenging step that is going to require collaboration to get there. But I don't think we should keep building on with different tweaks and different fixes to make an even more complicated market when we have other alternatives.

And when we are talking about bilateral contracting the Commission should really use as a benchmark the value of bilateral contracting that it would bring to market efficiency and reliability as opposed to its implications for the existing centralized capacity construct.

MR. QUINN: Thank you, Michael?

MR. POLSKY: I just want to you know echo on the Chairman's comments about urgency because we you know -- I'm a primary producer and private company and we will say we have to eat what we kill. And what we are witnessing now is destruction of the market.

I know it is easy to sit here in this room and sort of pretend we have a year or two or three to deal with this but there are specific issues right here. I think our speaker yesterday I heard say that an IPP company now a fraction of what used to be and soon it may disappear completely.

We have a lot of issues right here and there are things that are obvious okay. We don't need to do a big study to understand that a subsidized single plan is just not right. If this is what we have to stop today -- an Exelon representative said that the lowest cost in CO2 compliance with nuclear plants.

I'm in the renewable business. If it's lowest cost let them bid. They went through legislations because it is not the lowest cost. It would be the lowest cost they will be open to other sources. Illinois has 136 zero emission facilities. Why other people cannot bid?

Another thing is there are a lot of wind farms right now people built, historically relied on market collapsed -- a lot of those wind farms are not uneconomical. What happened if they all would come to their state and say we need subsidy because we can't run anymore because we have to close our facilities because you know -- so what are we going to do? Give them subsidies $11.00 a megawatt hour because they said the cheapest possible source?

I mean that doesn't make any sense. I just want to urge this Commission there is absolute urgency right now to deal with certain issues today you know when the Commission gets a quorum and certain issues maybe later because I agree with some comments that we are dealing with a market that is not properly constructed in general.

We have zero marginal cost resources thrown in together with fossil fuel resources -- it doesn't work because we will see basically fuel based resources will lose eventually, they will disappear. We have to deal with this.

But when I say there is an absolute urgency right now to deal with certain issues today. Because if we don't restore at least enter with confidence in markets then maybe next year we don't need this Conference anymore because markets would not exist.

So there is certainly an issue and again I hear a lot of discussions oh let's look at this, let's look at that -- you know we have to look at the issue that is in front of us. Can we subsidize a specific resource or not? The issue is clearly not.

You know should we accommodate some state policy? Yeah -- but we have to study, we have to deal with this okay. But again I want to again to elevate this sense of urgency because private people, companies that have to pay their employees, they cannot wait that year or two years, three years from now somebody will come and save this.

MR. QUINN: Sir, we will let Kathleen answer the question from the last version. I would love to move on from the conversation about whether or not the particular subsidy for nuclear is good or bad or efficient or whatever.

At some point I think we hear it and we get it. For the particular path -- the accommodate path we are talking about I hear is that a version of an answer to this thing that you are saying has an urgent problem?

As a wind developer New England has got a limited you know, a limited exemption for renewable energy. Does accommodate help you as a developer of that resource -- is that a reasonable path forward?

MR. POLSKY: I feel certain state policies that rely on competitive supply also rely on market to me those policies are policies that can be accommodated. The policies that rely simply on individual lobbying, in the regional companies going out the doors are not the right policies okay.

So if it is a market based policy -- yes they can be accommodated. We rely all the time on market based policies. Even if it is subsidized policy but it is market based. You know people have to compete to get something, not just given to them on a silver plate.

MR. QUINN: Kathleen do you want to say the very brief last word?

MS. BARRON: I'm grateful that you sort of try to take us back to the question. Obviously it is hard to compete when there is a fixed number of assets on the system you know to provide existing nuclear power, so we'll just let that go.

You know if you have a cheap source of de-privatization you only have a certain number of assets. The states did what they could to pick only the ones that they thought were at risk.

So moving on from that point to your question about accommodation I agree with what Lisa said. I mean the way it came across yesterday it sounded like it was like oh we will just accommodate and then we will be done with this -- not from you all but from some of the speakers.

And you still have to make the choice of which subsidizes, which state policies are going to trigger a re-setting of the price. You still have a minimum offer price in the accommodation pathway because you are resetting the price of some units that you say that you will have to decide are getting some sort of out of market support that makes then subject to that policy you heard yesterday. There's a whole bunch of subsidies explicit and implicit in the market figuring out which ones have to be subject to this policy, it doesn't take you out of that bucket of still having to make that choice.

There are a couple of solutions that have been offered in this vein. They all have that characteristic. Some of them don't go as far as others. In other words some of them would just say and I think this is true of the New England proposal only resources that are going to be able to be matched up with an exit resource will be able to come into the market, so it is still a limiter on whether these policies can be effectuated or not.

And the last point is to say that the existing exemption is small I'm not sure it's exactly fair in a small market like New England has 200 megawatts and given the capacity of valued renewables that's a pretty significant opening that the Commission gave for that state policy --

those sets of state policies to be effectuated.

And the challenge in front of you is now that you have done that what do you do next?

COMMISSIONER HONORABLE: Thank you. I'm very interested to hear the panelist's perspectives about the question that Arnie has teed up and I think really Chairman Vannoy and coupled with Abe's color around we are the state of clay today.

The state of clay today is that state legislatures are making these calls whether you like it or not, whether you think it's legitimate or appropriate or not, it's happening. So while we don't want to be in a position at FERC of swatting down, that's really not a good place to be.

I think the way that we've employed MOPR has not been a way that provides certainty and consistency. It seems a bit arbitrary at times. So we are now at a pathway -- a fork in the road, it has many forks maybe and Arnie has teed up one, path 1 which is limited use of MOPR.

Maybe in a way that would be consistent obviously with the Supreme Court decisions in time or accommodate and we have heard one example of that with the ISO New England proposal. I appreciate those of you who have spoken to that. If you aren't going to speak to that today I would urge you in your post-Conference comments to address that because we have to go down one of these pathways.

So we are either going to be at a place where we apply MOPR in a limited fashion or we attempt to accommodate the state policy that's coming down whether you like it or not, whether you agree with it or not, whether it is for economic reasons, whether it is for more jobs, whether it is for more renewables, it's happening.

Whether we are going to duke it out like we have been doing here at FERC so I just wanted to ask one more time, I think Arnie's been quite polite to try to keep us on track -- please speak to accommodate now, this is your time. We all dressed up and came to this party or file it in the comments, thank you.

MR. QUINN: Thanks Commissioner. You can also come to all of my meetings. Alright so I think we have John then Chair Sheahan I saw your card up and then Abe.

MR. HUGHES: I'll speak on accommodate. Accommodation works in two directions. Either FERC can accommodate the state policies and open a Pandora's box endlessly tweaking the market design and where we will have MOPR 1, MOPR 2, MOPR A, MOPR B with unknown, unintended consequences.

But in the end you are probably heading south of the problem because the states won't agree on anything and once you allow one state to have MOPR B or something else you know another state is going to want something that totally you know, contradicts what you did before.

And so that is just going to lead you again to a Pandora's box. The other form of accommodation which I support is the states have to accommodate their policies to market rules established by the FERC. And this will allow a simpler market design I hope that makes it more of an honest competitive market rather than an administratively determined one that we have today.

MR. QUINN: Thank you Chair Sheahan?

MR. SHEAHAN: I don't want to belabor this but there have been a number of characterizations of FIJA and I just want to make it clear for the record from the state's perspective that FIJA is about energy policy. And the state is acting well within its legal authority to address legitimate environmental attributes of certain generation.

In terms of accommodation I think Commissioner Honorable's comments really bear some consideration. The markets don't exist because you know they have some value in and of themselves. They exist because the states have bought in.

And to the extent that the markets don't accommodate the state's strongly held policy views, I think states will begin to move away from them and that's an important point I think that needs to be kept in mind.

MR. QUINN: Abe?

MR. SILVERMAN: Yeah accommodate one of my absolute favorite topics because we really do need to move very quickly. And if there is one thing that I would urge the Commission to do coming out of this Conference is tell the ISOs to REC them as soon as we have quorum if not before.

To come in by a date certain with a plan -- and you know the first iteration of the plan, the first evolution of the capacity markets doesn't have to resolve every problem. I really like the two-tier programs. I'm very glad that New England has put forward their proposal, PJM is working on it to put forward sort of their proposal -- is working on it.

You know I think that's great because that's a first step. But we really have a time crunch and I would very much like to see the Commission come out and say, "Hey ISOs we want to see you come in with a -- you know do your homework by next week, by two weeks -- seriously by the end of the year, come up with something that you could implement in the first half of 2018 for the next capacity option."

And if we don't do that we really do risk falling way, way behind. And you know, I like the accommodation that allows a state to come in and have subsidized resources that it picks, take on a capacity supply obligation which is great, that's one of their major concerns -- but then recognize that that unit isn't relying on the market for its fixed cost recovery.

It's getting its fixed costs recovery somewhere else and there's nothing inherently wrong with that but we need to recognize that the rest of the players who are deploying shareholder capital as opposed to captive rate payer capital are relying on the markets for the just and reasonable rates.

And if we want to drive an investment and we need to, we absolutely have to drive an investment if we are going to de-carbonize the economy, if we are going to turn over the existing fleet of generation in the next decade, we need that shareholder money in the market.

And in order to attract that money we have to protect the market from you know, protect those people playing in the market from the predacious effects of competition against a resource that's giving it away -- you just can't compete with free.

So you know one of the things -- I think the 200 megawatt exemption in New England is respectfully a great example of what not to do. Because what it does is it harms every market participant and prevents every other resource from getting the just and reasonable market rate that they are entitled to.

That doesn't mean that their resource shouldn't be able to come into the market through some sort of two-tier pricing, but the 200 megawatt exemption accommodates the states without doing anything to protect the suppliers.

And so I think that's an example of where not to do it whereas if you had a two-tier pricing scheme, the 200 megawatts still comes into the market over the long-term but it doesn't harm the people who have deployed capital, you know that has shareholder dollars at risk.

And it's just you can't have those two trade off against each other or it will drive capital away at the right time we need it the most.

MR. QUINN: Thanks, Thad?

MR. HILL: Sure I mean on some level some of the questions we are talking about are being litigated and we will hear from the courts on these and then the courts are going to say what they are going to say. In the meantime there is a sense of urgency for you all for FERC to step in and fill the space.

Look in the multi-state ISOs -- New England or PJM it is impossible, it is folly to think that you are going to come up with a plan that's going to accommodate every state's individual interest. You are not going to be able to do it.

You can make changes to the market and accommodate some general themes but whatever that is is going to have to be pretty firm because states are never all going to be happy just like melting generators will all never be happy.

And so there has to be a willingness at some point to step in place and you can accommodate to a degree -- the states are going to have to accommodate the other way around.

We talked about some of the programs, a two-tiered capacity market but what New England has said there's some energy market ideas out there and whatever they are Abe is absolutely right -- if we are going to put money to work we have to get comfortable that we are going to get a fair shake.

And if somebody up the road that works for a bigger company is getting free money from the state, we have to have the ability if there's a negative impact, that we as a receiver we can't invest. But I do think it's for sure that you are not going to be able to accommodate all the states and every wish they have, otherwise you know 6 states in New England or however many states are in PJM -- 10, 12 - 13 thank you.

13 plus D.C. you are not going to get there so you are going to have to put forth a plan that works. And

by the way if the states ultimately don't like it they have every ability to step out of the market and not you know, not have to deal with a lot of these issues and re-regulate the market and take over resource adequacy and then we can talk about for those of us with plants in those states, just and reasonable and retro-active you know rate making and all of those other things, you know that's kind of door number 3.

But we can't stand door number 2 and the discussions that we are having right now -- it is firmly door number 2. Door number 1 is a better answer but you can't accommodate everybody.

MR. QUINN: Thanks, Vice Chair Place.

MR. PLACE: Yeah I just figured we are coming close to your break and trying to wrap some closure around this. But I don't see any -- I listened to everybody here this morning, I don't see any way around I mean John's point regrettably that there's a path doesn't tweak it -- tweak the markets.

I just think that it's inevitable that we are on that path that you see what's coming from state legislature, see what legitimate -- and I'm not drawing a distinction between illegitimate and legitimate but there are legitimate concerns from states on the legitimate attributes the states want to monetize in the market.

There's no way around it. I understand that the capacity market by its nature is complex today and it is only going to get more complex but I don't see that there is any way to turn that clock back and I think we can get to your point to Thad's point sorry -- way too many people on the panel.

That you can get sort of generic first principles, you can say alright you need -- if there's a state attribute that is coming into the market that we are faced with, that FERC's faced with, they say alright can we fit that into a market, can you price it in the market?

If you can't maybe that's the only part where you say look you can't, FERC draws the line you go duke it out as Commissioner Honorable pointed out.

However, outside of that if you bound that point but inside everything else I just don't think that there's any way around not tackling this in a more complex rule in the energy capacity markets.

I hope that's helpful in a way but I mean I very much appreciate Abe's points and I think you just have to go there and there are mechanisms that you can do that don't discriminate against one generation source to another.

MR. SILVERMAN: And I'll just be really quick. You know markets aren't broken because they don't internalize for carbon. We need to ask the market to do the right thing. You know there's nothing magical about the existing structure we have -- it's an accident of history right?

So regardless I think everybody at this table would agree it's not the competition isn't the best way forward -- it's the national policy, it's the policy of this Commission, it's everyone's competition who is not for that?

But it is the question of how do we design the market and ask the market to solve for a changing set of desires. It used to be least cost and reliability now in certain states it is carbon, other states its other attributes -- we need to bring them in.

And it's not you know again markets aren't broken we just need to ask them to do something different.

MR. MORENOFF: Before we wrap up on path 2, I wanted to go back to one of the topics with the discussion of long-term contracting. Recognizing that this is not a perfect parallel -- about 10 years ago the Commission did several rounds of comments and what eventually led to Order Number 719 having heard lots of concerns that there wasn't sufficient opportunity or completion of long-term contracts.

Unfortunately after those many rounds of comments the best thing that we could come up with was to say why don't we have every RTO do a bulletin board and that will be a place where people can express their views and that will help people come together.

By the fact that we are having -- I have every reason to believe the bulletin board did not fully address that problem. Nonetheless, some of the speakers today I feel like have said if only there was an opportunity to do long-term contracting not constrained by capacity market everything would be great. That to me implies a degree of confidence that the problems that were there 10 years ago no longer exist, have been mitigated. Can we talk a little bit more about why is it that long-term contracting, if only the opportunity was present we now think would be the solution.

MR. HILL: Sorry I mean you know I don't think we need long-term contracts. I mean I think you have to look at the data. There have been tens of thousands of megawatts through generation done in competitive markets.

Again, remember we have all time low cost, there's no reliability problem and tens of thousands of megawatts are showing up with no long-term contract. In places where there is a lot of faith in the market like ERCOT they are getting renewables, they are getting built without a lot of long-term contracts because the math works and they can compete.

So I don't think we need to go back to long-term contracts. And if you price carbon and it happens to work

-- some of these wind assets worked in Texas just because of the market price. But if you price carbon and the price signals there just like nobody needs contracts to build combined cycles the investment is going to follow and we are absolutely seeing that.

So I don't think that there's a long-term contract solution. I think the data of the last 10 years is absolutely crystal clear on this.

MR. QUINN: John?

MR. HUGHES: I admit that the low prices right now have sort of taken interest away from long-term contracts but they may not stay low. Who knows next week there will be some environmental study that kills the fracking revolution and I hope that doesn't happen.

But I think our members would like the option for it and where they can exercise that option they would vigorously do so. I would add though that if the prices go up again and I would imagine Exelon will want to take their units and put them back in the market.

MR. QUINN: Lisa?

MS. MCALISTER: Thanks, so right now PJM's model accommodates bilateral contracting as long as it is for existing units. For new units you could get MOPR done and you are at risk of paying twice for capacity.

But I think one of the problems that we have right now is that in RPM suppliers have a choice. They can enter into long-term bilateral contracts or they can hope for continued intervention by PJM and FERC to make up the missing money through the capacity construct.

And so I think having that construct there has diminished the opportunity for long-term bilateral contracting and we would love to go out and do the bilateral contracts but they are not available right now.

If you take that away it may be that they come back and there is no other opportunity but to do that and we again think that would better accommodate the needs of both suppliers and load.

MR. HILL: Lisa, we would be more than happy to do long-term contracts with any of your representative entities. We do a lot of public power long-term contracts so we should talk afterwards.

MR. QUINN: So the Chair Vannoy, Abe and then Kathleen.

MR. VANNOY: Thank you so responding on long-term contracting. Maine's experience hasn't been good with long-term contracting. We have lost a lot of money over the years in long-term contracts.

But I think an interesting point on that -- when I say we lost a lot of money to what? Well the reference points to market so I think in our discussions of you know you look at New England, maybe at Vermont for example -- I won't speak for Vermont but when they long-term contract I'm sure they are looking at what the market price is as to whether it is a good deal or not so just and reasonable rates come out of the market price.

Go back to -- a lot of discussion on pricing carbon coming from my neighbor here. We have said unequivocally in New England we are not interested in pricing carbon and we are continuing with discussions not along a carbon front but along other attribute lines. So I just want to make that clear.

And then finally to clear up on the MOPR exemption -- the MOPR exemption was a compromise. It was a compromise on what the for a capacity market curve was going to look like and part of that was the MOPR exemption.

MR. QUINN: Abe?

MR. SILVERMAN: So we actually as a company love bilateral long-term contracts. We will get right behind Thad and talk to you afterwards. And you know competition can work in a bilateral market. I mean my company has been incredibly successful in winning long-term contracts in California.

Now I have got to tell you they are more expensive. Rate payers are paying more in California for the same product. It is not just looking at San Francisco as expensive. You know there is a benefit to the competitive market that you know has driven down prices for new generation.

But with that said hey, listen if you want to go out and put something out for bit you want you know -- 2,000 megawatts of carbon-free generation in a state for example -- put it out for bid.

And I think one of the things that you find very frustrating from -- if you are sort of wondering why we are all ganging up on Kathleen with generators it's not just that they are getting money, it's not just that they are being carved out of the market not having to ride through a real downturn caused by natural gas prices which is competition at work.

But it is also the tenure of the contract. We would love to be able to go out and get it an above market contract for 10 years that would be wonderful. I mean that's really something that's just not out there in the market available to us under any way, shape or form.

But when we think about it --

MR. QUINN: Just real quick is it just a 10 year contract is not available to you rather than the way you articulated it which was it is not a 10 year about market contract?

MR. SILVERMAN: Not one backed by rate payers across an entire state no.

MR. QUINN: Is a 10 year contract available to you?

MR. SILVERMAN: It depends on the market right, in California it certainly is. In fact that's the majority of the new power plants that we have built out in California but the renewables are having a slightly longer tenure.

And when we talk about a financing mechanism for getting particularly new renewables, but other resources build we actually don't necessarily think putting a price on carbon directly in the sense of a carbon tax or something else is actually the best way to incent renewables.

We like the long-term contracting structure. We think it has been incredibly successful at getting new renewables built and that's something we will do all day and all night. But the key point about bilateral contracts though is we do have to make a decision about how to integrate them into the market.

There's nothing inherently wrong with bringing bilateral contracts into PJM. Really it could exist in the market today. The biggest problem that we have had is something you just said though -- when you have a contract -- when you have a market that is relying on bilateral contracts or a footprint that's relying on bilateral contracts, you need to have an effective price signal.

And I know this conference isn't about NYISO right now is that the market is showing an incredible low price value of capacity and the bilateral contracts follow that right on down. So you have to have -- even if it is a residual market like NYISO you have to have a price boggy to shoot at.

And then people can go and make reasonable estimates and enter into the kind of long-term contracts. That's why bilateral contracts could work.

MR. QUINN: Thanks so we will do Kathleen, I see Michael and then we will take a break and come and talk about the paths 3 and 4.

MS. BARRON: I was just going to draw together a comment both John and Abe made about the nature of the state support programs related to nuclear. I think the states involved were certainly smarter than me, smarter than John.

They accounted for future price increases in their design in the way that they developed the price signal for nuclear in that to the extent market prices go up, the payment from the state goes down. And they also targeted as they said earlier, only the stations that they thought they needed to.

So in that sense they tried to draw the program as narrowly as possible to be as consistent with improving efficiency in the market as they could be and so I think we should give them more credit for doing something that's efficiency enhancing than you might have heard already.

And then the last point just Abe brought up NYISO, NYISO is not the subject of the Conference but twice over the last two days we have heard you know, this contention that the Illinois program is somehow affecting the outcomes and the markets are ready and there was an allusion to the NYISO option that just occurred.

It's just that you don't really need -- you don't need to take my word for it, just look at the chart that NYISO has released analyzing the supply curve in the last reserve option where the price cleared versus where it would have cleared for example if our Clinton Station was not in the market it might have gone from $1.50 to $5.00.

It would not have picked up any of the units of the companies that are complaining about it today as having affected the outcome. It's just not true.

MR. QUINN: Michael and Lisa.

MR. POLSKY: I just want to comment on the long-term contracts. As far as renewable concerns somebody mentioned some being built -- all the renewables are built with long-term contracts.

People built renewables without long-term contracts some years ago they all got killed. So in a way long-term contracting for renewables is an absolute must to enter the market for the new renewables.

But I want to say that people think long-term contracts there you go and you talk to people and they pay you whatever you want -- it's a highly competitive environment. This is what I want to stress here, it's a competition.

We can't just think okay I just went to somebody and they said Invenergy is a nice company we'll just sign a contract with a nice price. It's a very highly competitive field.

And long-term contracts now -- probably the lower price in the renewables at least that even market -- people don't sign long-term contracts until it beats forward market curve. So long-term contracts are not a present to somebody you know at bond market prices.

So all the CNI's -- commercial industrials they look at the long-term contracts and they look at the forward curve and decide below the forward curve not what Kathleen just said pay the premium. They want environmental attributes, they want a long-term contract and they want it below market price okay?

So it's not really -- but the key is again to distinguish is the competitive nature. Nobody signs long-term contracts without competition. So this is a key issue here.

MR. QUINN: Lisa?

MS. MC ALISTER: Thank you I agree. I'm not saying that long-term contracting is a gift. I think it is a competitive environment but I did want to respond a little bit to the market signals.

I agree everybody is looking at the forward curves to sign long-term contracts but the current capacity construct, while it provides some price signal, it is a one-year price signal that's very volatile and it is not used as the basis -- at least from AMP's perspective for entering into long-term decisions.

For example investing nearly 3 billion dollars in 350 megawatts of undelivered hydro which we did -- we have also invested in solar. We have got 80 watts that just came on line, it's the largest commercial solar operation in Ohio, in Bowling Green, Ohio.

We made those decisions in concert with our local municipalities on the basis of having a diverse supply and all of our members' preferences and to avoid the volatility and the pricing structures that we have been talking about today, so thank you.

MR. QUINN: Thank you. Alright so if we could take about a 10 minute break, back here at about 5 minutes to and we can wrap up within market solutions.

(RECESS.)

MR. QUINN: Alright we are going to get started because we have a limited amount of time and we have a decent amount of ground to cover. Alright I would like to get started. I'm going to start regardless of whether people are sitting down.

So I'll remind the panelists if you are not in your seat the old saying is that if you are not at the table you are on the menu. It might be appropriate for the one seat that's empty. I hope none of this is being transcribed.

So what we have got left for the last hour is a discussion I think we are going to skip over our middle path if you remember the framing is path number 1 -- limited or no MOPR; path number 2 -- accommodate state policies by allowing resources to get a capacity supply obligation but set the price as though no state support existed.

Path 3 -- you know we talked about being kind of the status quo. I think we have a pretty good sense of what the status quo looks like. We live and breathe our status quo so I don't think we are going to spend any time right now on the status quo given where we are.

Path 4 and Path 5 are what we would like to talk about in the remaining hour. We would like to give our Commissioners plenty of time to ask questions so we are going to try to spend about 20 minutes each on those two paths.

Path 4 is the bring it into the market path. I think in New England that path was described as achieve and we had some discussion with PJM in New York yesterday specifically of a version of bring it into the market which was carbon pricing. So that will be the discussion about Path 4.

Path 5 is it has to be in the market and if it is not in the market it is going to get a very strong minimum offer price rule. Because we have such a limited amount of time it would be wonderful to spend zero of the 40 minutes on whether or not Exelon has a good or bad deal from any of the various states.

So if you all promise not to take shots at Kathleen I will promise not to call on Kathleen to respond to those shots. So Path 4 I think we have talked about, you know, bringing the state objective into the market to the maximum extent possible.

So I think what we would like to talk about is what is it, what policy objectives are we attempting to bring into the market. What we have mostly talked about are environmental benefits but it would be good to know whether we are talking about something other than environmental benefits -- that we are trying to price into the wholesale market.

I think that we would like to understand from the states how that works -- from your perspective and we heard a little from Chairman Vannoy of whether that's a realistic thing or not. So we would like to hear from the states whether that's a realistic path forward.

Then I think we'd really like to hear what people think we are doing with the rest of the state policies, the state support that we haven't brought into the market. Are those things still subject to the MOPR? Are those things something that we no longer attempt to address through the MOPR because they are fairly small?

So that's the kind of path -- the time we would like to spend about the next 20 minutes, President Mroz?

MR. MROZ: Yes to your question. You know from my comments yesterday, from my pre-filed comments that it has been my opinion that the state issues, the state attributes should be brought into the market.

I -- there's been a lot of discussion about the state attributes being particularly focused on environmental attributes, that is a policy decision that many states have made. I have raised both in our state for discussion with my colleagues in other states, with the FERC, with staff and the Commissioners I have raised this with the industry that I do believe that there are also other factors that go to reliability, that go to the related issues around infrastructure -- I mentioned this yesterday that could otherwise if particularly in a state like New Jersey if nuclear facilities close that there are assets that will be in my words, stranded.

There could be other costs associated with the replacement of generation. It would have to replace those units that then fail so in my mind and Chairman Vannoy mentioned that there are attributes other than environmental that need to be brought into this discussion. I believe they do.

And as I mentioned yesterday I comment PJM for the effort it has started to undertake to try and begin to anticipate what those related costs are. And I do believe that that is something that was not really focused much attention on here in the last 24 hours but I do think it's part of the equation.

I think it's something that should also be considered lest we have generation units that fail and as I say ultimately the consumers are going to have to continue to pay for infrastructure that is being built now or that will have to be built before those units close.

MR. QUINN: Thank you, Michael?

MR. POLSKY: We use the foreign market and what market means we have to define its competition. If there is no competition there's no market. So I just you know, there are certain state policies like environmental specifically like RPS for renewables okay.

There are 30 states that have RPS's. The whole renewable industry exists because of state policies on RPS's. I want to be clear that with no RPS's there would be no renewable in this country at all or maybe very little.

And the whole technical improvements and price curves we see because of the amount of deployment but it is a market competitive strategy. What states come with a policy in this market go fulfill this policy. So whatever policies it has to be market compatible.

It's not about clean by the way, it is just how the world works. You have to have a policy that is market compatible. So if the state has an environmental policy fine then here's the policy and you market go to fulfill this policy, that's what you know regulators do or legislators. They come up with a policy and have market fulfill.

But there are clearly not market compatible policies. If policies are not market compatible they should not be allowed, no matter what, how you color it okay. So that's the fundamental principal here okay.

Is the policy market compatible or policy market destructive, okay? And I think this has to be a guiding principle here. How this policy -- but definitely my view states have to have the ability to effectuate policy okay.

But if we know clearly that policy is to save jobs, nothing to do with environment then it is not a policy. This is not a policy, this is just individual action that interferes directly with the market.

Let me tell you one more thing okay -- we as an independent producer we have to rely on market signals to do business. We don't do business in isolation just by saying I'm going to build solar in New Jersey, I'm going to do this here -- we have to rely on market signals.

So the recent RPS everybody knows there is an RPS, there is what duration what the length and market is fulfilling. But if policies are known it could change tomorrow because some states come up with a strange policy to support something and then there is a complete collapse of the plans that we were preparing and other people preparing to do.

This is just not market compatible policy. And I think in my view FERC has to give clear signals what a market compatible policy is or what not otherwise we will be here every year at this Conference. Maybe today Exelon as opposed to Shell, tomorrow it will be somebody else at this Conference and we will be continuing to talk about this.

We have to attack this issue up front. What is -- market compatible policy and what's clearly not market compatible policy.

MR. QUINN: Thank you Lisa?

MS. MC ALISTER: Thank you getting back to your question about bringing attributes into the market. I think of the two wholesale markets, the energy markets are better able to value or select additional attributes.

And as a result of our last Technical Conference on this issue in 2013 I think the Commission has done a very admiral job of working on price formation issues and we think that's a good direction to head.

And there are going to be new technologies with different operating parameters and capabilities that we are going to have to address -- distributed resources, energy storage and we shouldn't lose sight of improving the current price formation processes regarding transparency of operator decisions, modeling all known constraint and more accurate price formation rules during periods of transmission congestion and volatile fuel prices.

And we would also comment PJM on their efforts to help come up with solutions to these problems and we look forward to working with them on this.

CHAIRMAN LA FLEUR: I had a question about -- I'm sorry I'm having a senior moment the gentleman from Invenergy Mr. Polsky and Abe both talked about having as a distinguishing when we look at state policies whether they are set up open to all market competitive or not which sounds a little bit like the concept of when we talked about whether you take the production in tax credit in the case of MOPR.

Well if it is open to everyone in the technology as opposed to specific, whether that's a good rule or not I think that was the rationale. So are you saying that that would be a determinant of whether something got repriced -- like as long as it was done in a competitive bid in some way it wouldn't get repriced but it would get repriced if it didn't?

Is that the proposal? And could you expand a little bit on how we might decide if something is market competitive because that's I think dare I say a fresh idea that came in.

MR. POLSY: I'm not sure I'm 100% clear on your question and what it would mean to price but what I was trying to say here is that obviously we have to be realistic. If state has certain right to accommodate certain policies let's assume that okay. Because if we assume states have no rights for anything then we don't have to talk about it.

But if states have certain policies -- let's say environmental policies and as long as this policy is a clearly defined policy that fulfills through market work forces okay then in my view this policy is market compatible compared to policy that is simply I'm just going to give a handout to this particular member you know because of what their resources are, which is not fulfilled through market forces.

CHAIRMAN LA FLEUR: Can I start with the preposition that states do have rights and let's assume all state legislation is valid. It's not my place to say it's not. What I have to decide is does it affect the just and reasonable price or not, that's my only job -- not to be a judge of the states.

So I thought when I heard -- maybe it was when Abe said it before you are saying it's been through some kind of competition whether it is a bidding for bilateral or whether it is an RPS renewable portfolio standard or something else that everyone was eligible for -- that's a proxy for just and reasonable solar.

You don't need to re-price it or what were you saying. Like how would you do that?

MR. POLSKY: Okay in my view yes if it went through a competitive process okay and you know generally competitive process always works okay and in this particular case it would not need to be repriced.

MR. SILVERMAN: Yeah and I think there's a couple of different ways to skin the cat right, there's not one size fits all. I mean Chris Wilson as far as I can tell is probably the world's foremost leading expert on Edgar but I mean that is a place where the Commission has come in before and talked repeatedly about whether a solicitation is non-discriminatory, whether it should be you know allowed to be passed.

CHAIRMAN LA FLEUR: Sorry I didn't hear the word.

MR. SILVERMAN: The Edgar --

CHAIRMAN LA FLEUR: Oh Edgar, yeah.

MR. SILVERMAN: And so I think you could you know, if the Commission wanted to could go in that direction where they come in and say you know make a case by case determination.

Is this is a competitive process? I mean I have to say you know the beauty of the Federal Power Act is that 99% of the time you know it when you see it and you can spill 300 pages of testimony on a very simple proposition. Is it competitive and open to all parties and identify a competitively neutral product?

Either yes or no you know, you kind of recognize it very quickly. So that's one way to go. One of the things I really like about some of the two-tier pricing schemes or the New England scheme that they have talked about is that they are almost independent of intent so we can get out of the business of policing whether the state action is legitimate or within their sphere and we protect just and reasonable rates, both for the suppliers and also frankly for customers because you know they are able to take on --these resources are able to get some market revenue against the fixed cost that the rate payers would otherwise be paying and use that as an offset.

And I like it because it does have that -- you know you take intent simply out of the question entirely.

CHAIRMAN LA FLEUR: Did you have that as a MOPR exception in PJM for a while then everyone came it and wanted it changed? Like if states did a competitive bid it didn't face a MOPR?

MR. HILL: No I think with all due respect to my colleagues here I generally agreed with almost everything they said earlier. You know there's a clear Supreme Court case Abe zeroed that this is not the case.

A state can go out and do a process however competitive the process and then the result of that is effectively exercised in the market by your power, by your side market power excuse me.

We have an 8-0 Supreme Court decision so that is not the case. There's a much higher standard than is the process competitive. It is whether or not it is going to be just and reasonable to the others. The state going on and doing an RFP to bring in a new power plant is going to crush prices to everybody else, especially if that is the intent. It doesn't matter how competitive that process is.

CHAIRMAN LA FLEUR: So there are two things. One is how the state chose which is what you are talking about but there is also how does that scheme -- whatever it is, no matter how competitive it was, fit into the other states that might have not -- I mean that's what you are worried about crushing prices "for everyone else" that's the other people who aren't a part of that same system.

MR. HILL: That's right. I mean I think this is the concept of what can you price and this gets to one of the things that hasn't been mentioned although it was mentioned yesterday by Mr. Ott is the energy markets.

So we can talk about pricing carbon right and environmental attributes. The energy market is being subject in almost every single market to massive impacts by out of market subsidized resources.

And it wasn't as clear as what was going on in New Jersey and Maryland and its kind of impact and this is why you know everybody is picking on Kathleen as who is responding to this in some ways.

It doesn't mean that I'm not going to pick on her but --

CHAIRMAN LA FLEUR: Pick on this point.

MR. HILL: Yeah exactly. No I'm not -- she's good. But the reality of it is is that there are major distortions to the energy market that are going to drive some bad outcomes. And we have to recognize when there are negative marginal cost resources out there we need to think about what it is that we can do for the energy market.

And by the way when prices are pricing negative which they do sometimes, there are a bunch of resources that are actually on the grid that are positive marginal cost resources, they have to be there. And they hadn't got lifted, they are there -- we are jacking the prices for all of them which is impacting the forward markets and we have to bump some wind down when there is a little over wind chain and that is hurting forward markets and hurting the ability for transparency.

So I would argue you know carbon would be a good thing for the states with no attributes. Energy price formation I think is probably failing us generally right now given all of these distortions and I think this gets a little bit at the you know, competitive processes you still have to be careful about it.

The third attribute which I don't think needs to be priced and I will go the other way just to kind of directly answer your question is there has been talk of resiliency and there has been talk of reliability and there has been talk of -- although I haven't heard it explicitly today diversity of resources.

That job belongs to the RTO. That is the raison d'etre, that's all the French I know, that's the reason for being. And you know it's their job and if the states -- that is the RTO's job and if the states actually think that they are failing there they have the option to leave, but I don't think that you can actually -- when we talk about what you are going to -- the deal that is going to get cut to use their term if you are going through door number 1 or whatever you agree to the attributes of some hybrid approach, I don't think that's got to remain with the RTO then a far better place and then you state to decide, is there too much gas or what do they do when it is cold out or whatever the mights might be.

So it's a price environment -- carbon if you want it we have to get energy markets right and I think there is some real need for innovating thinking there but the rest of it I think the RPO's have and I think they have done a great job.

CHAIRMAN LA FLEUR: Well isn't that the markets first name reliability? Isn't that what it's called reliability pricing mechanism?

MR. QUINN: Right, so I think I've got Abe, John, Chair Vannoy and Vice Chair Place and then Kathleen.

MR. SILVERMAN: Great thank you and you know Thad

I mostly agree with what you are saying but when we talk about whether we are going to accommodate the resources you know I do think that we should get beyond this idea that a state is right or wrong in most cases.

You know that's not to say there is not a spectrum. Clearly I think if we had a jobs program masquerading as an energy bill that that would be a problem. I think you know as we get closer and closer to the environmental attributes that a state is looking for I do think they have a role in setting those and then markets should accommodate them.

This all comes back to duel federalism versus cooperative federalism right they are a little bit different and the Federal Power Act has kind of evolved over time. But so when we look and we say what these markets should accommodate a state environmental program, a state and environmental goal should be first on the list of things that the federal government recognizes. That's the heart of it.

That to me is the heart of the cooperative federalism, but we need to do it in a way that also meets the other parts of the Federal Power Act and that is first it is a jurisdictional product in some cases. I mean you know nuclear comprises virtually 100% of the supply stack at Illinois.

Would we really say that a state can come in and you know wind or anything else and take 100 -- carve 100% out of the wholesale market and say it doesn't affect or pertain to the wholesale market?

And unless you could say yes to that question it's FERC jurisdictional and so I think the Commission's role here is the same regardless of whether the state attribute is you know, if zero carbon or some sort of lower emission it needs to step up and provide the platform for just and reasonable rates.

Amazon for clean energy, right? Nobody would say that going to the grocery store where you have one grocery store in the middle of nowhere with no competition is going to get you a just and reasonable price for brownies right?

No, you are going to go and you are going to shop at a super store, you are going to go online and compare prices -- I don't know why brownies, it just is. So when we think about these programs and really only FERC could play this role. Only FERC can set up the apparatus that allows us as a society to get the best possible competitive price for the environmental attributes we are looking for.

And so if the state comes in and says we want a hard carbon target of certain emissions or they say we want 5,000 megawatts of clean energy or they say you know, any other kind of you know competitively neutral goal I think it is incumbent upon the Commission to come in with oversight to make sure that the rates are just and reasonable and accommodate that.

You know it is security constrained, economic carbon dispatch if we have to. Certainly we can design a capacity market that has the various you know, various tranches of different product.

Those are the kinds of things that I think we need to do but the base principle has to be don't destroy the competitive market so that the resources that are counting on the competitive market for 100% of their fixed cost recovery need to be you know, treated and given just and reasonable rates. It's not an option that's what the Federal Power Act commands.

MR. QUINN: Right, John?

MR. HUGHES: Thank you. I like Michael's description of market compatibility and maybe we need a market compatibility test to screen attributes. I think attributes have to be germane to the business of wholesale electric market.

I get really nervous when we try to drag in attributes that are outside the market. We are going down the slippery slope of really heavy duty command and control regulation and big government that I don't think people benefit from notwithstanding the intentions behind the politicians that want to do it.

MR. QUINN: Thanks, Chair Vannoy?

MR. VANNOY: Thank you. I want to take the discussion back to the attributes and I think as we move down this path that we are on, go back to an earlier comment was that all public policies are not created equally I think the same can be said about electrons -- all electrons are not created equally.

Our market rules have to adapt to the necessary attributes to provide that reliable service that we are all looking for. I think PJM has taken a shot at some of those in their generator reliability attribute matrix. I think some of those attributes that are listed on that matrix are important ones that we should be focused on.

And as we -- you know the reality is as we move to more power electronics, less inertia on the system all of those things are going to affect reliability. Physics are not going to follow some market rule that we have created and we have to be cognizant of that as we go forward.

So I think we would all benefit in our ISOs from a real honest discussion about the real technical issues and the type of attributes that we need to ensure reliability. When you look at -- carbon has been talked about a lot.

I want to respond to that very briefly. When you look at ISO New England and carbon, pricing carbon in our market -- we are one of the lowest carbon intensive markets in the country yet when you look at all in delivered prices, transmission distribution, generation, various state policies and you look at average prices across New England we are the highest.

So when you move to put let's call it a $10.00 price on carbon in the market -- what does that result in? We have a flat supply curve, it is not going to change the dispatch but it is going to increase rates to customers by half a billion dollars.

So we have to be very careful about what attributes we are looking at to go back to the point of reliability and address the point of reliability in those attributes.

MR. QUINN: Thank you, Vice Chair Place?

MR. PLACE: Thank you. Yeah I'm not sure I'm not going where Chairman Vannoy is on the carbon price but if you return revenues back to the states in a mechanism I would argue for benefitting when you do low income support, avoid being aggressive it is not a net loss.

But President Mroz started this -- yes I think you can and should and must or have to or it is already happening, integrate state policies into this market. But if it is distorted the rule is as Abe was pointing out is it distortive or not?

You know it as you see it. Case by case I think we can handle that, I think we can know which bucket these lie in. Yes you are going to introduce some more complexity however it is not undoable it is not unmanageable and from my perspective thinking about the carbon issue, you can't integrate carbon into that in a technology neutral, source neutral way that is not distortive to the market.

But if you do have policy to that deflected a little bit over to the question of size I don't think it matters whether it is small or large, you just come down is it distortive or it is not distortive. In some ways the cows have already left the barn, the milk is already spilled and a lot of these policies in the market and you can say that to date as Andrew Ott said yesterday much of this has been non-substantive.

But we are getting to the point where it is substantive. So really I draw the line okay if it is not-substantive let's not waste our time arguing about it but by and large much of this is going to be substantive. And just ensure that we have mechanisms whether it is MOPR or whether it is the two-tiered market price signal you can get there, you have to get there. I think we can do it and it is -- we can do it in a way that doesn't crush the market.

MR. QUINN: Thank you Kathleen?

MS. BARRON: Thank you. I'll pick up on something Thad said earlier about energy market price formation. Because obviously the way we decide energy markets already we have decided which attributes matter to us and which ones don't.

And I thought it was pretty striking what Andy Ott said yesterday when he was speaking. He said -- he was describing the problem negative pricing and the fact that we have inconsistency in terms of environmental policies throughout the large PJM footprint that are devaluing nuclear stations.

And he said we have tried to politely ignore the problem but it is no longer ignorable. And so you see PJM coming forward with both a proposal to work on changing the way we are pricing energy and that's what Thad was eluding to as well as should we try to be pricing in other attributes including carbon which clearly in PJM would change the dispatch.

I mean that's why Calpine has long been in favor of carbon price because it has efficient gas resources that would benefit from that model. But you know, either of those two paths you know the one nuclear plant in PJM that has some amount of state support if it gets picked would be economic. So there was a statement that Abe made before the break that you know FERC should take action to mitigate all state actions. We don't want to have to determine which ones are bad and which ones are good.

The only thing you have in front of you is a complaint that is targeting at that one nuclear plant in PJM that could get a state's support payment. So you don't have in front of you something to do what you have been hearing about today and I just want to keep that in mind.

The complaint chose not to address this bigger issue it just chose to target that one station and I just wanted to make sure that you know, if we are going to take a step back we really do take a step back.

CHAIRMAN LA FLEUR: We do have cases in front of us about MOPRs for existing resources. They aren't all just the complaints. We have a bunch of those things.

MR. SILVERMAN: And if I may just real quick, when I said all resources I'm talking about if we have a two-tier pricing scheme that is going to accommodate such resources. I'm not talking about under the existing structure, so if I was unclear about that.

MR. QUINN: Chair Vannoy?

MR. VANNOY: Yes thank you. One other area on reliability and kind of the urgency of the discussion that we are having here today -- when you look at ISO New England's regional energy outlook they didn't put this issue as their number one issue.

The number one issue in New England is fuel scarcity or fuel supply, fuel security -- those questions. So when we look at attributes maybe that's another attribute we need to be looking at. And you know the way we respond to that right now is we are burning oil during winter reliability programs but that's not exactly where we want to be.

So we ought to be moving forward in that area of fuel security and maybe that gets wrapped into these discussions. And we have been at this for some time. Going back to the urgency question I'm hearing from other panelists that this needs to be solved immediately.

I think we are working on it, we are moving forward and we are taking steps.

MR. QUINN: Thad you have another word and then we are going to move on to path 5.

MR. HILL: Okay while to your point I think the most urgent thing other than the one plant in Illinois, that Kathleen referenced and I'll try to play nice Kathleen. The MOPR getting a plant one -- it is incredibly destructive when you are a public company and you depend on public investors to be able to invest your money and set your calls to capital when you have this going on.

Even one plant that people think is a trend is unbelievably destructive. Real quickly and this is to the attributes. Whether it is fuel supply or diversity supply, my point is and I hope I was clear about this. I think that whatever the issue is that it is up to the ISO.

My only point was I don't think they need to accommodate states, I think it is their job on reliability. I think there are a whole bunch of attributes which the ISOs should take into account.

It's just that we need to make sure they get it right. On my point I just don't think you know whatever passes our state legislature when it gets to reliability that seems pretty clearly in the ISOs camp.

MR. QUINN: John real quick.

MR. HUGHES: Very quickly some of these attributes are really under the purview of NERC and NERC has standards dealing with security and many of its various forms. And so I think part of this discussion we need to look at the appropriate form for trying to internalize these attributes and not assume that it is always going to be done by tweaking the energy market.

MR. QUINN: I just want to see if we can spend a tiny bit of time on path 5 because I think we have heard folks ask us to kind of push to an extreme that says essentially if it is not in the market, if it can't be brought into the market whatever the attribute is, if it is a reliability attribute, if it is an environmental attribute, if it is something else, then that resource, that support is subject to a very strict minimum offer price rule.

The resource is repriced as it enters into the market. If it doesn't clear the capacity market it doesn't clear the capacity market. That's just the deal and so I would like to see whether I can get any of you to take the bait on whether that's a good path forward, that's a sustainable path forward, if that path you know lands at a place where we still have a set of states that are willing to have the utilities participate in the wholesale energy markets or not.

And especially from our state representatives whether that path is a path, John?

MR. HUGHES: Again quickly if it preserves competition and results in the lowest possible rates to customers do it.

MR. QUINN: Michael?

MR. POLSKY: When we created competitive markets all states they thought that they were doing exactly what you just said they are doing. They thought they would join in the market and they relinquished to markets a lot of things that they were doing the states okay.

Only after that they started testing things to try to see how much they can get away with and that's why we are sitting here. Okay people already forgot why they joined the market. So in reality in my view that was the intent and that's why it stayed during the markets because they thought that markets now will play that role and states would only deal with issues that really were the prerogative of the state itself.

So I think unfortunately that's kind of how it's evolved and that's kind of happened historically. I mean people tried to get away as much as they get away with and nobody in their right mind in early 2000 would have thought the states could support this plan or that plan.

It was not even thinkable okay. Now we are sitting with issues 15 years later presumably thinking we are a free market country you know, trying to support the regional units okay. I'm not picking on Exelon, I mean that's how we roll.

So what you said --

MR. MORENOFF: Michael I apologize for interrupting but because the time is tight and because that is getting dangerously close to the same conversation we have had I am going to cut that off. I want to focus a little bit more specifically on the question about the implication of if we are not talking about that specific example but a broader range of state policies that would all be subject to the MOPR.

On one hand what does that do for competition and then I think as Arnie had eluded to from the state's perspective we had several people observe that states always have the ability to direct their utilities to leave the RTO, to leave the market is a long-term sustainable path if FERC is going to MOPR all state policies from the states' perspective.

MR. POLSKY: Are you asking me?

MR. MORNOFF: Probably the state folks but if other people want to weigh in, Chair Sheahan?

MR. SHEAHAN: You know I would just say that whether it is the RPS I thought it was interesting to hear Andy yesterday talk about the fact that it is just not significant enough for them. Kathleen mentioned it again, Vice Chair Place I think kind of touched on that -- you know we are engaged in Illinois in our utility of the future discussion next grid where we are going to kind of take this on.

There's a lot of momentum in Illinois we have a very aggressive RPS. And so very quickly you know those environmental attributes in particular are going to have an impact on the markets and to the extent that the markets don't respond to state priorities.

I think the door that states will head for has the word exit over it.

MR. QUINN: Chair Vannoy?

MR. VANNOY: Thank you. I think the key here is confidence in the market from both sides and I think as you walk down one path where you MOPR everything out you are going to see states that don't have confidence in the outcomes because I mean we have this in New England where states are purchasing long-term contracts.

They are going to have excess capacity that their consumers are paying twice for. It shows up in their retail rate, it is not a good situation. On the other hand you have other states who are concerned about the socialization of the costs of other policies. So there's a conflict there that is brewing so that takes us back to accommodation-type things and I think when you look at what New England did in the MOPR exemption, we looked at what the RPS was across the states, we had a very tailored, very restrictive approach to that MOPR exemption.

That's working for us now. It took a number of years we are now into this IMAPP process, we are working through those details, we will continue to work at.

CHAIRMAN LA FLEUR: This path 5 which is MOPR everything -- is there a difference between things states are doing to bring in new resources you know where we have the New England plan?

Maybe what the states want above all is for it to get a capacity award because it is getting revenues anyway, were things that were done to support existing resources which seem -- I mean those just seem to be two different buckets in terms of accommodate and I would welcome any comment on that.

And I'm not trying to get into what we are trying not to talk about but just in terms of structural. Is that the same thing or --

MR. SILVERMAN: Mike do you mind if I take that? No I don't think they are the same thing. I think the Commission should be very highly skeptical when a state steps in to prevent efficient entry.

I don't think the Commission should ever rule out any possibility that there is a competitively neutral you know, reason to prevent efficient entry XR Mars would be a classic example.

But I think the Commission should you know put on its reading glasses when it sees a case like that and be highly skeptical whereas new entry is a little bit different.

CHAIRMAN LA FLEUR: But you said they are two sides of the same coin so the state is bringing something in that wouldn't have bid in, isn't that a little bit of it?

MR. SILVERMAN: It is a little bit of the same coin but it is also different. I'll try to walk through this mine field. But I mean I think you have to recognize that there are you know, there are very reasonable -- there are a lot of reasons why a state wants to bring in new entrants.

I think environmental -- I mean we have a pressing environmental problem that we have to address. And so if we sort of put it in the face of do we want to prevent states from bringing in and solving environmental problems in a way that is not least cost for consumers, in a way that requires a state to come in and purchase 100% of its environmental attributes outside of the market, pay twice?

I don't think that's A -- politically sustainable or B -- frankly just and reasonable. I think a much better question to ask is how do we facilitate, how do we use the power of competition overseen by FERC to procure what the state is looking to procure at the least possible price?

And again you know uneconomic entry versus uneconomic retention -- in some ways they have the same impact on the market but I think this is just one of those places where the Commission is going to have to make a call and say that uneconomic retention is probably a bad thing and probably needs to be MOPR'd because it is such an easy and direct way to adversely affect and really crater the wholesale market. I don't know if I would thread that needle or not.

MR. PLACE: Yeah thanks I'm just not sure you are threading the needle on that one but I do appreciate the effort. But I just can't draw a distinction between new and existing and say that that is a hard line.

If you care about -- again that's why I come back to the efficiency and the elegance of a carbon price. Then you are saying alright that's an attribute we want and whether it comes from -- Kathleen out here, a nuclear plant or an off-shore wind turbine in Lake Erie.

I'm agnostic about that and I'm not sure I could say this is this and this is that. I think they are both sides, they are both sides of the same coin thank you.

MR. QUINN: Lisa do you have a response to the acting Chairman?

MS. MC ALISTER: I do thank you. I think we are not in favor of broad application of MOPR period. But I think you can draw a distinction between new and existing for what at least PJM's MOPR was initially based on and that's to prevent market-side power.

And it was targeted to natural gas units that could be constructed within a time frame and of such a size that they could enter the market within that three year window and actually have market power.

And I think long-term if you are going to do broad application of MOPR, what you are going to do is introduce a lot more uncertainty into the market because resources are not going to know whether they are going to clear or not or if they are going to get MOPR'd.

And I think that's actually very damaging excuse me, to the competitive market. And I do want to be clear that we are in favor of competitive markets.

We are better off since Order 888 and I think it is legitimate for customers to want what they want and the market should accommodate that. It shouldn't say no we are going to choose for you not because we know what's better for you but because we have such a fragile construct that we can't accommodate anything else.

MR. QUINN: Thad?

MR. HILL: And I just needed to speak because Chairman LaFleur just called Abe being inconsistent and I said something a few minutes ago that could be and I want to -- I'm scared to death to be inconsistent.

What I said a few minutes ago I said that before the break we were supportive and thought that the New England idea was a step in the right direction. The reason we said that -- because I do not think there's a difference at all between new or somebody leaving.

What I will say is the markets are very different than the realities on the ground are. In New England, the threat, the price formation and reliability if it were allowed to go directly to number two is new entry.

Yes, I know there's the Dominion plant in Connecticut but I think everybody in this room knows they are making money and they are not going to retire anyway regardless of what happens in Connecticut probably.

In PJM the threat isn't as much new entry as it is assets leaving. So while you know I think they are exactly the same thing you know, the fact that New England policy deals with one and we may work with it as a matter of accommodation, the fact of the matter is economically it is exactly the same thing.

And I think the policy you know, outside of any kind of regional practicalities -- what's doable needs to treat them all the same and I would say by far the most serious issue out there, whichever of these options is your door number 2. If you are actually going to subsidize resources and not have defense of price formation of the remaining assets we are going to subsidize another layer and another and we cannot go down that corridor whatever the right answer is.

MR. QUINN: Alright Commissioners I'll turn over the questions to you.

COMMISSIONER HONORABLE: I want to thank you all this has been an excellent panel. I don't know where to begin. We have asked a number of questions throughout. Let me ask you this because you have really tried hard. At first you didn't try very hard but once we cornered you, you started trying to take on some of these paths.

Now I want to ask you to go even deeper now because -- and I appreciate your candor and I think through it we are really trying to crystalize and synthesize what the future looks like for competitive markets.

And taking into the account the reality of state action -- so it seems that through our discussion we probably and I want you to challenge me on this if you don't agree. I know Abe will. We are probably not headed down a path 1, probably I'm thinking about the consensus here that I am hearing today.

Probably not a path 4 or 5 -- and I'm going to tell you why I am undergoing this exercise. You are scaring me a little bit because you are either talking about path 2 that's fine. It would encompass a two-tier option process much like the ISO New England substitution option effort.

But what is scaring me is that some of you are still talking about path 3 which I think is where we are today in many respects. So tell me now am I drawing this too narrowly to constraint it to path's 2 and 3?

I want to walk away from this and feel like we have gotten something done and I need you to tell me if I am wrong to think that the consensus of grounds -- well maybe consensus is too strong of a word is focused too narrowly on path 2 or 3 or if you think that's about what you have heard here as well, Vice Chair Place?

MR. POLSKY: Thank you.

COMMISSIONER HONOPRABLE: Oh I'm sorry Mr. Polsky, okay now I'm sorry. I thought you had your tent card up and it was Mr. Polsky's tent card. I know who you are.

MR. POLSKY: Commissioner I feel path 3 do nothing is just too settled. It is just not -- I mean what we will see you know complete market disintegration or massive bankruptcies or things like that.

It is just not -- if anybody in this room feels that this is a sustainable path they are just playing with fire. Because whatever actions we see today there will be more actions not like we will stop today okay this is the stop we will see no more actions, no new interferences.

So to me path 3 is just an academic exercise to see how long we will stand up before we fall down. So to me now path 2 the reality -- I kind of agree with you that and we went through this and sorry I just want to talk about stranded costs.

Remember we went -- when states went through deregulations they recognized that plants are uneconomical and the rate payers Exelon recovered billions of stranded costs for their nuclear plants. A lot of plants in New England recovered so states recognize that they are not competitive resources so therefore let's put them there, let's recover the costs and let them deal with the competitive markets.

Now we come back and we try to forget what we have done before and go the next round on the same thing. So this is to me this is kind of repeat of the same things.

COMMISSIONER HONORABLE: Yes it's insanity.

MR. MORENOFF: Again with apologies and particular concerns we are not have more conversations about the Exelon nuclear plant, thank you.

COMMISSIONER HONORABLE: But let me say this I agree with you. Doing the same thing over and over and expecting a different result is insanity. And path 3 could be status quo which I hear so many of you saying is unacceptable. But then the reason why some of the discussion is making me a little unsettled is because you are also attempting to pass judgment on whether certain state policies are legitimate, whether they should be included, whether it is a jobs plan masking as an energy plan.

I heard my friend down at the end of the row say so we are going to have to get on the same page. But I agree with your point and I want to go on then to Abe?

MR. SILVERMAN: Yes so you know I actually have a slightly different view of path 3 I think. To me path 2 is the 6 month to a year time frame where we begin to accommodate state efforts to come into the market.

And I think what exactly that looks like is going to be different in every market. I think the substitution effort in New England is a great first step. I personally like the two-tiered pricing scheme. PJM has another variance and each market really I think if they are not doing it with expedition you know and real concern they need to be doing it and I would love to see a statement coming out of the Commission or Commission staff or individual Chairman and Commissioners.

CHAIRMAN LA FLEUR: Chairman.

MR. SILVERMAN: Yes thank you. Saying that we all expect the ISOs to come in with a baked proposal you know the day we get quorum back to address these incredibly important issues and it has to be now.

Now longer term and I do see these very much as you know steps right. We have the staunch the bleeding MOPR stuff which is already pending. We have the ISOs out there trying to develop some sort of accommodation for states that ensure just and reasonable rates for existing supply and load you know that's going to be sort of the next evolution.

But then the third evolution which is actually how I see path 3 is identifying the market attributes and then having the Commission -- four is that four? Well I actually thing that is the ultimate end goal has to be that step 4 where we do identify the market attributes and bring them into the market.

So again we are doing it you know, buying things in bulk is always cheaper. Buying them where we have a competitive market is always going to be the right way to go. So again you know there's that path we are on now that is more accommodate but then the longer term has to be to that facilitation of buying things cheaper.

COMMISSIONER HONORABLE: Very helpful, thank you.

MS. BARRON: Yeah I was just going to jump in in defense of path 4. I mean as I count the heads on this table I think you have a majority of people including the state Commissioners, including importantly states that have not taken action yet who are asking you to take path 4 or to consider path 4.

COMMISSIONER HONORABLE: Do you all agree with that by nods of heads, okay very good.

MS. BARRON: Expressing their willingness to work on path 4. So you know I don't know why the suggestion is that path 4 needs to be down the road in 5 years when we figure it out kind of path. Why we don't have the urgency about path 4 when we all know that we have been facing these problems at least from the perspective of our fleet for years.

We have been losing money for years so let's put a time clock on that, let's work on that. That was in PJM's pre-filed comments their first initiative. Let's work on that with the same amount of expedition that we want to apply to some of these other things.

MR. QUINN: Thad?

MR. HILL: Well I was just going to echo that. I mean path 4 it may be what the army of one, and a Commission of one soon but there will be a -- you are FERC and you do have the ability to regulate and this is yours right?

And path 4 is what we should all aspire to I think because competitive markets want and as Abe said let's price the things. Now if states are going to do things outside of this and the courts let them, then you shouldn't let it impact price right? And that's within your control as well which is maybe that's a hybrid afforded to but it is only a failsafe.

Our aspiration should be we price what's valuable and the market works.

COMMISSIONER HONORABLE: Thank you that's very helpful and what I hear you all saying is we are not picking one path and it's that path alone, we can work on things simultaneously, we can have aspirational goals and then bring Abe and Kathleen on the same page maybe.

MR. MROZ: Commissioner Honorable I would agree and the status quo is just not sustainable. I think that and commenters mentioned this yesterday you have got the industry and the markets potentially now chasing the next subsidy that comes from a state.

The concern is it will continue to de-stabilize the market, that's not good for anyone. It's not good for regulators, it's not good for the industry certainly and you know I am struck by reading the analyst reports you know weekly.

It seems like they pay more attention to what any particular state is doing or what a particular legislature is considering more than they are looking at the underlying fundamentals of a company.

So it is that which if you take action which I think that this conference has shown that there is a willingness to do something will be received very well across the board from industry, from the regulators and as I have said we would look forward to working with the ISO, with our colleagues in the other states and the industry to try to work through a solution in one of these that does build these attributes, all of them hopefully into the market.

MS. MC ALISTER: Thank you. I'm not sure that our proposal fits neatly into any one of those five buckets specifically but I do agree that we need to do what we can through the energy markets but then we also need to compliment that with the capacity construct that supports and encourages the use of bilateral contracts for those attributes that cannot be priced into the energy markets.

COMMISSIONER HONORABLE: Thank you.

CHAIRMAN LA FLEUR: Thank you. It would be more of a comment and people can reply in their written comments because I know we are trying to get to lunch although if I see cards pop up right away -- if Colette is only a little bit uncomfortable she is way less uncomfortable than me or whatever you said.

COMMISSIONER HONORABLE: I'm being careful I don't want to scare people.

CHAIRMAN LA FLEUR: I was just kidding but it is -- we are in an uncomfortable place. So I am just trying to think through not what path I would go on if I were -- if I saw Professor Hogan coming and I was writing an article saying this is what we should do but kind of what we actually have and what we can do with the tools that we have.

I'm assuming we have a quorum and what we can do. And the re-regulator changed the regulatory compact I don't think is something we can do unless a state wants to take it. That's Tom Brady throwing you know the incomplete pass. Somebody has to catch it and I haven't heard anyone yet say -- I mean that they wanted to.

So that means we still have the responsibility under the Federal Power Act to make sure there is a just and reasonable wholesale price in these markets that even if we don't like the status quo are the status quo.

And so thinking of what FERC can do as a forcing function beyond a little on the complaints which could push the ball but I don't think anyone thinks okay there, we are done, everything is good now, people are happy.

It seems to me if you make us make up a thing it is going to probably be an "accommodate" because we cannot tell the states what we want them to achieve. We heard from New England loud and clear -- don't set goals for us FERC.

We are on a path, we are working on something, don't make up what you want us to do and it's possible we could kind of look out and look at the different states and craft something brilliant but it's really if we are trying to achieve something -- if we are trying to achieve state policy, we need the states to tell us what that policy is.

So in terms of what's actually before us and what we can do other than order somebody else please work on this, it's really I think right now in the hands of the states if we are going to get to an "achieve" define what it is we are trying to achieve.

Either for states to agree, okay there's an environmental attribute and once you agree you can price it. If it is resilience, if it is environment I mean it might not be perfect but markets work if you set the parameter.

But I don't think we FERC -- unless I'm mistaking something can just make up an achieve solution that is likely to be sustainable in these big multi-state markets. So we are going to have to act once we have a quorum but I think we are going to need proposals coming in if we are going to get out of the accommodate path because I just don't see a lot of other -- I just unless somebody can tell me something easy, that's just what I have heard the last day and a half.

So I think we have to do what we have to do. We have dockets pending we have to decide them, we have to do things, but if we are going to get to some new place it is going to take other people to tell us where they are trying to go, am I wrong, does anyone want us to decide a design and achieve, you know -- Colette?

COMMISSIONER HONORABLE: And we also heard you loud and clear. I know someone mentioned yesterday you don't want a top down approach. You don't want us to try to figure this thing out and it will have greater buy-in and greater success if it is developed and coming up.

MR. QUINN: Matt White had his card up after Commissioner Honorable, maybe go to Matt first.

MR. WHITE: You're very kind. I wanted to offer a clarifying observation that I believe dovetails on your most recent comment Chair LaFleur. This is regarding the path 4 which was the incorporate the attributes that states design to the market the so-called achieve thing as it was called in New England.

More so than any of the other paths that you have put on the table Commission staff, in our experience in New England this path incorporates views and perspective that are so divergent they are almost impossible to call the same path.

Many people as you have heard in the last two days in New England have viewed that really as some form of carbon pricing, whatever it is -- cap and trade whatever. Others view that as either not what they view as path 4, simply not on the table as you have heard from Chair Vannoy.

But have articulated visions in which path 4 would be what in my words I would characterize as the ISOs being authorized to administer little more than an RFP for specific resources in specific locations in chosen amounts by a state and quantities by a state with performance standards selected by an entity other than the ISO.

So yes it becomes an administrative agent of an

RFP they might otherwise conduct on their own behalf. I don't want to take a position on either of those two -- of course as an economist I have my views but I will leave them for the moment.

But rather in the vein of the clarifying comments you asked of us to point out that agreement that you may hear among stakeholders that incorporating the attributes is a desirable path, may mask very substantial differences in what they actually envision much more so than on any other paths we have seen. And that divergence of views, because it may surface later may make moving down this path a much longer and more difficult process.

And that's at least a reflection. It's my personal view of one of the things we have learned as the ISO observing the process and doing it over the past year.

CHAIRMAN LA FLEUR: Thank you for marring my momentary optimism with reality.

MR. WHITE: Sorry it's for a reason.

MR. QUINN: So I guess we will probably just wrap up for lunch then. I want to say thank you to the panelists, this has been a three hour juggernaut. It's been a really good conversation we appreciate all the perspectives and look forward to what comes next, back at 1 o'clock a very hard start at 1 o'clock with people in their seats.

A F T E R N O O N   S E S S I O N

CHAIRMAN LA FLEUR: Okay we are going to get started in a minute. If folks could take their seats, wow it feels awesome to sit at the Commission table again but I am only here for 2 minutes to introduce a special guest.

We are very honored to have with us this afternoon Congressman Joseph Kennedy from Massachusetts. I am very proud to say he is my Congressman but that is not why he is here. He actually volunteered to come and speak with us about the capacity market.

As you may or may not know, Congressman Kennedy and his energy advisor Eric Finns could undoubtedly ace a quiz of everyone on Capitol Hill about how the ISO New England markets work.

CONGRESSMAN KENNEDY: It's an important caveat compared to everyone else on Capitol Hill.

CHAIRMAN LA FLEUR: I won't say how he came to know that but it wasn't all a great experience but Congressman Kennedy was first elected in 2012. He is in his 3rd term and he is very happy to say for some time has been a member of the Energy and Commerce Committee and the Energy sub-Committee where we are extremely happy to have him in that role.

And I want you to give me help in welcoming him to the Commission, thank you.

CONGRESSMAN KENNEDY: Madam Chairman thank you for the kind introduction, thank you for having me here today. Thank you for allowing me to stop by. Any pothole requests or trash removal or snow removal or anything else that is necessary Tom and I will pass along to the mayor most rapidly.

Commissioner Honorable -- thank you both for hosting this important Technical Conference and for your service at FERC. You have both been a constant source of guidance as I have tried to focus on energy issues in Congress and I appreciate your responsiveness and your support.

I also want to thank Director Quinn as well for the opportunity to speak at the Conference briefly before I have to run off to vote. To all of the other participants gathered here today I commend you for being here at this Technical Conference to review the interplay between organized markets and state level policies by providing critical oversight of RTO and ISO structures you can identify their influence and shaping and meeting state energy objectives.

But more than that, you broaden this debate to ensure that these markets are not only benefiting generators but also consumers as well. As the Chairman mentioned a few years ago a power plant in my district abruptly closed due to dramatic increase in capacity rate prices in New England.

In the years since that announcement I have met with many of you and many stakeholders back home in Massachusetts to analyze our regional energy markets and to try to understand the process by which the rates consumers see on their month's bills comes to pass.

As many of you know I have become deeply concerned about that process. If there is one thing that I have learned in Congress is that the more complex a system becomes, the more likely that someone is being short-changed.

And I fear that is the reality facing us today. Everyone in this room would agree that oversite of energy markets is a challenge. The highly technical rules and the economic theories that underpin these structures are difficult for market participants to understand, let alone members of Congress or the general public.

Another challenge is the relationship these RTOs have to the federal government. Their actions effectively carry the weight of federal pre-emption causing courts to provide more deference than they would if these organizations were truly independent.

Finally, I did a long-standing view at FERC that it holds the responsibility to ensure well-functioning markets. I believe, however, that too often in recent years this Commission's debate over just and reasonable rates has focused too much on market participants at the expense of the consumers who are left with the bill.

And that's why at today's Conference I am asking you to broaden your focus beyond solely tweaking the market rules and instead -- leverage your unique experience and expertise into the deeper reforms that I believe are necessary. After all one of the purposes of this Conference is to determine whether state objectives and policies can be achieved through existing market mechanisms.

From my first day in Congress I have shared your frustrations with our country's lack of a cohesive energy policy. That failure continues to have a profound consequence at the regional, state and local levels.

In making policy choices, decision makers must take into consideration issues ranging from reliability to capacity and new generation. But going even further decisions must factor in resource diversity, environmental impact, jobs and most importantly cost to consumers.

Debate over market structures is only one piece to this puzzle and it is certainly not the only way to meet these goals. The question of accountability and oversight is an important one to answer and Congress we tried to address this piece by piece.

For the second year in a row the House passed a bill that I wrote to ensure judicial review of rates that take effect by operation of law when FERC does not act. Whether they are deadlocks like there were three years ago or cannot acts due to a quorum like the unfortunate situation we find ourselves in today.

I have also pressed both the last administration and the current one to take action so that we have a fully functioning Commission. More to the point and this is where I'd ask all of you to come in -- we cannot afford to delay these efforts any longer. We cannot continue to make the system more complex without solving the underlying problems of cost, of resource diversity of a liability infrastructure and our environmental responsibilities.

I urge you to think big and to look forward to working with you all on the path ahead. Let me just say in addition to those prepared remarks this is one of the most complex areas of regulation that I have certainly dealt with in my four plus years in Washington.

Madam Chairman you were very kind to say that I understand it. The best thing I can do is hire people that actually do when luckily I hired one of them that did and he's dived into these issues with an awful lot of your help.

Congress's role in some of the oversight of this area can get confusing and challenging even amongst my colleagues. I again would double down and ask for all of you here and the organizations and companies and entities that you represent to try to help us understand how we work our way through some of these challenges because an example of my home state in Massachusetts the discussion we have on our energy infrastructure and debates there I think could use more full-fledged understanding of the benefits and drawbacks.

Yes we would all -- in the words of one of my colleagues, love to be in a world where energy is clean, it is available, it is cheap and it is far away. We are not quite there yet and until we do there are trade-offs we need to make. I'd ask your suggestions and your support and your voices to help make sure that our public has an informed debate as to these trade-offs as well.

Because at this point I will tell you we don't. And we will keep trying to do what we can but we need your help with it too so thanks very much.

CHAIRMAN LA FLEUR: Well thank you so much for reminding us of that and I think that will set us in the right direction, thank you.

MR. QUINN: Alright welcome back from lunch. I appreciate all of you taking the time to come and meet with us and talk about the issues that we have in front of us during this Technical Conference.

I will make sure I introduce the panelists. We have Cliff Hamal the Managing Director at Navigant. We have William Hogan, Research Director at the Harvard Electricity Policy Group and the Harvard Kennedy School of Government.

We have Lawrence Makovich of HIS Markit, Vice President and Chief Power Strategist. We have Samuel Newell, Principal from the Brattle Group. I have Roy Shanker and Independent Consultant.

We have Robert Stoddard, a Senior Consultant at Charles River Associates, speaking on behalf of the Conservation Law Foundation and we have Susan Tierney, Senior Advisor at the Analysis Group.

Welcome all of you. Again thank you for joining us.

So the purpose of this panel is to discuss potential solutions for sustainable wholesale market designs that both preserve the benefits of regional markets and respect state policies.

I think I stole that language directly from the Notice. We don't expect the panelists to give us detailed market designs but would rather like to focus more on the principles and the objectives one would follow in designing those markets to address the central question in front of us how we reconcile state public policy with well-functioning wholesale markets.

Again I think just to set the stage and provide a little bit of context for all of you, I think the morning conversation was very much focused on us having a complete understanding of the potential paths forward.

We had our 5 paths that translated into 3 doors. In choosing amongst the 5 paths or the 3 doors we are going to have to use some set of principles and objectives and one of the things that I think we have heard throughout the Conference is that one of the things the Commission could do is articulate that set of principles or that set of objectives.

So I think that would very much be something we would like to get out of this discussion -- is your point of view on all of those things. I'll appreciate that is complicated by the fact that for most economists there's one principle -- economic efficiency. Just do the thing that it economically efficient, now we are done.

So we have written down our principle and we should walk away. We might now have that option available to us and so to the extent that the option that all of you would think is the obvious economically efficient answer to the extent that it is politically difficult to get there, we will need a set of complimentary objectives.

And so I would encourage you to kind of engage in the question on that basis as well. I think we would like to start though to kind of not backtrack but address one question that came up at the end of the last panel.

As we talked about our 4 or 5 paths, path number 4 was the let's try to integrate as many of the objectives and policies the states are attempting to achieve out of market actions into the wholesale market.

And we had some discussion about what it is -- a realistic expectation that could be brought into the market. I think we would like to start with all of you on that question before we jump to principles and trade-offs and objectives.

Do you have an opinion on what should, can be brought into the markets? And yes the rules today will be if you have something to say put up your tent, I'll try to keep track of who asks to go first.

MR. SHANKER: I think Mr. White's comment from ISO New England settles 4. It sounds great until everyone writes down their list and then you find a mutually feasible set of conditions and I think it is misleading and it would be a mistake to try and generically suggest that we follow that in terms of guidance from the Commission.

Because I think to some extent you have heard time is of the essence for a lot of people and just sorting that out to come to that conclusion or to the deliver the stakeholder process is a year, maybe a little bit more.

Number 5 was the one I was personally more interested in because in part it would answer that 5 is in a way in response to your request about what to do. I think it's within the Commission's jurisdiction and that doesn't mean not as an actuary but I think you have the capability to take actions to internalize much of what we were talking about today, particularly in terms of what I would think are the most obvious and transparent externalities we have been talking about with respect to the carbon.

We would have an interesting discussion about what's the right value but that there should be a value is almost a credibility test on the legitimacy of a lot of the actions that you are seeing in front of you and a reasonable effort.

I would rather see the effort go into three months of fighting about what is that number and how to do it in a matter, staying away from taxation, but as a matter that's fairly straight forward. We know how to design it, we know that we will have some surplus funds. We will have the usual argument about who gets those but we will pass through just as you said a high degree of efficiency and do away with hopefully almost all of the legitimate concerns that you have seen expressed.

I think with that you are certainly going to have to have the ability to sort on some of the more questionable aspects and so a MOPR-type mechanism does come in. I would hope, if everybody is being straight-forward and saying it's de-carbonizing, we put in an adder, we are done the other would go away.

But this is sort of like a safety net and I don't think you can avoid it. And I know that we heard expressed by the Commissioner from Maine that you know, no way carbon maybe will leave and from my perspective and again I'm speaking solely for myself, is if someone wants to leave or isolate themselves from the market, you know which is another alternative they should do that.

And it shouldn't be perceived as a threat. I testified in Maine when they considered leaving ISO New England and they did the balancing and they said gee are we really willing to give up all the good things to have more independence about state policy and the way transmission was being allocated.

I think every state can make that decision. The legal play that goes with that decision -- I don't know that I know exactly the details of how it would work. Certainly something like an FRR alternative than PJM is viable and so yeah I think you can have a hard criteria and I also think it is out the outlying of what I would recommend would be my recommendation on how you would proceed.

MR. QUINN: A follow-up question on that and it goes to your question about what you would have to deal with minimum offer price rules for the other things. I think in some of the discussions we have heard is that for carbon pricing, for some levels of carbon pricing you will get a certain set of carbon-free resources that are supported by you know something that is a price around the social cost of carbon, about $40.00 or something like that.

But there are another set of resources that are also carbon emission free that you would need a much higher carbon price for. To the extent that you -- markets decided to have a carbon price or a carbon adder but there were some carbon emission-free resources that didn't -- were still not economic based on that price, would you suggest that those resources continue to be subject to a minimum offer price?

Would you try to accommodate those resources in kind of the way ISO New England has talked about accommodating other state policies so do you think once you have identified the environmental attribute you price that and any action that focuses on resources that would fall into that category should be subject to a strict MOPR?

MR. SHANKER: I think if I understand your question I think it's the latter. The argument presumably would fall out of the price is too low. So instead of $40.00 it should be $60.00 and if that doesn't satisfy the requirement for the resource then we sort of agreed that if it is too expensive, then it is too expensive.

And, the fact that somebody was circumventing that with a side payment then you are into the land of MOPRs. But part of the debate of setting that number is to make people happy that we are getting the right balance of the resources.

MR. QUINN: Bob?

MR. STODDARD: Thanks, my friends call me Robert by the way. So let me start with a pragmatic point which is we would need to move fast. And that by definition means we need to have consensus.

If we end up with half the states in New England disagreeing about what we have done, it is a very long road to the Supreme Court and that's where it is going to go. So our goal has been as a pragmatic point of view of how to move forward quickly is to try to get a broad consensus amongst the states that what we are putting on the table -- what the policies we are responding to are the policies they have implemented.

Or at least the reasons of why they implemented the policies -- as I said in my pre-filed comments I think most of the particular decisions getting made in the law are the result of an over-arching goal. This is clearest in Massachusetts. They say we want to achieve a certain carbon reduction -- oh and by the way since there is no mechanism outside of Massachusetts to achieve that we are going to make up our own mechanisms and we are going to do this action and this action and this action in support of the big action.

And has Abe Silverman said this morning, ultimately we have to set up the markets to achieve the policy goals. In which case hopefully the policy makers will set the policy goals but not fret about the implementation.

They will have confidence that the markets the ISOs are setting up can meet those goals. So I think the answer to the question of what should the policies be that the markets support are the policies the state's request.

Now at least in New England almost all of these have at their root environmental protection. And so I think the carbon attribute is important or some other measure of the carbon attribute in my pre-filed comments I lay out a particular mechanism.

The key about that mechanism is it answers the last follow-up question you gave to Roy which is, what if the price we set isn't high enough. Well the point of using markets is that we don't set the price, we have suppliers who offer resources they could bid in.

We have demanders in this case, the states where their entities, the utilities saying, here's what we want and oh by the way here's how much we were willing to pay for it and that creates a demand curve against which there is a supply curve and the market tells us what the price is.

So it would be a way of revealing implicitly a price of carbon abatement in each market depending upon its particular solutions, technologically and the appetite of the states to buy that.

That's the great advantage of using markets. Just as a side note and then I'll turn it over to the next speaker. I do want -- we keep focusing on a capacity market as where things are broken or where there could be problems -- the energy markets are really where we should be very, very concerned.

All of these out of market long-term contracts not only affect capacity prices but they also render huge swathes of the market insensitive to the L&P's that are coming out of ISO New England.

And those L&P's are supposed to drive the efficiency of the dispatch, tell people when there is too much power, tell people when there is more power needed and provide the right incentives for resources to choose what kind they are, when they operate and what their maintenance schedule is.

So we are really defending the energy market and the capacity market which is always intended to be a follow-on residual market to that is a natural follow-on to it.

MR. QUINN: Thank you, Sam?

MR. NEWELL: Thank you Arnie and FERC staff and thank you to the Commissioners for having us here. Arnie you asked about path 4 integrating as many of the objectives as possible into the markets. I like that path because we have seen that centralized markets have worked very well to meet the needs they were designed to meet at lower than expected cost, spurring competition and innovation.

And it would be nice to continue to rely on that and get those benefits going forward. Now when you asked about as many objectives as possible I think the states have a lot of objectives. There is one that stands out as by far the most transformative for relative to the current fleet and relative to the current market design and that is de-carbonization.

That is with some states aiming for 80% de-carbonization within one investment cycle from where we are today. So to me that is the one to focus on the most and it is also the one that I think is most readily integrated into the wholesale markets.

And we have seen -- there are several approaches some of which have already been tried and succeeded in other forms. We have talked about carbon pricing and that is the most market based with the -- you know sharpest locational signals, given rise to the broadest competition.

I think the economists tend to like that one the most. And I think it is practical and in our preliminary work with New York ISO shows that to be very promising. And another approach is with clean energy markets, something like RPS but hopefully broader based technology neutral and perhaps with enhanced product definitions like the ones that Robert described in his pre-filed testimony.

So now you asked also whether there's a need for MOPR, I suppose not everything falls under that. If it is at all within markets you don't have to worry about MOPR but what if some of it falls outside of that is it a higher implied cost of carbon abatement?

And I do think you still need some kind of MOPR but I would rather see something more in the direction that ISO New England has proposed that doesn't just outright exclude or pretend that those resources aren't there. So that's what I like about their approach.

MR. QUINN: Thank you, Cliff?

MR. HAMAL: Thank you and I really appreciate the opportunity to be here today. It's quite an honor. Your question about integration of the markets embeds a question of what's the market. Is the market the FERC jurisdictional

RTO run markets or is it other things like RGGI and renewable energy credits and other things that go outside?

I believe people will respond to all incentives and I use the term liberally -- markets is anywhere that money is changing hands to create incentives. So I think we need to be really clear about that in what we are trying to accomplish within that and where it has to fall.

And I'll get back to how I feel about whether it needs to be FERC jurisdictional or not and fall within ISOs. But the second thing is -- I mean I'm a fan of carbon taxes. I think they would be an efficient way to accomplish a lot of good. The price is really high.

We talked about $40.00. When you multiple that by all of the carbon and talk about how much money is moving around and where are those revenues going to go this is going to be you know quite the food fight with a lot more people involved than we have here currently.

So it sounds great and an economist -- and I'm on board. I think it is a great way to go but there is a lot at stake if you start doing that. Cap and trade can work, it's got other problems -- I don't think it works as efficiently.

But I don't think it accomplishes everything the states want to do. I think it is really clear that the states want to promote carbon-free but they also want to promote you know innovation and technology. No one is building off-shore wind because they think that's the cheapest place to build off-shore wind.

Arguably they are doing us a favor by developing a new technology which shows great promise down the road. This industry has had a huge history of that. It also has had a huge history of failure in that regard. It's a mixed bag but that is part of what the state's objectives are trying to accomplish so I don't think merely putting a price on it will get there.

If we try to bring it into jurisdictional markets cleared by the RTOs I think it is going to be really complicated. You know I just think we have a -- I don't, I have great doubts about the capacity markets as they are today. I think rolling in another element, trying to determine what to do with multi-year elements, locational issues, quality issues joint optimization is an exponential complicating factor which is going to lead to a lot more hearings and disruptions in continued process with that.

And last time you questioned about MOPR, I'm not a fan of MOPR either but if you think of MOPR as a way to keep prices up for the rest of generation then it doesn't matter if we got there through a carbon price or something to motivate new generation or not -- we are going to have those same problems.

We have to decide what that is about. Do we want to have just markets clear and let those prices go down because we get really aggressive on carbon or not? And I think it is a struggle when you deal with the MOPRs.

MR. QUINN: Thanks, Lawrence?

MR. MAKOVICH: Your question has to do with trying to price things like flexibility and the CO2 profiles of generating resources and things like resiliency. And I think you know all of this is pointing to the fundamental root problem here, is that we have got state interventions that are distorting the market prices, both capacity and energy and to the extent that our market outcomes are moving further and further away from what are efficient well-structured market outcome would look like then you are going to have to start to respond and try to price things that you would have had in a well-functioning power market outcome.

So if we didn't have these distortions I think what you would find is that between the capacity and energy prices you would get a nice mix of fuels and technologies and a resilient power supply portfolio.

And I think that a competitive market does deliver flexibility in the investment profile. But to the extent that the distortions are moving us off of that we are going to have to start to try to compensate by pricing for the things we know ought to be there and the problem is that these distortions are going to get bigger and bigger and it is going to be more and more difficult to properly price more and more of these attributes that we are losing.

MR. QUINN: Can I ask a follow-up real quick? I think the degree to which there is a distortion or that we are creating a need -- we are creating a system need based on a distortion I think might go to one perspective.

Is what you are saying that -- I'm trying to verify that to the extent that we just have a state policy of renewable portfolio standard that works outside of the market but brings on a set of resources with a certain operational characteristic, that regardless of what we do, that need exists and so we are going to have to price that flexibility or if it is ramping or whatever it is.

Are you suggesting that we wouldn't have that need if we could just stop the policy on the front end? You know ultimately is that the goal is to kind of prevent things from happening so that we don't have associated needs that have to be priced?

MR. MAKOVICH: Right so the example being we have state interventions to mandate subsidized wind and solar. And the intent there is to reduce the CO_2 profile of the power supply. The consequence of this though is to suppress wholesale prices and to disproportionately reduce the cash flows to base load generation.

So the consequence of this state intervention is to lead to the closure of premature, uneconomic closure of baseload power plants. When those happen to be nuclear you end up with the perverse result of you are not making a trade-off between the state objective of reducing CO2 and having a less efficient market, you have got both bad outcomes.

The market is less efficient and with the closure of the nuclear units you are not reducing CO2 which is then creating the rationale for you know, a well-functioning marketplace that does internalize a CO2 emission charge, those nuclear plants would be economic and run.

And having done analysis of this I can tell you that if New York were to move forward with a price on CO2 emissions and no subsidies we wouldn't be talking about the need to pay nuclear units to keep running, the market prices would keep them running.

And so you end up moving down this slippery slope as Bill Hogan said in his filed testimony subsidies beget subsidies and that these subsidies to keep the nuclear plants running are the result of the dislocations we have created in the markets from the subsidies on the renewables.

MR. QUINN: That's helpful, Sue?

MS. TIERNEY: Well first of all I just want to pay homage to the fact that I bet this is the only federal building in Washington DC where there is a discussion of carbon pricing and de-carbonization, so very good folks, we like it.

UNIDENTIFIED SPEAKER: And solar panels.

MS. TIERNEY: I want to agree with a couple of statements that I have heard and then plant a flag in disagreement on some others. Where I agree is that I do think that the issue is urgent of addressing the -- I kind of called it in my comments the nibbling away of the markets by a lot of different pieces.

Such as those players who don't get to participate in one of the special deal aspects of the market is one in which I just don't think it's sustainable financially and you have heard that. I think that the -- all of the markets do need attention.

Even though it is an urgent issue I do think all of the markets need attention and that is not a fast thing. And by that I simply mean certainly the price formation in energy markets continues to be not perfect for many reasons that have been said over the course of the two days.

Capacity markets are administratively determined really and they are suffering from the problems and even ancillary services are probably incomplete in terms of the product categories that we need in a changing world.

So I do think the urgency of the problem is mismatched with the complexity of the task. Systemic to your question Arnie about whether there are preferences from a principled point of view between number 2 and number 4, my personal preference is number 4 is more elegant.

It allows for pricing rules to play their role in markets. It allows for a dovetailing in a way that certain things like the RGGI program today dovetails with the Federal Power Act authorized markets.

So I think it is more elegant but I do think that even if this particular group is talking about carbon and I'm the first among them to talk about the need for markets to reflect the impacts of carbon on the economy.

I think that it is a very slippery slope about where are you going to set the line about the attributes? So if some -- you know, thermal plants need water, some states might have a free water supply. Every plant needs land whether it is rooftop or other real estate so we all know that lots of states and localities use land as bargaining chips for economic development.

So I can see that even though that's a very elegant solution and we might vote to start with our urgent big one soon I think there will likely be practical problems associated with defining the attributes.

And that of course presumes that push comes to shove and the states can't agree in a multi-state RTO that the RTO would file something affirmatively under its own powers to do so.

So although I love that one it strikes me that number 2 may be the practical place where FERC ends up. The Chair, the acting Chair, the forever Chair who has had two Chairmanships over her career -- her suggestion that number 2 might be a place where FERC ends up because of the difficulties of having a federal preference forced on a region.

I think that's probably true. So I think that's where we end up. I think that number 5 -- I actually thought that Roy described number 5 as actually number 4 so I am a little confused at what number 5 is anymore but number 5 I think will surely lead to states opting out. I absolutely believe that that's the case.

Number 1 is just not going to happen for good reasons and number 3 is death. Death by little shark bites. So I think number 2 is where you need to go and then to potentially use the forcing function of asking each RTO to come in to how they want to address this particular problem of nibbling away at the markets.

MR. QUINN: Thank you, Roy?

MR. SHANKER: Yeah. One clarification that I think a couple of things may have gotten partially jumbled listening to Cliff's comments. I think uniformly we have talked about some sort of an adder we have been talking about it based on a relative carbon intensity in the energy market.

The reference -- subsequent reference at least on my part to whether there was a MOPR wasn't that the implementation of what we were talking about was in the capacity market is that the likely manifestation of somebody trying to sneak around would be captured in the capacity market construct.

So that's the safety net and I think I got the impression, I'll let Sam speak for himself, I got the impression we were talking about the same and I think maybe that wasn't clear to Cliff.

The second thing is coming back to Sue's comment if number 2 -- if there's a Commission mandate, I'll put it that way, and that's the starting action and the difference between what I was thinking was 5 maybe I'm mis-numbered is that I am suggesting that the Commission come forward with a mandate that's broad, uniform, as broad a footprint as they can, maybe all of the RTO's.

And the difference between that and what Sue was saying is each of the RTO has come forward under a Commission mandate and tell me what you are going to do -- I don't know that there's that big of a difference. The place where I would become worried to the extent there was a difference is the tar baby of the stakeholder process.

I think and again I'm wearing my consultant hat, not legal hat, I think you have authority to mandate both. I don't think that's in doubt. There are parallel type attribute and even financial actions associated with attributes under different conditions in the existing tariffs that don't look too much different -- they function differently but they encompass the same regulatory reach I think as an adder.

So I think you can do it and if you did it and come back as a compliance filing then maybe I wouldn't see a real big difference between somebody else does it a little this way versus that way.

If the mandate is let's be congenial about this and have a year and a half of everybody pre-positioning their litigation or two years of litigation positions in the stakeholder process then I want number 5 if it is a mandate and that's the distinction. That is what I was trying to get to.

MR. QUINN: Thanks, Bill and then Cliff.

MR. HOGAN: So A politically pragmatic when you started off by saying I couldn't appeal to efficient markets because that's completely off the table and I've been sort of recovering for that for the last hour. And it reminds me

I think I was sitting where Sam was sitting about a dozen years ago if I recall and I went through a diagnosis and I said the problem was fundamentally if you don't have efficient markets because you don't have appropriate scarcity pricing, you have the real time market and that's the thing which is causing all of these other things to happen.

And you ought to fix that first that's the most important thing and there was a lot of good conversation. And the response actually from Andy Ott I believe at the time was this is a really good idea. This really makes a lot of sense but we are really busy and as soon as we fix the capacity markets we are going to take this up.

And now one of the regrets I have over the last many years is I haven't been more aggressive about saying this is really a dereliction of duty on the behalf of the Federal Energy Regulatory Commission and if you don't get these real time markets to be efficiently designed and have appropriate scarcity pricing, you give people the right incentives and quit socializing the cost of all of the components that go into it, this is a problem you have created for yourself.

Okay so and that is what I think is the most important think that the Federal Energy Regulatory Commission should be doing. That will not solve all of the problems that you are talking about here today. But it is a big job so it is not like that's an easy thing to do as evidenced by the fact that we are still having this conversation and I am reminding you of what I said 12 years ago, that's a difficult thing to do.

But it would work in the right direction and it would get you going so that some of the things that are going on here would be either not a problem or less problematic. Now it won't solve the problem of people who want to do things which are fundamentally inconsistent with the efficient market and they just insist on doing it and they have the capability to do it.

But at least if you had an efficient market and you had the things priced properly and got rid of some of the socialization, the people who were making those decisions would be bearing most or all of the cost associated with doing that.

And if they choose to do something which is in my view not in their interest then they are absorbing the cost, that's much less of a problem than if they are doing something and then fobbing the cost onto everybody else in creating all of these cost socialization problems.

So I'm happy to talk more about specifics. I listed some in my prior comments but I really do think that if the constraint here is that we have to accommodate all the states and make everybody happy, we have to make capacity markets work, we don't have the time or the attention to focus on the things that make efficient markets the fundamental of efficient markets.

If we are going to have consideration of re-introducing contract paths and bilateral contract actions and firm capacity all the stuff that we spent almost two decades explaining why that doesn't work and proving it in practice that it doesn't work.

If we are not going to do that I don't know what to do. I mean this is just -- and you can't solve all the problems of the country. Now I am in favor of a carbon banana is that what it is -- I can't use the word, the "T" word but I am definitely in favor of a carbon banana and if we can do that I stand on my choice of words.

But that seems to me to be arguably not under FERC's jurisdiction. I don't know if you can pull it off I'll be there with you at the barricades if that is what you want to do. But I do think that there are things that are under FERC's jurisdiction that I discussed in my written comments and that's what we have talked about before.

And I'm not smart enough to figure out how to make capacity markets work without people gaining. So I don't know how to do it. My goal is to make them irrelevant and I think that should be your goal too.

MR. QUINN: Chairman?

CHAIRMAN LA FLEUR: Dr. Hogan I want to ask a clarifying question. First of all I said I was depressed yesterday that based on Sue's testimony there was something we neglected for 3 years but now that you brought up something you testified to 12 years ago. I understand I think why fixing scarcity pricing and I think we have tried to do some things on price formation, obviously not enough for what you said.

I understand why that's important but I think I want to understand you said if we got that right then if people made uneconomic decisions in the market they couldn't put the money on other people.

I know they wouldn't have uplifts socialized but how would that help with somebody who wants to buy off-shore wind if the market is in conflict. I don't think I understood your comment.

MR. HOGAN: This is what I'm not saying and it is very important because it is part of this political issue. I'm not saying things that everybody is going to be happy who is outside of whoever is doing this. So if you are subsidizing uneconomic resources and dumping into the market the people that are competing with that are going to be unhappy.

The incumbent generators and the other kinds of things -- but the loads who are outside of that region are going to be delighted because prices are going to come down because of the subsidies that are taking place and causing the whole thing.

So at least you would want that to pass the test that if somebody in a state does something which increases the overall cost of the system that they incur at least that much cost themselves.

And if they want to and they are prepared to do it or nobody is paying attention or something like that, I don't know how you can stop that. I mean if they are prepared to absorb it -- but what we have is built into this system is all of these subsidy mechanisms where they are shifting the costs on to other people.

So I mean and I have listed off some of them and we can talk about more, which they are out there. And I think if you could fix the problem so at least you have in the idealized market case we had efficient pricing -- that used to be the old joke, where's the best place to have your -- to be a consumer and it is right on the edge of an RTO but on the other side right so you get all the benefits but you don't have to pay the costs.

And I think it really is structured just the way that people want to take advantage of things then they have to absorb those costs and they don't get to participate.

So should subsidized resources be participating in the capacity market and not getting the double payment problem? No. Why do we have capacity markets -- trying to correct a defect in the energy market because we don't have enough scarcity prices?

Now should we pay people who are making the problem worse so we get them in on the deal too? The answer is no. They just shouldn't be there. Now I'd also get rid of the capacity market but that's another important more complicated conversation.

But I think that's the thing to focus on and despite the politically unpragmatic you know and foolish plan, this kind of attitude that I have now evidenced in violation of the structures I think that's where you should be concentrating your attention.

And it can be done and I would describe that elsewhere. I'm happy to talk more about my list and adding to the list of things that you should do but that's where I would focus.

MR. QUINN: Cliff did you have anything?

MR. HAMAL: I'll pass. Roy mentioned my -- but it seemed so long ago.

MR. QUINN: So Sue then Roy.

MS. TIERNEY: I really hesitated to put up my card to talk about scarcity pricing in capacity markets because I respect Professor Hogan so much as one of the biggest brains I have ever met. And that was actually honest.

But 12 years ago I wrote a piece in which I said it is really a theoretically desirable place for electricity markets to move toward scarcity pricing. For all the reasons that Bill has so wisely written about but at that time I wrote and I feel even more strongly now that those -- I don't understand how they have been politically sustainable in Texas.

I suppose because they have not had the pattern of scarcity pricing that caused the Governor to call the Commission to say cut it out. I think that scarcity pricing that we see or we see symptoms or expressions of scarcity pricing when for example in New England natural gas becomes unavailable and prices spike to the marketplace and every Governor sends their Commissioners to the legislature to talk about how they are going to fix that particular problem that's just been encountered in the marketplace.

So as much as I think it's my right brain is supposedly the logical one I don't know. That logical side of my brain says absolutely that is the right way to go. I think that we will find ourselves here addressing the fallout of scarcity pricing if you spend a ton of time on that and not addressing some of these other issues, that is not a fast exercise.

And I am not smart enough to figure out how we are embarking on a world that will be I would expect much lower carbon that includes resources with high fixed costs and almost no variable cost. So scarcity pricing in that kind of a world and lead times for excuse me -- getting resources into the market is causing my brain to fritz out.

MR. QUINN: So we will do Roy and Lawrence then I think we want to move on to kind of talking about principles and objectives.

MR. SHANKER: Capacity scarcity and energy only -- I think this is one of the few areas I sort of disagree with Bill. The starting point is reliability and input and output -- ask that question.

And if you say that it is an input you have a capacity market. You may not know that you have it and you may not realize that you have it but even in Texas there will be a point which I think Brattle was a good example, somebody continually takes a look at do we have adequate entry, is the penalty factor high enough?

If it isn't high enough do we adjust it and that's because if it is not high enough and we are not getting entry we are concerned about reliability and that's because reliability is an input.

And so one form directly or indirectly you have a capacity market. If you say it is an output then you ration in some fashion based on price and we don't worry about any of this and I don't know a market that has those properties.

So the distinction is how fine is the detail in which we are resolving how efficient in terms of the argument I think both Sue and Bill might hear the same argument and come out in a little different place.

The more detailed, the finer the resolution is the higher the efficiency. But there shouldn't be the perception that there is not a capacity market, there is.

The second thing again I'll stretch when Bill suggested that the carbon adder and I really mean adder because I'm looking at this in the context of a mechanism that creates a surplus because of the way charges are applied and money goes back out.

I don't see any reason that we cannot -- we differentiate between units like PJM versus New England and forced a 4D versus ICAP. You know we differentiate and compensate units differently based on start-up, run time, minimum run and cool down.

We have differentiation between whether they can be fast or slow ramping, give them different regulation signals. PJM has adders in a different way just to be clear, I'm not saying they are the same. Based on emission limited resources they get an opportunity cost to ration their output.

I'm not sure where an attribute distinction that can be monetized is clearly once we agree on the price on the intensiveness of carbon it looks to me just like all of those other things and so I wouldn't see that and I would encourage -- you know I am sure you are going to get lots of comments and we have no loss for legal advice here.

I would encourage you to pursue that to pin it down because it is so powerful a tool here that to not be 100% convinced that you couldn't do it would be a big error. I believe you can I don't think there's any problem at all.

MR. QUINN: Thank you, Lawrence?

MR. MAKOVICH: I think there's a couple of principles here that bear you know focusing on and the first one is that I think there is general agreement that if you have got electricity markets and you are trying to incorporate state policy objectives of reducing CO2 that the proper way to do that, the most efficient way to do that is to use cap and trade or set the price, an appropriate price on CO2 emissions.

That will alter the marketplace but it will not distort it. And I think it's really important then to try to anticipate whether you think that the proper market structure, a well-structured power market is an energy market with the operating reserve demand curve or whether it is an energy market with an associated capacity market.

Either way if you have as a benchmark what that outcome is going to look like with an efficient carbon price, then you have got a basis to make some judgments when you have got people coming to you because you know you have distortions creating in either of those cases, episodes of increasing duration of negative prices.

Because you have got these policies that are distorting things so I think whichever marketplace you think is well-structured, analyzing that with an appropriate CO2 price has got to give you the proper grounding to make a lot of the decisions that you have got ahead of you.

MR. QUINN: Thank you so I want to move on to a discussion about principles or objectives that we would use. Potentially choosing amongst the various paths we could go but it might also be that it's important as we talk about some of the proposals that we have heard for accommodating states if we accept that it is going to be difficult to achieve within our markets.

We are going to give up on Roy's admonition that we figure out for sure that we can't do it. But if we accept that we are trying to accommodate state policies with you know, some manner of letting them get a capacity supply obligation but then setting a price so that you almost ignore that state support -- or some other form of accommodation.

What kind of principles would we use in thinking through proposals like that and just to provide some basis? We had a couple in the pre-filed comments, sets of principles that we heard from various folks. David Patton set out a couple of principles I think premised on the believe especially in ISO New England that the focus of the capacity market really was to organize exit because most of entry was going to come from state supportive resources.

So his principles were things like prevent the credibility of the market by protect -- the credibility of the market by minimizing our official surpluses. Prevent the inefficient entry of new conventional resources given the entry of subsidized resources and then minimize excess cost to be borne by RTO customers.

NRG also had a couple principles. I'll read them out again this is just mostly to kind of ground the discussion -- allow state backed resources to take obligations on the capacity market consistent with their ability to support resource adequacy while recognizing the fixed cost recover for those resources is coming from outside of the market.

Insure that resources relying on market revenues are able to access sufficient clearing prices to maintain reliability and apply reliability must-run contracts.

Insure that all resources being counted for resource adequacy have comparable if not identical performance obligations and create financeable capacity market structure that continues to incent investment when and where needed to support resource adequacy, even as state sponsored resources proliferate.

So I guess our question to you is do you have a similar set of principles that 1 -- you know the Commission could use as we evaluate different proposals and including proposals that would ask us to accommodate state policies if they are not going to be incorporated into the market?

MR. SHANKER: You are not going to be happy with the answer. We are here because those questions were asked repeatedly PJM what is it now 11-12 years ago, same in ISO New England about the same time frame in the capacity markets.

Each of those markets came out of the administrative law judge decision's age with I thought excellent orders. Each was directed into settlement. Each went through a settlement process where the types of questions you are asking were addressed.

Each was watered down and distorted, biased, damaged enormously by the compromises. Now I have to say that we would still be here on the environmental RPS type of distortion regardless but we would have been here with an industry that was financially much, much sounder and probably much more willing to adapt if not adapt itself.

I put the number in PJM of a transfer close to Joe's here he will understand the cases that I am referring too, but between 15 and 100 billion dollars over the last 10 years that got transferred between suppliers and load.

And that's a lot of money and it would have changed the entire face of the industry. It would have changed the cases in front of you in terms of re-regulating and fights over exit and ability to adapt to environmental controls.

And part of this was a huge set of bad compromises. Dr. Bowring talks about underpayment in his comments, I know you have all read them. It is worth going back in the state of the market reports -- there are numbers linked to his general statement.

And in pretty much each case you can link it to a compromise and so the general principles I said before are the ones that I would stick with. And I know this is so politically incorrect to stand in front of the Commission and I know the Chairman is probably out but the reality is you are here to be making some very hard decisions now and whether you agree with me or not trying to punt to accommodate which is I think we have called the alternative in the face of a lot of things that we understand and know not to be correct.

If we had our druthers we would not do, it is a big mistake.

MR. QUINN: Bill?

MR. HOGAN: When the Clean Power Plan was first published, you remember the Clean Power Plan, so when it was first published I actually wrote a paper which was in the Electricity Journal and I will submit it again for the record again if necessary.

But the purpose of it was to address the question about how to deal with carbon in these organized markets and the mistakes that you could make and what to do and what not to do. And it laid out the carbon tax as the economic goal, this is the efficient way to do it and if we could do that, that would be terrific and would fit and everything would work fine.

And it went through a series of alternatives that are approximations of that which went from the good to the bad to the ugly and then down into -- and the last one on that list as I recall was environmental dispatch, where you change the objective function for costs of CO_2 emissions.

And that creates havoc in the system. So I think there are a lot of things like that -- where it is just understanding how the system actually works and making sure when people propose things you compare it and the message here is to compare it against the economic thing that actually works which is the carbon tax idea.

And then if you are going to do something which is not that but you have to check to see how close it is and how far away you are and what some of the problems are going to be.

CHAIRMAN LA FLEUR: It is awesome having you guys here by the way. I want to ask a somewhat provocative question that was provoked by something Roy said and Sue as well. I mean obviously we don't live in a politics free world.

Part of the reason Representative Kennedy became so interested in this issue was because of a spike up in the capacity market that affected his constituents. But there has been several references in your pre-filed testimony to the problem of the stakeholder process as a market design mechanism -- is there something you think we can or should do differently?

I mean we have kind of assumed that this is the way it has to be and I don't mean by that Cheryl LaFleur gets out her pen and designs a market. I know I am not capable. But some other method or something because I mean that's just a question honestly.

COMMISSIONER HONORABLE: Let me add on, I can't allow Cheryl to be on that island alone because I think by my comments I have made very clear over the course of yesterday and today that I think in the short term that path 2 is the correct one.

So I take to heart your comments Roy and Sue. I think in a Utopic world 4 would absolutely be a path that would be a viable one if there could be consensus. I have to say that for the record I think my comments have made that clear but I don't want Cheryl to be out on an island alone. We have to find a pragmatic pathway forward and we appreciate your expertise in helping us carve that out in a way that demonstrates our political courage.

MR. MAKOVICH: Well actually in answering the question that you both posed you do have I think a fundamental principle which is that compromising negotiation among stakeholders is not always going to give you the best answer. And so FERC needs to be a check on that and in particular I think to Arnie's question about what is the principle -- the principle is you want to keep markets demand driven.

And what I mean by that is you ought to keep in mind the principle, the objective of using markets in the electricity sector is to minimize the cost of giving people the electricity they want when they want it, internalizing a CO_2 cost and maintaining grid security.

Now everybody might not accept that but we do have a threat here where we are going to violate this principle because when we have states that are mandating 50 or 80% renewables and they are starting to use the market instead of it being customer driven it is now supply driven.

That we are going to be using market forces to set prices to equilibrate electricity production that's not giving us the power when customers want it and use prices to reshape customer demand in order to align.

And if we lose sight of the fundamental principle these markets need to be demand driven, we are going to undermine support of the markets because it is not ideological it's very practical.

MR. QUINN: Thanks, Cliff?

MR. HAMAL: Thank you. I would like to address the Commissioner's questions and then return back to where we were with the question you had. But with respect to how we develop options -- I struggle with that.

I personally believe that we should move much more toward a bilateral market and allow people to contract for individual attributes of capacity that matches what they need, that has the characteristics, including duration to get what they want to accomplish.

It's a bit complicated thing. I'm not going to try to explain that here. But I have talked to a lot of people about it and on an individual basis you can make some mileage and get some understanding of it.

But whenever you enter into one of these stakeholder agreements and I have been involved with PJM and New England -- everyone sitting around tables much larger than this one, politely talking across a very large room, interested in moving incrementally forward.

It's hard to address the kind of sweeping change that Commissioner Honorable was mentioning at the opening of this hearing. How do we get something different? And you know you pose an interesting question I hadn't planned on addressing, but if the Commission established ways for people to debate, really, truly different options and bring them forward without the Commission's endorsement.

But here's a different way of looking at it. I would like to see my ideas pushed forward and others as well, but to articulate them, to develop them with some depth I think may be a way to get out of that you wouldn't get from the stakeholder process so that's one suggestion I have.

The question we started off with was about the objectives and the principles that we would have for developing a market going forward. I start with presumption and we are assuming that we are in the world today states and federal -- states have objectives that are legitimate that lie outside of what the Commission can deal with but we are trying to incorporate them into the market.

Most of those are environmental -- that's what we have been talking about all the time. It's really interesting about the environmental objectives is in this case the benefits go beyond the state boundaries. I mean arguably they go all over the world, arguably they are part of trading the momentum around the world to get people to make changes from places we don't even know how to get to.

But what we really have is an interest that someone is willing to step forward to take change to deal with additional cost for a better world, environmental benefits. I think one objective should be that we shouldn't in the federal market -- in the wholesale markets do things that penalize those entities the customers that are going out of their way to begin with to take extra cost actions to try to create these environmental benefits.

We shouldn't penalize them and that's what we are doing. I mean I just find it really frustrating. We in New England as I understand it I am not involved in the New England process but they are going to spend the extra cost, then they are going to have to buy their way out of that through some secondary market that I don't understand very well so it is the second time that they have to pay.

And then as a result they are going to get extra retirement so the prices go up overall so they have to pay three times. This is how we reward people who are taking these extra environmental actions. So that's my objective. I don't think that we should make it more expensive to take these environmental decisions and strategies that some states have wanted to take.

MR. QUINN: Thank you, Robert then Sam.

MR. STODDARD: Thanks, as to the stakeholder profits I really wish I had the magic answer to that but I don't. I think the challenge of forces fundamentally everyone has the right to appeal to the courts and so getting their buy-in to a design before it comes to the Commission and then again I think the Commission's expert review and improvement of final tariffs you know a hard look at the final tariffs to make sure what is there is just and reasonable and not unduly discriminatory is the last check.

But the stakeholders will always be with us. To return to the question from Director Quinn though how should we accommodate? Sorry I am going to give the hard answer -- minimally. States have taken some actions that are on the books already. We have to recognize that they are there so we should do what we can to make sure those disrupt the markets in as small a way.

And I would join with people from this morning saying that the Commission should require every RTO to file in short order a plan to do that.

But if we have to move past that -- if we built in permanent accommodations then we are going to have a death by a thousand cuts as Dr. Tierney described. We are going to eventually un-structuring the market and having more or less everything procured by rate payers through designs and lose all of the benefits of competition we have had.

The RTO markets will just become residual, marginal trading operation and that's not going to achieve the benefits that Order 888 and the subsequent orders anticipated. So I think what you should be focused on after you accommodate existing action is giving the states the market-based tools to achieve their policy goals within broader markets.

I don't think they have to be FERC jurisdictional markets. For instance I think it would be possible to build on RGGI as a way of -- and establish carbon pricing. When Chairman Vannoy said Maine doesn't want carbon pricing -- Maine already has carbon pricing.

And we have a mechanism to do that. So it may be possible to re-work some existing things. It may be possible for regions to work collaborative if they don't like federal jurisdiction over their policies.

But let's give the states market based tools that then can be recognized as part of the market and not distort the outcomes.

MR. QUINN: So I'll kind of ask a follow-up on that. Is that partly advice to call the bluff? I think what we heard in the morning panel was you know the harder we push to say you can do it within the markets, markets we regulate or some other market.

But if you don't do it that way we are not accommodating. The harder the states -- the more the states believe that the policies and objectives they are pursuing are integral to their mandate, then we start to ask them to make a decision.

Do you continue to pursue your policies that you believe strongly in, believe are a core part of your mandate? And then we heard yesterday kind of a reminder that often these policies are coming down from state legislatures. So are we asking them to choose between that and the wholesale market or is your belief that faced with that choice they will choose the wholesale market because that evidence suggests that it provides so many cost savings that we can call their bluff and they will come our way?

MR. STODDARD: Well first let me try to distinguish as I did in my first round of comments that I think there is a difference between the policies of the states we want to be carbonized and implementation methods to achieve those policies.

What I meant in my statement is that if there is a method, the 2020 process is underway in the Tri-State RFP is underway. We have to figure how to put those into the markets in the least damaging way. But if we gave states the policy -- this market based mechanism to achieve the bigger policy goal of carbon reduction that many of the New England states have, or RPS standards that all of the New England states have -- then what we have heard in private discussions with regulators and legislatures, they would be happy to not have to administer complex RFP's and develop rules around that.

That's putting a cookie jar out that legislators are all too happy to you know, start moving particular funds around. Let's give them an efficient mechanism to achieve the goals. That's my position. So I think this calling the bluff maybe overly harsh.

Having said that like Dr. Shanker I was testifying in front of Maine about their decision about whether to leave ISO New England -- and the alternatives are really hard. You have to pull back the entire restructuring including putting everything back on rate base, everything back on rate base and now you are negotiating getting merchant plants back on rate base which is going to be a long and hard discussion.

So I think once you look at this you have the option of having a market and a quasi-market as one of the RTO's commented yesterday, the market is a better option but now we just need to make sure that what's happening in those markets does not result in unduly discriminatory rates and achieves the state policy goals.

I think by and large they are consistent.

MR. QUINN: Thanks for that clarification, Sam?

MR. NEWELL: Thanks Arnie. So first I would like to address Chair LeFleur's question about the stakeholder process. I have to tell you how impressed I have been by the stakeholder process as a model of democracy and how much we debate these small points that don't seem to be debated over much larger policies.

So democracy is hard -- I don't mean within FERC I mean nationally and I mean democracy is hard and inefficient but you know I think it is the best and I actually thing this dialogue has already done quite a bit of good.

I'm hearing you know, having all the parties start to recognize all the needs of the other sides. I'm hearing suppliers that recognize the reality of state's needs and that the future will look very different from the present and NRG's filing that had this picture that looks very different from today of a clean energy future.

I think I'm hearing states start to move towards understanding and maybe this is hopeful thinking that the market already does solve what some of their objectives are and as for their other objectives like de-carbonization they probably have to do a better job sharpening what their objectives are and articulating them so maybe even a market approach could hear them.

Maybe that's wishful thinking. Maybe you need something a little more to compel faster action. You know I don't know about that but I urge not too much frustration with the stakeholder process just because it's somewhat slow.

And you know I hear a lot of words that it is dire. I agree it is very important with the challenges that we face to set up something that works better.

CHAIRMAN LA FLEUR: I wasn't really worried that it was slow I think that's inevitable with the number of parties, it was the comments made by a couple of your brethren and sister that the compromises then get built -- some of the compromises make economic trade-offs that then get built-in and need other things to fix for them.

It was problems expressed with what comes out of the process in terms of you know, whatever, choose your clich you know a camel is a horse, I'm a committee or whatever. Not the slow-ness I can accept that processes are slow.

MR. NEWELL: And I too don't have a silver bullet for you on those. But I would like to come back to Arnie to your prior question on some principles around accommodate. The first thing I would say again re-emphasize that the sort of achieve idea and bringing some of these objectives into markets is the best and I hope where we are headed long-term.

But in the meantime those take longer to put in place so in the meantime we have and we will probably continue to have procurements and financial support sometimes that are outside of the market. And then what do you do about that and I think that's what you are asking what are the principles for that.

The first thing I would say is to recognize all of the value that those resources provide. So if they provide -- recognize the REC value and recognizing the ZEC value or some other equivalent -- because with that in mind and against Larry's benchmark of a carbon price they may be economic.

The second is to you know there may be resources that don't pass that test but even then not to ignore the value of capacity that they incidentally provide and therefore over-build I just think that's wasteful and it is not sustainable.

So to the extent that we have a lot of investment in clean energy resources you need less other -- other resources. There was a very important question that Chair LaFleur that you asked yesterday which is -- Is there going to be so much investment in clean energy and all of these special resources that there is just not going to be a need any more -- I don't remember if you called it in-market investment, but something to that effect.

CHAIRMAN LA FLEUR: Something that no one wants to subsidize.

MR. NEWELL: And I think that's a really key question and I think the answer to that is there will still be a need I'm quite sure and for that reason it's very important that you have good price formation and let's not that's in capacity, the energy markets, the ancillaries, that's really important.

I also think about the regulatory risk that investors perceive if you know if these other resources are able to come in you know, not just part of a long well-defined path towards de-carbonization but sort of haphazardly. I think it just creates huge regulatory risk that states might intentionally reduce the price that it is just you cannot predict the future price based on fundamentals.

So I do think you need some mechanism in place.

But again I think I hope for a future where we move more towards the in-market approaches and that becomes less important.

MR. QUINN: Thank you so we have Roy and then Sue.

MR. SHANKER: Yes I wanted to respond to the Chairman's question. Over 22 years I probably have averaged about two stakeholder meetings a week aside from having a real job. And so it's a given what you said about the time and process.

But it doesn't have to be and it should be of some concern because stalling is a business tactic within the stakeholder process it does not exist. If you said you had to do A, B, C, D and you knew it always was like that I would agree with you that's life.

But it isn't and it is able to be manipulated for better or worse. The ability to actually do something constructive when there is a winner or a loser or a transfer of funds in a zero sum game is almost impossible.

The voting structures are strange and I think you may have even had issues brought forward to you about voting structures so I don't want to get into that kind of level of issue. And then there are procedural objective functions on the parts of the RTOs which are to close some things out.

I have been amazed between this is right and this is wrong and the RTO, at least in my view in general has come out on the right side, not always and said I'm pretty intractable about this and we are going to move forward and that's how we are going to push the process.

PJM probably has more of a voting process that prevents that than elsewhere. But I have also been amazed that there is also an institutional scorecard probably, maybe even down to how well you have done as a coordinator of committees as to whether something gets done which may lead to compromises in of itself that are bad.

And it is all over the product. I mean it really -- the spectrum is sort of shocking when you look back at it over time for both good and bad and I don't know if I can explain each piece. I know PJM as I look around is Vince Dwayne still here? Afterwards if he is he might -- somebody or actually Ed Tatum I know is one of the resident experts.

We are reviewing in PJM the enhancements on process again I think is up for consideration and that's more -- it gets it to you faster to then go forward with the process that Robert described and that would be a good thing.

CHAIRMAN LA FLEUR: So do you think we should set tighter deadlines for things?

MR. SHANKER: Yes unambiguously that's a no brainer.

MR. QUINN: Sue?

MS. TIERNEY: First comments on the stakeholder process. It shouldn't be a surprise that we have market rules that are not perfectly economically efficient because we use legislatures to come up with designs. And by that I mean stakeholder processes are weighted voting legislatures.

And of course the RTO can at the end of the day put in their own file and ignore so to speak, some of the stuff that comes out of the stakeholder process. But I don't know that you have a choice for all the reasons that people have said. It's an imperfect system. I do think setting deadlines would be really helpful.

I have often admired the SPP stakeholder process that carves out certain aspects of deference to states on things that are really political decisions. And they say okay these are really about allocation of goods in the system so that they don't have other weighted voting on there.

So there could be some process design issues but I think you have to have it. A tighter process would be helpful because then people have to get off the can. On the principles point I guess I would say a couple of things. Let me just start by recalling that we often talk about whether the states are going to leave the wholesale market -- FERC regulated wholesale market.

But I think there's an important distinction between leaving the resource adequacy portion of the wholesale market and the rest of the market. And we know that every other RTO deals with resource adequacy differently than these three RTOs.

So when we think about whether states might get so fed up with one or another of these paths that they would leave, then think about whether or not they are leaving resource adequacy or whether they are completely leaving the wholesale market and going back to full regulation.

California is virtually a contract market now and certainly the state has resource adequacy but they operate a security constrained economic dispatch. And so maybe I'm assuming that when states talk about what the like about wholesale markets it's that -- it's the operation issues and less excitement about the resource adequacy piece.

And if that's the case then I wonder if you could think about if states are going to leave then if they want the benefits of the economic efficiency of security constrained economic dispatch then you know they are either all in or all out.

I don't know if you can do that because otherwise they are just picking and choosing of things which they can do, which I think they can do. So on the principles I definitely think that you would want to have consistent performance obligations that are technology neutral, that you just insist on that so that if somebody has to meet the test of being available on call or whatever it is that you don't care whether it is renewables or nuke or anything else.

I would really try hard to address this problem of minimizing artificial surpluses. I think that we really see that profoundly with many of the state bilateral contracts and I think the ISO New England is trying hard to figure out a way to make it more orderly to address that problem but I also think that the way it's proposed at least based on my understanding today is it could definitely -- it will surprise me if state legislatures and regulators will be patient for the orderly exit portion of that proposal.

So I think that that just needs more work to figure out how to dovetail that with state's imperatives from their own political point of view. And I thoroughly believe that the principal of allowing efficient price formation in the markets where there are market participants without a state backed contract or a state ordered contract is really important for various reasons.

MR. QUINN: Thank you. So I think I want to move on to one last question before we turn it over to the Commissioners. I think it follows up on the question that acting Chairman Lafleur asked about process and using the stakeholder process and to think some of you talked a little bit about the time that it takes.

A number of other panels have talked about how urgent it is that the Commission provide guidance or take action or you know what deadline we set for that stakeholder process and I think we have heard a variety of answers from -- it's all going pretty well, you know we will get to it when we get to it to the town is burning down and you are a couple of minutes late.

So I would love to get your perspective on you know how much time we've got. Is the market burning down or do we have a little time? And maybe we can go a little bit to some of the discussion about accommodate versus move things within the market.

If the town is burning down accommodate becomes a more active priority. If we have plenty of time we can spend that time to find the within market solutions. So yeah and again appreciating this might not be the same answer in all three of the regions that we are addressing in this Conference, I would love to get your perspective on how fast the Commission or the ISOs need to move, Roy?

MR. SHANKER: I'll try a couple things for PJM. I think Andy spoke yesterday about 10,000 exit, 10,000 entry which might sound healthy but what if the distortion said we didn't need either, status quo would have been good enough and we churned 10 billion dollars of capital for no reason.

I think part of Larry's comments about well you know we heard a lot of comment about Exelon and the payments and ZECs and I won't go into the details. But my observation is pretty much the same as his that with a rationale carbon pricing the issue would go away.

So however that plays itself out then those units would be economic is what I am saying. We are swinging either what may be going into the dollars of subsidy or if they are inappropriate then billions of dollars in new capital the system is going to balance out.

Somebody is going to take some action and don't -- I guess what I am trying to encourage you is to not look at power balance per se but look at efficiency of capital formation and whether or not some of the Joe Bowring's comments about under compensation, retirement of plants.

It doesn't mean there's not new entry, particularly with the way we have set up some of the incentives in the market even if they are not exactly right. But I use the expression and probably if you have searched through testimony I've given that we are artificially churning capital enormously and to me that's as big or bigger a concern of replacement.

The other thing that is a slight distortion that I will mentioned for PJM is gas supply situation is probably bearing a multitude of sins. I get to see let's say a dozen new plants. I have a nice -- because I'm by myself I'm sort of neutral so I get to see what other people have done to advise them.

And obviously I can't talk about numbers per se but you know there's a lot of gas out there and there are some very attractive projects that are probably coming into the market not that there's anything wrong with it but the timing versus all of this other distortion is something that you shouldn't take for granted will always be there.

And you are already starting to see that go away.

MR. QUINN: Thank you, Larry?

MR. MAKOVICH: On this question of stakeholders I think that you have to recognize the fact that they tend to be very reactive, not proactive so that when problems are cropping up in the power markets they are not likely to be aggressive in trying to solve things and it takes crisis to actually force some movement.

So I think the example is you think of PJM went through a couple of different designs on its capacity market but it took the polar vortex to force them to finally define what exactly do they mean by capacity even though they had a market they had been trading it for over 10 years.

And so that's an example of the kind of problem you have got with the stakeholder process being very reactive and with accommodation I think that right now it is tempting to think that you can accommodate, particularly by pricing resiliency or pricing flexibility and so forth.

But Thad Hill said California in his opinion is a market that has failed and when you look at California we are talking about a marketplace where the subsidized wind and solar make up about 12 to 15 percent of the annual supply.

And you have already got a market with the duck curve and so forth it's showing tremendous stress to function and to form prices that are efficient. And if we have got this kind of problem at 12 or 15% then we are going to have enormous problems when you have got markets like New York saying that we are going to get to 50% by 2030.

And so it may seem that you can accommodate now when these problems are small but they are going to rapidly expand and if the solutions don't get out in front of this I think it is going to be very hard to be effective in a reactive mode.

MR. QUINN: Thank you, Sue?

MS. TIERNEY: On this question of this trade-off of time I really agree with Roy. I think that the insights about whether the lights are going to stay on is not the problem. It's really about quarterly reports of publicly owned firms will cause them to make decisions about whether or not to leave or to invest.

And so maybe that becomes then a "lights is on" problem eventually but I don't think keeping the lights on is yet urgent so addressing the financial considerations in the markets I think is a bigger driver.

MR. QUINN: Robert?

MR. STODDARD: Yes I think it is also critical to realize the markets are already looking way forward. You know we are in the capacity markets procuring three years ahead of need so any changes we make today are really not fully affecting the markets until the early 2020's.

And a lot of states have a lot of renewable goals and other policy goals to achieve in that time frame. So I think the urgency of putting in front of people a clear path to do something other than massive policy in state-directed bills is quite high.

To second Lawrence's point it doesn't take much to tip this over. If we look at the new stuff coming on board there's very little except renewables getting built and virtually all of those renewables are now coming in with some sort of baked in contract which immunizes them from the ISO markets energy ancillary services and so forth.

MR. QUINN: Thank you, Cliff?

MR. HAMAL: I guess in terms of urgency I see sort of two kinds of issues. One has to do with the nuclear units. We certainly talked a lot about that this morning. I see value in having zero carbon-based load generation that is not valued by the marketplace.

I think it's a big deal. I know a lot about nuclear power plants and they are not replaceable as we are seeing evidence of with people trying to do that. It's just a one of a kind circumstance that I think deserves attention before bad decisions are made.

Now I say that without having looked at the numbers and not trying to pass judgments on who is paying for that and what the costs might be but I do think that those are unique resources.

With respect to the rest of the marketplace you know PJM with reserved margins of 22% I think of Yogi Berra my favorite economist. We have so much capacity we are going to run out and I think that gives us a little bit of time about dealing with the rest of it. I think we do need a long-term strategy that can incorporate these issues.

And you know nearing the end I want to make one last plug that's not directly on your point. But as we look at that and look at that long-term option -- competition is great, we need competition. We don't have perfectly competitive markets. The mere fact that this product unlike any other produce in the history of the world needs to have a centralized construct is being built to keep it around is just proof that this is not a normal, efficient market with buyers and sellers and acting on it.

So what that means is when you look at options and we try to value what we are going to need to do over the long-term. You can't say well this looks like more competitive than the other, this is the land of second best. You have to look at the overall implications, look at competition, look at entry.

Thoughtfully come up with something that will work long-term for all of the goals that we have but not use -- you know we have to adopt this because it is the only competitive solution. We left that when we adopted capacity markets in the first place, just tying back into Bill Hogan's comments.

MR. QUINN: Thank you, Sam?

MR. NEWELL: Thanks Arnie. So I first of all agree with you Sue, that you know the lights aren't about to go out so it is not urgent in that sense. And I also think some of the urgency is overplayed by people who are demonizing renewables as if that were the entire cause -- that the policies around renewables are the entire cause of other resources earning low revenues and it's not.

And so there is urgency about no we have to stop this or change how they are treated in the market. The fact is that you know low energy prices are much, much more because of fundamentals -- gas prices are low.

You know in most places we don't see the negative prices were often. I mean that is a big consideration for the future, whether we are getting things right there. With capacity -- there too it's mostly fundamentals, low load growth and amazing I can't believe how much low cost new entry there has been even by a new gas-fired generation in these markets, all of these markets we are talking about.

And you know meanwhile renewables have fairly low capacity value so really some of the discussion and sense of urgency I think has been somewhat misplaced. I do think there are a couple of decisions -- a couple of elements here that are imminent and do need to be addressed.

So one is the nuclear plants -- and you know when a nuclear plant retires you lose the option value on years of generating vast amounts of clean energy. Now in some cases, maybe not all, in some cases that may be at a relatively low cost of carbon abatement -- and again I like the benchmark that you suggested Larry.

You know they would be in the money if you had a market with a carbon price. Some of the New England states -- well one in particular is about to embark on some very large renewable procurements which do have much higher capacity value and you know so there too I think how do accommodate in the capacity market becomes you know fairly urgent -- that needs to be addressed pretty soon.

MR. QUINN: Thanks, Larry?

MR. MAKOVICH: Yeah just a quick clarification on this question of what's really going on right now. There are a lot of people that think that low natural gas prices are the reason why nuclear plants for example aren't able to make it in the marketplace.

And a lot of people think well this is just kind of the creative destruction that you have in a marketplace. People use the term uneconomic and so forth and I would agree with that if I saw evidence that with low natural gas prices the natural gas fired generators were making great profits because this unanticipated shale gas revolution has put these people in a really competitive vantage position and now they are able to become really profitable.

And what you see is, even when gas prices were hitting their historic lows over the past year, if you look at the peer group of natural gas-fired competitive generators so NRG and Calpine and so forth they lost 40% of their market valuation across the past year.

And you look at the market report from PJM and they are telling you most of the gas-fired merchants aren't profitable and they look over the long 7 year time frame they said you are not making it on your basic economics with the gas-fired generator.

So I think it is true that natural gas prices have fallen dramatically but what it has done is it created a missing money problem that was concentrated in gas-fired competitive generators and now it has expanded it to the whole rest of the marketplace.

So I think there's a danger in concluding that natural gas prices are creating this creative destruction that we see with these plant closures because I think instead we are seeing a distorted, uneconomic set of retirements.

MR. QUINN: I see that but I want to make sure that I get to the Commissioners, so Commissioners questions?

CHAIRMAN LA FLEUR: Thank you. I want to take the conversation a little further out in time and broader while I have my Genius Bar here. Because I have to say I have been very focused in the last day and a half and in the last since February 4th with the short-term.

What do I do the day we get quorum? What about the hundreds of backed up orders? What about the dozens of rule-makings? What do we do about this? What do we do that day? What do we put out? What do we do?

But these decisions are going to have long tails and just a few things -- I want to make sure that if we launch the RTOs and the stakeholders on a process you know, we think big enough. And a couple of the things that are kind of swirling in my mind just to set up the question -- the first is that all of the New England states, New York and four of the PJM states have carbon goals.

In most cases 80% by 2050 that could make a real long-term change in the profile. So you know, we are talking about gas or nuclear or whatever but there are other types of technologies here. I'm trying to figure out if the reason we hear about the renewables needing long-term contracts is that because they are new and fledgling or is it just something different about the whole way their structure of when you spend the money, you know, you spend it all up front and you don't have fuel.

And if so, does that mean we have to do something different with the ways the markets attract capital? And also, California I mean we moved past worrying about nukes in California which obviously they aren't but the gas plants are losing money because of the duck curve and the duck is getting deeper.

And so I just want to be sure we don't solve like today's problem here only just in time for pushing forward another problem. So you all have given a lot of thoughts and you know the trajectory of how we got here. What kind of challenge should we be giving to the markets for that longer term and I just want to say from the start I know that pricing carbon makes a lot of sense. I hectored on

RGGI yesterday and had very little uptake on wanting to use that to solve the problem for various state reasons that are very real.

And so beyond just pricing carbon even though that might be the right thing, are there other accommodations we should be making in the markets? Capacity, energy, ancillary services that we need to start now to get to the future?

MR. SHANKER: Actually this sort of meshes in with the last -- what I was going to follow-up with before and Larry's comments, it's worth looking at. All of the market monitors have a good display using the levelized entry cost relative margin, net revenue analyses and I don't want to say anyone is rolling in money, we are seeing the gas units finally exceeding in the option revenues and net energy margins at the levelized cost of entry.

This has crept up a little bit. It used to be impossible and if you do indeed take a 10 or a 15 year view it's dismal. The last three or four years the margins are there even with the lower gas prices.

Part of the and the lead-in, that is a lead-in part of the security as a proxy for a plant is the investment community to some extent, there are no changes to that uniform and I'm sure you would find people that would disagree with this.

But the institutional stability of the market design is part of the asset that's being invested and if it is unpredictable, if it is being able to be manipulated to be biased, to be overturned by state action priced out by a whole variety of things then contracts probably are the only way you could form capital.

If you fix those things and part of it is the carbon fix, part of it is the sanctity of law in the rules, you know stability of the rules -- then when people are buying and we are starting to see a little of that and we saw that and I think it has actually gone up and down just in the three or four year window around gas -- then you may see real merchant activities and you may see it in the clean energy area, particularly given the incentives we have.

CHAIRMAN LA FLEUR: Is that better than reliable contracts? I conceptually think so but I don't --

MR. SHANKER: Well it depends on -- if it is a bilateral contract you knew and you have to clear the market and you have to have these attributes and then we are back to Nazarian and Solomon type issues in giving those attributes.

You are saying -- somebody says I want to buy "x" megawatts of the cheapest power I can get or the cheapest clean power I can get but it is not pulling on the externals. It is meeting our qualifications, then there is no reason it wouldn't occur.

But the basic support mechanism is that the design itself is reasonable, stable and compensatory and we are starting to see that but for the environmental. We are starting to see some of that come into play within PJM.

CHAIRMAN LA FLEUR: You mean it is just starting to work?

MR. SHANKER: No, I think it's the environmental that has to catch up and think it.

CHAIRMAN LA FLEUR: Oh okay.

MR. SHANKER: We will go into that -- I'll give you a side story about California pricing and my home generator later but it will emphasize why you don't want to do some of these things.

MR. QUINN: I'll just go down the row, Sue?

MS. TIERNEY: Well I do have to say another joke. If you had hoped that you would get the vacancies filled on this Commission you have to hope nobody is watching that because they are going to get scared off about taking the job.

Okay so just roll back those tapes -- so a couple of things. I believe everything I have seen about renewables coming in through bilateral contracts is consistent with what Michael Polsky said.

You see that at various scales of renewables that

that's the case and in large part that is because financers don't provide monetary value in the deal for RECS. So if you are basing it on long-term energy prices they may not support the initial capital investment.

So there is a lot of sound reason why renewables, except in a very large company with a very large balance sheet is going to be delving out some urgent ones. So fast forward -- how many years do we want to go out, 20?

CHAIRMAN LA FLEUR: Whatever you think made sense. These resources that we are trying to attract capital for are going to be around longer than me for sure, I mean decades.

MR. TIERNEY: Yeah, God, longer than me for sure then. So 10 to 20 years you see if states stay on the path that they have adopted and if we believe that climate change is actually real which I do then we are likely to see in this 10 to 20 years not very many carbon capture and sequestration projects, not very many advanced nukes however improved they may become with different business models and other things.

In that time frame it is unlikely from what I read. And that world will require a lot of capital intensive facilities, storage, renewable energy, zero variable costs for the most part, net grid to move delivery systems as well as long-distance transmission so it's capital cost, no variable cost to associate with grid improvements.

And natural gas plants that will have very low capacity factors because of integrating renewables and so keeping those plants online without a lot of revenue flows from energy markets, to me that leads me to think that they are eventually going to need long-term -- some year contracts to stay online when they might otherwise excuse me and I still have this water here.

CHAIRMAN LA FLEUR: Do you think we will ever see method pricing in the markets for them like some kind of service like we do with tele-com?

MS. TIERNEY: Yes, especially focused on we are renting you right now to stay around so yes and I'll stop there.

MR. STODDARD: Let me pick up because I agree wholeheartedly and I would like to put some focus on that. And I'll take a page out of Professor Hogan's here -- this is about getting pricing right in the energy market. We have got to do that. Because we are moving to a future assuming that we see where we are going, we are by and large on a typical hour we will have nothing setting the clearing price above zero.

We will have a lot of renewable energy, maybe some nukes still left or a few new ones getting built in some regions and so we have to have really good pricing so that storage units are able to know when to absorb energy and when to put it back in.

We need to have good pricing so that demand side can become an active participant. This is a weird market, it is one of the very few in the world where we take demand as given, that's going to be not for price responsive. That's not how markets work. Markets usually are two sides of the scissor not just one.

So we will do better by having good pricing and letting that get down into the retail rates. And maybe my nephew will work with your brethren at the states so that more customers can see where we are and use the internet of things so that smart, electric vehicle charging, other changes can really adapt to integrate renewables -- intermittent renewables more effectively and improve grid reliability.

And that will solve the duck curve. The duck curve is a sign of pricing failures in California. Not to be that there are people -- roomfuls of people at Calpine trying to figure out how to waste electricity. That is -- there ought to be a way of storing it or shifting demand to use more productively in the middle of the day.

The contracts are as correctly diagnosed symptom of lack of institutional confidence. It's also in many states a lack of a bilateral contract party, restructured states, most of the load is served by standard offer which is a 6 month -- 1 year, sometimes 3 year product.

These people cannot write contracts that will cause a plant to come onboard. So the capacity market construct at least in New England was built with a long-term contract implicit in it to stand in for the fact that the New England states with the exception of Vermont have all restructured and the utilities who might write contracts don't have a load serving obligation any longer.

MR. NEWELL: Well I very, very much agree that in the long-term when you get to very high levels of renewable penetration that the Northeast markets are not close to the price formation is the most important for all of the reasons that Robert described and I'm sure Bill will tell you.

As for your specific question about what's different about renewables -- so they are different. I mean the nature of their costs it's all capital so compared to a gas plant, even if it has similar you know levelized cost of energy, a smaller amount of capital -- a lot of that is variable and variable that is correlated with the market prices so that makes it inherently less risky.

So that's one. The other is as you mentioned Robert with the lack of institutional confidence so if a large amount of their value is going to be captured from the value of the clean energy attributes -- so for example if I have a $20.00 REC that might be a third of their all in revenues or more.

And there's going to be perceived a huge amount of regulatory risk around that.

CHAIRMAN LA FLEUR: But I mean if they don't make a lot of -- if they don't have a lot of variable costs because the energy market -- I mean a lot of the markets were designed around that gas front on the margin whatever, if they don't have a lot of variable costs and it is all up front doesn't that mean you either need a really good capacity market that's actually going to pay them or contracts?

MR. NEWELL: And I'll be brief on this I'm sure Bill can say it better but it is not going to be true if the price is zero all of the time. If you really have price formation right both for energy and all of the other services, maybe you need a ramping product there will be a lot of other on zero value and especially again if storage and demand are in place.

Again that becomes an issue when you are at much higher levels of penetration. I mean California is already there but I don't think the Northeast is that close to that being fundamentally the issue. I do think but back to why renewables are different in terms of investing and you mentioned long-term contracts.

That of course, is a way to deal with the regulatory stability but I would urge thinking about -- well that regulative storage stability is important. But also thinking about the product definition and market so you don't necessarily have to have a long-term contract, a PPA for the entire output -- it could be like in New York it's just a REC, so I think even more focused than that on the clean energy value if you had some way of locking in an effective carbon price that they get the value of.

You know and it is still nothing to say long-term contracts, you could have multi-lateral options that have longer term products. I mean so there is a lot of possible ways.

MR. MAKOVICH: So to answer the question about how will states tackle this challenge of meeting 40% reductions as I think somebody said about New York by 2030 or greater kind of targets.

I think that if the market prices are correct I think and that is the importance as I mentioned of getting a good sense for what would be the least cost pathway if you had a charge on CO_2 emissions and you did away with all of these subsidies and mandates and what you would find from the research I have done is that a large part of getting there would involve an increase in consumption efficiency but is primary by incorporating that CO_2 charge in the retail price and less so from rate-payer funded efficiency programs -- that you would get the incentive to continue to run the nuclear plants, to maintain a fairly large base load of non-CO_2 emitting nuke and hydro.

There is an optimal market efficient amount of renewables that come about and the price signals will tell you if renewables make money or not. There is still room and a necessity for some fossil fuels to give you the load following capability you need to integrate those renewables.

And there would be actually fairly little storage given the cost and performance of existing storage. But again if storage is going to make it in the marketplace it has to beat the economics of meeting the ups and downs in load with peaking and cycling units.

And until the storage costs and performance can outperform that it is not going to be economic to incorporate into the marketplace. And so the price signals are there -- the same price signals that will pay for the flexibility on load following units are the price signals that will get you a sufficient amount of storage with the only observation that if storage does become very economic, it actually advantages high utilization of power plants more so than low utilization intermittent technologies if you are optimizing the whole system.

But having a sense of what that looks like is going to tip you off to when you see state policies that are trying to achieve those reductions with a very different prescription that's where you are going to have a lot of market distortions.

MR. HOGAN: The long run and then there's the really long run. The one thing we know about long, long run of this problem is that the efficient solution in theory and I think ultimately we will get there is we are going to have a common price of carbon in the globe, that's the ultimate for problem and the quantity reduction in every continent, nation, state, county, city will be different. So we are just characterizing it so it can't be true that the right way to formulate the problem is a 50% reduction or an 80% reduction unless you go all the way to 100% and you get an end point kind of story.

So as soon as people start coming along and proposing things you should always be translating this back into what does this mean in terms of the cost and the implicit cost of carbon and does this proposal make sense in that context or is it some aberration that is going to go away?

So in California we have now simultaneously regulations -- can we talk about California -- is that legal here? We have regulations in California for the Clean Fuel

Standard where they actually have a tradable item that you could go look up the price of carbon and the price of carbon backed, for carbon dioxide was over $100.00 a ton the last time I looked which was a couple of weeks ago.

They have other cap and trade programs where the price of carbon is about $12.00 per ton. This can't make sense, simultaneously that we are doing this kind of proposal so you should be evaluating it always in terms of that and then putting these things into the framework.

And then when people want you to accommodate if the answer is make the market more efficient and get the pricing to reflect the costs of it, this becomes economic in a way that's consistent with that then that's a good idea.

If the request is accommodate by doing something which decreases the efficiency of the markets I have responsibility for in order to make you happy that's a bad idea and so you should say no. And so the benchmark would always be the cost of carbon and as I understand the administration's position is that this is now your responsibility to figure out this number because they just got rid of the inner agency working group that was responsible for doing this but their work was quite good and you can use that you know, round numbers -- and the agencies are supposed to figure out this themselves when they are supposed to be guidance so you should accept this opportunity and use that as your standard.

And when people come in to do things which sound like the Clean Fuel Standard in California you should say we are not going to accommodate that. You know if you want to do that I can't stop you but that's another thing -- but you should be very encouraging of things which are consistent with the social cost of carbon that you are now responsible for estimating.

MR. HAMAL: I always enjoy following Bill, thank you. I'm not going to look that far out into the future. I would like to look to 2021 at the Third Quadrennial Capacity Market Technical Conference.

CHAIRMAN LA FLEUR: And there still will be no quorum.

MR. HAMAL: Let's hope and there is a quorum.

COMMISSIONER HONORABLE: Cheryl will be Chair.

MR. HAMAL: I remember Commissioner Clark talking about how he said he spent a quarter of his time on this issue and I think that's going to continue. I mean not for him obviously. But I think that I don't hear a fundamental driver to an efficient price coming out of this market that is purely competitive that we can step back away from the rules.

I think this process itself is entirely dependent on decisions made at this Commission to do tweaks necessary to get what we want. We know what we want -- we have to keep tweaking it to get there.

And I think as long as we continue with this market and this market process that's where we are going to be for the next 4 years. Now hopefully there are some changes, hopefully the Hogan is not here.

And hopefully it is because -- hopefully it is late in the day, it is because we have accepted his proposals and suggestions to price energy more efficiently. Scarcity pricing -- I think I am totally on board with that. I am not going to think that he needs to be honored by my support for that proposal but I think that makes a lot of sense.

I personally don't think that gets us all of the way there. I think as we think about a market that is going to be increasingly zero dispatchable cost resources, more things along those lines stress build on by not a special duck kind of things.

We are having multiple problems coming up. The job in maintaining reliable markets is getting more complicated. We just can't keep building a bunch of peakers to take care of whatever we need both in terms of responsiveness and rampability and then add the capacity that we want.

So I think we are going to see this Commission struggle with how do you price storage and variability and things like that and I don't have an answer for all of those pieces but I think one thing that makes sense to me on a common sense standpoint is you don't layer on a layer of environmental rules that are run by these same markets at the same time, that just makes the problem more complicated.

People want to price carbon which would be great, you let them price carbon like RGGI outside of the FERC run markets. If states want to have decisions to do things along the lines that we have been talking about to the maximum extent you let them do that but you don't complicate the markets themselves.

You take what's left turn to capacity markets, energy markets to make them efficient. Capacity markets were originally designed -- to otherwise phrase the missing money -- it's what's left after everything else is taken care of.

We don't need higher prices if we have enough capacity. We need it only when we need that capacity. The other thing that I would like to see 4 years from now is some state or two step up and say what we need to do is integrate all of these choices into a more bilateral framework.

And what we need to do to do that right is create competition on the buy side. What element can we do to create buyers within our states who would buy this pure capacity product? Who could think about carbon emissions, investments, technology, reliability issues in certain areas perhaps where it is not being served by the market themselves and create -- from the states.

I don't think you could do this here. I think the states could adopt that and then what this Commission will deal with is states who have decided to take the reliability targets put forward by the RTO's, but take responsibility for delivering those in a bilateral manner.

So that in 2021 we can see if we can get that adopted, expended at other places so that we are not here again in 2025.

CHAIRMAN LA FLEUR: I'd know that either the town is burning or the town is simmering or elements of the town are burning so there are faster things but it is good to have a sense of the long-term and that was very thought provoking, thank you.

COMMISSIONER HONORABLE: Thank you Genius Bar it's been great to be informed by you and more importantly I think in some ways we should have visited with you all first because you have really helped us get back to the basics. I think over the last course of this Technical Conference we have been really looking at where we are and how we need to get to the next place.

And we probably need to step back a bit further to think about how markets operate in the purest sense and to make sure that we are honoring those core principles and I want to thank each of you for helping us recall those.

And you may have listened in on the last session -- session IV where we talk a lot about the paths and we talked quite a bit about attributes that sometimes may or may not, or should or should not be factored into markets in terms of pricing.

I thought it was an interesting discussion because in addition to carbon pricing I also heard someone say that they thought that maybe we should be taking into account reliability, resilience, fuel diversity and I also heard someone say no, the market should already be doing that.

So while we have you all and you are free for the moment I want to ask your thoughts about that. It seems like a fundamental question to some -- you may have differences of opinion but I would like to know that, that's important.

To me as a regulator as long as I am here with Cheryl, but more importantly we are building a record upon which our quorum of Commissioners can consider this issue and your opinions will be helpful, that's question number 1 and then I have another 4, yes Mr. Stoddard I have one for you after we get done with this one.

MR. SHANKER: FERC will very narrowly go to the reliability attribute. I think Andy Ott's answer was correct. If the security constraint dispatch and commitment those are constraints -- one of the things that strikes me as a little comical that maybe points this out is people talk about well we will build a whole bunch more transmission and become more reliable.

But that isn't really what happens. It expands the capacity of the system, it runs in the same reliability standards which is what I think Andy was trying to explain, we have more capacity to move things.

But we move them to the limit and we believe that the limit is appropriate. Okay now you may argue that the way we set the M minus 1 or M minus 1 minus 1 or the various contingency limits is wrong and they need to be more conservative.

But given those reliability attribute is fixed and everything we do is an adjustment to accommodate or state within those constraints. So if his example or maybe California is a good example here. California needs more ramping, I mean that's one of the flexible capacity issues that have been before the Commission.

You don't not have it and be unreliable. You know that that is going to be a constraint that you have to keep the Ace at regulation within certain bounds and so they will commit more resources. And that may mean they buy them elsewhere or they adjust other operating procedures or over commit -- I have more units than minimum capacity to give themselves more upside ramp.

But they do it and those are because they are all structured as constraints.

MR. STODDARD: So recognizing we are here to talk about integrating state policy in the markets I think the challenge I have with resilience or other security goals -- I don't think properly at least in the multi-state RTOs that states ought to be focused on those things.

I think those are the proper purview of the RTO, of the stakeholder process, of review by technical folk. When I see states within these multi-state RTOs talk about fuel diversity or et cetera it typically is a jobs program where they have a particular goal, a particular plant or something they want in their state and so they are going to push that.

I -- again I'll put on my reading glasses as someone said in the previous session and wonder whether the claim of resiliency at a state-level is actually a legitimate policy goal.

MR. QUINN: Sue?

MS. TIERNEY: I disagree with what my colleague just said. Resiliency is different than reliability in my view and I'm informed in making these remarks just now by many to many hours spend on the National Academy of Sciences Panel on resiliency of the grid.

And we will be finalizing our report so you will get to read all about it -- but resiliency is really being ready for an event, you know mutual assistance agreements. Making sure that you have got the hardware and software to identify where there is an outage.

Events would be in this case a terror attack, a physical hardware hit -- cyber-attacks, extreme weather events. So before the event do you have the capabilities to address it? During the event are you managing through it in a safe way? Is your system going to be ok?

And then after the event are you recovering the operation of the system as fast as you can to provide access to services?

States are extremely concerned about the assurance of critical services, hospitals, sewage, water treatment, and a variety of other things during events like Hurricane Sandy, Katrina.

So states, indeed are working a lot on resiliency issues, because of this problem of assuring that people don't die and are not harmed during all of that. So I do think that there is going to be increasing attention because of cyber -- because of extreme weather events but I don't know how you monetize those things and I say that after spending all of those hours around the table on that.

I don't thing we are -- we are just at the cusp of doing metrics to identify what is a resilient system. That's different than you know all the retail reliability things we have about outage, frequency and number of minutes you are out. These are really different things.

The resiliency I think is very hard, it would surprise me if early on you see markets for resiliency but I do think we are going to see a lot of resiliency but that will be -- that may involve a state ordering a micro-grid and turbine and a variety of other things in a particular place and it is out of market and for reasons that they want.

So I think it does come up as an issue that you will need to think about.

MR. QUINN: Thank you, Larry and then Cliff.

MR. MAKOVICH: Yes Susan makes a good point about defining resiliency because it is such a complex issue but to Colette's point I think we do see that we have got market distortions right now that are reducing the diversity in our supply portfolio.

And the idea here isn't to maximize diversity, have equal shares of all of the different types of generating resources but the market tends to produce a nice mix of fuels and technologies and we have got a distortion now that seems to be moving us to too many CT's not enough base load and a really increasing reliance on natural gas and that's what has got people concerned.

Natural gas is a fuel that tends to have multi-year cycles, periodic extreme volatility and some deliverability problems when you have some weather events like the polar vortex and so forth.

We also have to worry about things like hurricanes and cyber-attacks and physical attacks on the gas infrastructure and if we get some disturbing seismic activity in Oklahoma that led to a year-long moratorium on fracking you could have a real pinch point on fuel supply to the power sector.

So I think this resilience issue is big. I think that it is getting triggered by the fact that people are just getting nervous that we seem to have all of our eggs increasingly in one basket which is natural gas.

MR. HAMAL: I thought I heard a slightly different question and maybe I got that wrong. But whether we should create a different product with a different attribute in the system -- resiliency might be mean ramping or some other quick start capability or something like that.

I don't have a full answer. I would like to put my thumb on the scale. I think as much as I think competition is great I think that we shouldn't rush to kind of create a competitive market and something new that we haven't need up until now.

I think if it is needed, it is truly needed the cost of service paradigm is a way to get it built and get it running for a while until we make sure we have enough understanding of the vibrancy of this extra attribute before we build that.

I also think that given the kind of stuff we talked about for two days now showing the different dynamics that are taking place in this market gives a little bit extra cover for cost of service of those or other attributes.

There's a lot going on here driven by different factors which would lean away from trying to create a special kind of physical characteristic market.

MR. NEWELL: Thanks, so I'll skip some of the ones -- attributes that others have already discussed a lot but one obvious one is resource adequacy aspect of reliability -- that is very much already covered by the market location and let's see, flexibility.

We may need new kinds of flexibility but that is very much a challenge for market design. At Brattle Group we talk about developing what is market design 3.0 going to look like for a future that does have all of the zero variable cost and intermittent resources online and you may need new parts. That is a market design question not a state planning question -- they can't figure it out as well or do is as efficiently.

As for we are hearing a lot about base load lately -- that is not an intrinsic value and the energy market sorts out how much you need base load versus peaking, sure I will agree there is some distortions to the price for a lot of reasons and not just from renewables so it is not like we have that perfect but the energy market is the place to sort that out -- not with a different product.

And fuel diversity too I hear that a lot from states and sure that matters but it almost never very well defined and so I sometimes do wonder if it is being used as a proxy for other objectives.

And you hear this in places where the fuel diversity is improving and by the way I have worked for generators a lot evaluating investments or aspects of their portfolio. When you look at a non-gas generator they think a lot about the possible value if gas prices go up.

So economically the contrarian position is real and I am skeptical that the market -- I think the market does to a large degree if you are asking about fuel diversity from an economic standpoint and from a reliability standpoint as well because and only to the extent that the markets have the right scarcity pricing and/or capacity performance which you know really puts the economic stakes of the value of lost load on the resource suppliers.

So you see for example a lot of back up oil generation.

MR. SHANKER: I'm not sure if this fits into the paradigm that we have been using so far. Excuse me I take some medication it makes me all hoarse. But there's an information transfer on pricing that is underneath some of this and Bill goes to get the price right.

Assume we have the price right in the wholesale market and we know there is a communication problem at retail. It's that lack of communication that is creating the demand for some of these attributes. It's the mismatch of now I can talk about my silly tariff in California.

I'm want something called smart rate which is a misnomer. At the low point of the duck curve where last year I was looking at LNPs around $60.00 or something now probably make it into the negative. I will see $1,000 retail rate. I have a very inefficient generator it's about $13,000 heat rate and I can run $20.00 retail gas and make $260.00 power dome that's dirty and it's not that dirty but it is a gas generator.

And I'm messing up the net load, I'm making it worse from the ISOs making the duck curve worse and so I don't know what the attribute -- we talked about getting the prices right but it is the communications link.

And I have never really thought about it until this discussion of how do you -- we always say the states have to get the prices right but is there an attribute that we consider at FERC that pushes that in the end to create a mandate? Because that mis-match is horrendous -- generating $260.00 power, marginal costs varied load negative and retain at 1,000 tells you that you are going to force operating problems.

I mean it's just the exact kind of configuration of the whole bad price information that leads to bad dispatch and operations. So some of these little operating attributes that you are concerned about are derivative of the communications and pricing and as Bill says get the pricing right.

But this is a really macro one because it is an issue that is coming before you in terms of things like flexibility. If pricing was better in this context the need for flexibility would be way lower I mean much lower.

If the carbon pricing was transparent the level -- rather to Bill's comment about I don't need 80%, I don't need 50% or 100% I just need to see the pricing on the carbon attribute and maybe that curve won't look like that.

So we may need another name for it and somebody else can suggest it but that information gap is an attribute that we need to fix more than this same transparent wholesale prices, it's the communication and pushing it through the system better.

COMMISSIONER HONORABLE: Thank you for mentioning that because that isn't something we have touched upon and it could also factor in an important level of coordination that is necessary between the wholesale and retail.

We sometimes do a bit of finger-pointing, but maybe if we were working more in tandem -- I understand the point you are trying to make.

In the interest of time I know everyone needs a break and I do too but I wanted to ask Mr. Stoddard because in your pre-filed comments you talked about forward markets and the clipper approach and someone else mentioned it in the course of our -- the presentations and also I recall that National Grid referenced a forward clean energy market.

And as we are thinking broadly about potential solutions and maybe what some of the keys might be I wanted to ask you to shed a little light on that for the record. And if anyone had thoughts about it, you are standing between Mr. Stoddard and me and a break but now is the time, thank you.

MR. STODDARD: I'll try to be brief but persuasive. We have spent a lot of time in New England in the IMAPP process and a lot of the questions sort of surfaced over the past day and a half have been surfaced there and discussed and I think some very useful thinking going on.

I originally walked in with the idea of we ought to put carbon in dispatch and that was all we needed. And as I worked with stakeholders and the states and you know many conversations with lots of people it became clear that there are some flaws in trying to implement the carbon, not least of which is the state's strong resistance to having a federal thumb on the scale of carbon.

But there was a real need for something so the other challenge again from the states is a very clear cost causation linkage. They wanted to make sure that if New Hampshire doesn't want to purchase any renewable -- more renewables, they are not getting any cost socialization.

Now there's an argument that says they ought to be bearing it because they are getting some of the benefits but again for the sake of trying to actually get something past through the stakeholder process, we were looking for ways of having a clean 1 to 1 allocation.

If you said you wanted to buy a product and we figured out what the cost of that product is and charge it to you. So the product we developed over time and we I should mention was the core of the idea came from two economists Kathleen Spee's and Judy Chang -- I've been working on the edges to refine it and I took perhaps the opportunity prematurely to name it -- it needed a name.

But Flipper is a good old Yankee term so we settled on that for the moment. Something that mimics a carbon adder but only for the unit that have it -- now that produces its own inefficiencies that we don't get the benefits of dispatch but realistically ISO New England there's very little re-ordering of the dispatch merit of whether it will occur -- it's mostly a gas state.

The key property is that it is much like a REC but that the value in any hour is not fixed and flat but depends on the marginal carbon intensity in that hour relative to a benchmark that is established as part of the auction.

So when the marginal carbon intensity is zero it is worthless. So if you are running your windmill overnight and producing lots of power but you are not off-setting any carbon, you are not getting paid.

Likewise if you are a storage unit you have the opportunity of picking up those free variable incentives overnight with their energy and deploying them in the middle of the day when the carbon offset is very high.

So this creates a real value for storage or for hydro that can choose to vary its dispatch. It creates a carbon-like price but particularly for units that are able to respond to carbon and it helps sort out which units are actually doing the best in terms of off-setting.

We tend to think of a megawatt hour from a wind farm in Maine as being equivalent to a megawatt hour from a wind farm off Nantucket or a solar panel in Hartford and they are not -- in terms of the actual carbon offset there's a real difference.

And that gets priced into this clipper product. So it has some of the desirable attributes of the carbon adder but because the demand for these is set by state policies -- states bid in a quality price pair.

And ISO is acting in effect as an auctioneer and then as an administrator to calculate what the cost of it is and then they assign the cost back to the people whose bids cleared. So it keeps a very tight link between cost causation and cost allocation.

It achieves many of the benefits of the carbon adder in dispatch, particularly for units that are able to do it and it helps sort renewables into a sensible metric which is a carbon offset rather than just a megawatt hour.

MR. QUINN: Alright this has been a great conversation. We really appreciate all of the panelists we will take a 10 minute break and try to be back here by about 8 minutes to, thank you all.

(RECESS.)

PANEL 2

MR. QUINN: Alright we would like to get going. We have a couple of time constraints that we are managing for the end of the day so we would really like folks to allow us to get this last panel going.

Alright first off thanks to our panel for going last, staying around all day, having to listen actively because we might ask you about what you heard and following the Genius Bar is troublesome.

Think about how smart you must be that you are going after the geniuses. So again I very much appreciate all of you staying the whole time. I appreciate the folks that are still watching and for staying engaged.

We are at our last session of the day, last panel of the day, I'm very pleased to welcome Jeffrey Bentz, the Director of Analysis for the New England States Committee on Electricity.

Stu Bresler, Senior Vice President PJM, Rana Mukerji, Senior Vice President of Market Structure at New York ISO, Scott Weiner who is the Deputy of Markets and Innovation at the New York State Department of Public Service.

Matthew White the Chief Economist at ISO New England and Vice Chairman Andrew Place from the Pennsylvania Public Utilities Commission.

We had prepared as on a notice level a set of detailed questions and even contemplated asking you those set of detailed questions but we have had a lot of discussion today and thought it might be most productive to ask you all and especially since it is the last panel of the day and purposely selected so we are talking to our market operators and our companions and states to get a sense from you at a high level what you heard.

You know one or two takeaways for you things that you heard and you want to make sure that we heard. Another go at timing, you know, how either what is your timing or what should our timing be and then last is there anything that we can do to help you know, I'll reference Ronald Reagan -- "We are from the government and we are here to help."

So what is it that we the government can do for you to help move this process along? And you all can collect your thoughts it kind of looked like you were ready to kind of go first, please.

MR. WEINER: Thank you and again thank you for the opportunity to participate. This has been a very important, very interesting couple of days.

Let me first respond to the question of timing. Go back to the construct of looking for a couple of principles and provide some thoughts around that and literally just a couple or three principles and then answer the question of how I think you might be able to help.

And much of this you have heard yesterday but I appreciate the opportunity to repeat it. In terms of timing we all recognize -- the panels recognize and I know you all recognize that things are happening as we speak and that's particularly the case in New York.

And in New York we in fact not only believe but think that we have demonstrated that we are addressing a number of the issues that were discussed today and yesterday, but particularly today.

REV represents we think one iteration of what the future paradigm is going to look like. There are many other states around the country that are taking pieces of what we are doing, they are approaching it differently. They are responding to their own unique jurisdictional situation.

But the fact of the matter or the three forces that brought REV together are going to bring other change fairly quickly -- change always occurs quicker than we think it is going to and that is a customer focused policy -- number 1.

Number 2 -- concern about system efficiency and improving system efficiency and the third -- the enabling aspect of emerging technology and those things bring us everything that allows us three or four years ago to start the REV initiative.

So we are looking at a system and we are taking steps to in fact implement a system that has a new utility business model as a different role for LSEs in general.

It activates load as a resource. It is building out a dynamic trans-active response of distribution grid -- all of which is going to come into the operation of the marketplace as we thought about it in New York, and my colleague Rana will talk about that.

So principle number 1 -- it's not the same old grid. I used the phrase yesterday bolting on -- I think anything we do, anything this Commission directs the RTO/ISOs to do should take into cognizance that we are looking to the future -- not just because the life of the assets that are going to be placed but because of the local market designs and the state policies that are taking place today and that those are going to be there for the future.

Number 2 -- I want to echo Cliff's point about the multiplicity of markets. Sometimes the language that we all use tends to conflate concepts. So the term market can simultaneously mean the federally FERC administered markets. It might mean markets in general.

But as we think about markets as a whole there is obviously a multiplicity of them and some of them include state-level markets. They include RPS procedure which is a competitive procurement. It is going to involve a distribution level market.

I mentioned yesterday the Commission adopted a new methodology to replace net metering that is going to -- in fact has already started valuing and compensating DER on a much different basis all centered on the focus of accuracy and accurate pricing all to the point of being able to get the bill down.

It is going to change the operation of the grid. It is going to change planning, and it is going to be its own market and we will talk a little bit more about that. So principle number 2 and I know I am swimming upstream on this, but I want to again suggest and I understand where the word accommodate comes from, I understand it has been institutionalized in some of the New England activities but I want to suggest that the more effective word is harmonize.

Frankly and I'll say this with my tongue partly in my cheek New York is not interested in being accommodated. We are interested in working together as partners to harmonize the market responsibilities.

And I think words can matter and I think if we change the terminology from accommodate to harmonize that will be very important in terms of setting a tone.

So number 3 -- when thinking about state policies and this is one of the points I want to underscore that came out of the past two days, state policies are multi-faceted. They are interconnected.

In New York for example when we think about carbon -- carbon is not ZEC. Carbon is much more than that. Carbon and our strategy towards carbon as was pointed out yesterday starts with the state energy plan.

It involves the Clean Energy Standard, the Clean Energy Fund, the value of distributed energy resources. It involves all of those things. So as we commence later this week our collective work with the NYISO to look at the plan that they are developing we are going to be doing it collectively, collaboratively in the context of the state's entire carbon program and begin to see how do we harmonize it. We need to understand how these different programs and these different policies and these different markets are going to operate.

Right now DER including storage in New York is going to be compensated through a value stack. And one element of that value stack is an E-value and that E-value right now is the price of the REC in New York, the last public price of a REC in New York.

So there is interaction, there's interweaving, they are interconnected -- that doesn't mean we can't do things, it just means we have to be cautious about it and sometimes the focus on one aspect can lose the bigger picture.

Number 4 is federalism -- there's been a lot of talk about that, cooperative federalism, dual federalism. I raised it as a state official to say out loud that we recognize that there are boundaries. We recognize that there is an exclusive jurisdiction for this Commission and that it is important and has to be recognized and honored.

We too -- as I said in my earlier comments have our own jurisdiction and if we come at it together to harmonize there may be some accommodations along the way, there is going to be compromise along the way but I think it is an important distinction and that leads into sort of a related -- I don't know whether this is number 5 or number 4A, but I can't pass up the opportunity to have the microphone even at this late hour and say one of the principles we would argue is to change the presumption around the application to MOPR.

Don't assume and put the burden on state policy to prove what it is not doing. If there's a concern that state policy is violating that boundary -- and I'm not going to pretend to define it right now but where that boundary exists -- then establish it.

Show it. I sat here today and I heard lots of people talk about what New York's policies were, what our policy intentions were with our Clean Energy Standard and all I can tell you is for the most part everybody was wrong.

That matters in litigation, anybody who wants to know the facts as we assert them can take a look at the pleading but I think that this change of assumption becomes very important and sort of is something to consider.

And finally in terms of principles I would ask you to consider taking an approach that we took in our analysis of valuing DER and say what's at issue again is accurate pricing. And I think that there is sometimes a convergence between what a product is and what a market is.

There is lots of value that is being brought by generators into the marketplace. Much of that value is recognized in one way or another. Some of it is not recognized yet. Some of it may not even be known yet.

And even if it is known we may not know how to calculate it yet. We don't have the tools to do that. But the commitment to precise and accurate pricing which will get better and better and better over time I think will solve some of the issues that the last panel was talking about.

Lastly in terms of what the Commission can do now

I would like to renew my suggestion that the staff convene an ongoing discussion, not once every 3 years, not once every year and a half although you are always welcome to come back to Broadway.

But to convene a discussion among yourselves, among policy makers in the states, the leadership of the RTOs and ISOs and let's begin to talk about what are the principles. Undoubtedly the decisions that are made in New York are a little different than the other regional markets and we have the advantage and we talked about being a single state ISO.

But there would be enormous value if we can begin to talk and understand the implications of the policies just by hammering out the common principles that will be applied throughout the three regional markets. That we should be able to do and now we can do on our own today.

MR. QUINN: Thanks and I think it's a good idea to stay in New York Rana?

MR. MUKERJI: Thanks for having me and thanks Commissioners. I think one -- New York is in the forefront of de-carbonizing the grid and also transitioning to a distributive future with distributed resources and demand.

And the wholesale market is an integral part of achieving both of those goals which are de-carbonization and distributed resources. One of the principles and one article is that preserving the revenue adequacy for resources which are capital at risk in wholesale markets is a very important principle we must strive for.

For the state to reach 50% by 2030 the ability to calculate it is approximately 9,000 megawatts of solar and 5,000 megawatts of wind which has to come online between now and 2030.

To do that within the markets we have to still have a significant amount of conventional resources to balance this intermittent resource. It is not one for one. Wind has about 20 to 25% contribution to capacity at peak. Solar has 30 to 40. So if you have 15,000 megawatts -- 14 or 15,000 megawatts of more intermittent resources you would assume the contribution to peak is about 5,000.

You would assume that about 5,000 megawatts or some amount of megawatts of conventional resources should and need to retire. But it still would have something to the tune of 30,000 megawatts of conventional resources which has capital at risk.

Our peak load is around 35,000 which depend on the market for market signals. So we have to preserve the revenue adequacy of conventional resources. And how we plan to do that -- again recognizing the fact that low gas prices are driving down in for marginal revenues and intermittent resources have zero marginal cost.

We have to look at Bill Hogan's pricing, scarcity pricing, new services like ramping, start up, load following. We have to also look at performance components in the capacity market. So you are going to look at revenue adequacy of the conventional fleet which has capital at risk.

So that is almost like a pre-requisite to reach the de-carbonization goal. It is not good enough because if the New York goal is 50% of energy through renewable resources if you would like we could inspire the market to not be a 50% market but 100% market and the market should drive resource additions which are for all of the resources, even the renewable ones.

So that's what we are working with the state to harmonize, if you can complement -- this is the study that we have asked Brattle to help us with which essentially looks at putting the social cost of carbon in the offer stack as an input under the offer and it looks very promising in terms of providing marginal revenues to the renewable resources, giving a fleet-wide signal, giving signals to even conventional resources having a better carbon footprint to perform better, give better locational signals.

And we have find an equitable way of returning the revenues from the carbon by taking the penalties of carbon penalties back to LSEs. And all of that, it is a state policy that we are implementing so we have to work in partnership with the state and we tried to find a way to harmonize what our program is with the state programs.

And one of the things that I want to stress is that what we have asked Brattle to look at is not instead of what the state programs are doing it is in addition to. So if you put -- if you are investigating a social cost of carbon but we are not saying then you would have to have less money from REC's or ZEC's or whatever way.

For example if the social cost of carbon only incents inland wind and the state throughout their policy objectives want to build offshore wind they have to only pay that premium.

I mean we are not questioning what the legitimacy is of the policy but we are saying that this is the way to harmonize the de-carbonization goals into the markets. So there is a lot of work to be done. We want to preserve revenue adequacy of the cost of resources which have put capital at risk.

We want to make -- we don't want to run a 50% market, we want to run a 100% market. We want it to be the market that all resources depend on our market signals for entry decisions and we will work with the state to achieve those goals.

MR. QUINN: Is there anything that the Commission can do to help make that process more productive?

MR. MUKERJI: Absolutely. You have already you know started the price formation work. We also would not need guidance and deadlines it helps the stakeholder process as everybody noted is long and contentious.

Having deadlines works miracles and so it would -- that would and having clear directives that this is what you would want us to work on would help.

One other thing is that we are also working with price formation which is critical of some of the state programs like the REV resources need the locational prices to actually function to get the prices covered for storage in the REV resources.

So the state also very much applauds our efforts to give the group the right prices.

MR. QUINN: Thank you, Jeff?

MR. BENTZ: Thank you, Jeff Bentz from NESCOE as I'll just tick off a few items here in response and we can go from there. First of all I do want to clarify something that someone said -- I think it was Roy Shanker said in the last panel about Chair Vannoy expressing this opposition to carbon adder that Maine would consider leaving the grid.

He did express an opposition to carbon adder. I want to be clear that he did not express leaving ISO New

England. And on the carbon adder a lot of people in the last panel talked about Maine opposing it. I want to be clear that that was a 6 state collective view that's listed in our April 7th memo to NEPOOL.

We listed about 8 different reasons why the states had concerns with the carbon adder and so I just don't want all of the pressure going on for Maine. All 6 states stand by those statements about the carbon adder.

On the urgency issue you know we see this issue coming. In New England I will say that about 5 years ago I was here talking about a renewable exemption. We saw this problem coming from the state's perspective when the MOPR was passed.

We came down, we tailored -- narrowing tailored a limited proposal that could accommodate or harmonize, maybe I'll use a new word here now in the IMAPP process and we went through a stakeholder process and ISO, NEPOOL, states, supported this mechanism.

Yes it was part of the compromise deal to implement a sloped demand curve in New England but we saw that as a mechanism and we still see that as a mechanism today that will accommodate state policies into competitive markets. And we can read all the pleadings about why we think it doesn't harm the market over the long-term et cetera but I did want to point out that you know that was an agreed upon group stakeholder effort which I think speaks well to the stakeholder effort.

We have been able to even just recently working with Tom Kaslow in NEPCA to come to an agreement on a new demand curve that's being implemented. So to talk about the stakeholder process I think at times it can drive you crazy and get you frustrated and get you a little bit mad at the folks sitting on the other side of the room, but generally if you look at the IMAPP process NEPOOL took that on because they saw this state problem coming.

We have had a lot of talk about carbon pricing. We at the states have gotten a lot of education about different proposals. We -- ISO New England has now latched on to one of those it was originally aired retirements from First Light and that's now part of their CASPAR program.

So I think the stakeholder process and especially the IMAPP process has given a lot of discussion and I know we at the states just for both NESCOE collectively and individual states have spent a lot of time with individual participants.

In fact we are meeting with Robert next week to hear more about the clipper program. So this is not an easy answer, this is not an easy problem and I think that collaboration is probably been positive.

So when I go to the urgency though I look at it and I certainly don't think the town is burning down around us. This renewable exemption has been in place for three options now. The procurements that are taking place have been known for a long time.

The three-state RFP was a 3 year process so it is very transparent. Participants could see those procurements way ahead of time. They knew the possibility of what they could be, but they have also turned out to be a little bit lower than what they were originally advertised for.

The Connecticut procurements those were also kind of a year-long plus process and are now in the contracting phase which is going to be another year. So when I hear that the town is burning down I have to look back and say well participants knew about the renewable exemption 5 years ago.

It was really tailored to these procurements that are happening right now and yet in the last 3 years we have had good responses to our options in New England. We have had new resources cleared in every option. We are long in New England, even with this renewable exemption and people knowing that these procurements were coming up.

So we take it with a little bit of a grain of salt when we hear the urgency. We don't -- we certainly agree and this is why we have been very active in the IMAPP process that with new state laws changing -- the

Massachusetts -- we see maybe bigger problems coming than what we originally saw when we developed the renewable exemption, but the town is not burning down at least from our perspective.

And then as to path 4 I think path 4 is an excellent path for us to try to go down. Again if you look in our April 7th letter to NEPOOL the states are supportive of a forward market design -- that's what we called it.

We recognized in our letter and I will say here that the states have some work to do. We have gotten some great information from the IMAPP process. We are taking it back, we are digesting it. We understand that we need to say what do we want to buy and when do we think we want to buy it and that will help in the forward market design.

But as far as principles go and goals -- we put out a goalpost docket about 8 months ago -- you could go online on the NESCOE website or the IMAPP website to set up some principles and priorities that we thought this forward market design should be shaped around.

And I think that's my response from what I have heard the last day, thanks.

MR. QUINN: Thank you I think we will stay in New England, Matt?

MR. WHITE: Good afternoon and let me second my panelists thanks to the Commission and Commission staff for spending two what feels to me very long days with I'm sure of a lot of attention to the nuances and code with which we speak amongst each other and certainly very thoughtful questions from all of you to unpack it all I think are very helpful.

Dr. Quinn I would like to make a few points responding to your requests about takeaways, timing and what can FERC do to help linking to some other broader themes I have heard.

First as Jeff Bentz alluded we have been at this stuff in New England for some time. I hope that comes through clearly in the conversation of the last day and a half. We started a formal integrating markets and public policy process nearly a year ago now that has developed many proposals which we characterize broadly as falling into the achieve category -- that's our term or path 4 in the new FERC lexicon that we have all got to learn.

The other ones fall in what we have called accommodate so that could be called harmonize as you wish. It's really path 2 in the new FERC's lexicon. The first takeaway I have both from our experience in New England and I think I would suggest is consistent with what you heard in at least the New England panel yesterday and in many of the comments in this morning's panel is there is a common view -- though a caveat it is not a consensus that it is important to move forward diligently on an accommodating track that makes sense, that is sustainable, that has some well design.

The house is not burning down so fast that we must make an exigent circumstance is fine with you within a week. Coming up with something that we can do and you will not be tweaking it again and again and again and again is probably worth 6 to 9 months of our time.

I think there is also -- rather I think there's not a common view on whether or how ISOs should take responsibility or have an active role in implementing achieve state-type objectives where the states articulate specific objectives and look to the ISO to implement them.

Not to say that that can't be done but rather there is really not yet a clear statement on what the specific objectives would be, what should be achieved and how so. That is something that will take a much longer period of time to reach some sort of a consensus in the region.

The second point in terms of what the ISO thinks is most productive as next steps and here I mean to point out that the in concrete matters because the market design details matter.

We have listened very carefully to the IMAPP proposal and as Jeff alluded to we took what we thought were some of the most promising ideas in that process and developed a 35 page roughly paper going through many of the details.

I was pleased to be able to put in lots of different supply and demand diagrams for anyone who is interested. Rather than go through the details that of course are on the web I'll just note that we think this is a productive way to coordinate capacity options with subsidized policy resources.

We think it is based on sound principles, it's sustainable, the fundamental markets change over time and it will funnel itself to two of the core problems that came through all of the discussions in the last two days.

One is the possibility if you do nothing you can greatly depress capacity prices impairing the abilities of the capacity markets to function. At the same time if we choose to do nothing at least in New England the way the MOPR currently works we are quickly on a path to having far more capacity in our system than we need to reliably operate from the ISO standpoint. That would be in the words of the economists "terrible efficient highly costly to consumers."

So the status quo is not ideal to say the least. I have to take just a moment here since this panel was titled "Opportunities for Responses" to note two things that came up earlier that I think are not quite correct -- there was a comment which I noted from Cliff Hamal on the last panel that he was concerned that these types of accommodating ideas emerging in New England might ultimately cost consumers more.

I think the phrase was used, pay it three times. I think that's not a correct reading of what either the ISO or the stakeholder or the states are looking to do. Really it's actually to quite do the opposite. The status quo is we will end up buying what we need to maintain a resource adequacy through the capacity market.

And most of the resources the states want to bring on will not clear because of the MOPR. The costs are simply too high. Those will get bought in addition but not paid through the ISO, those will get paid through the states. Those are expensive by definition that's why they are not clearing.

If we don't find a way to take those state resources -- state sponsored resources many of which will have very high capacity values. I give them credit for that. The process will cost consumers too much. What we are trying to do is of course not have such a costly solution and inefficient solution. So I think it will take more time for the region to fully understand these details and implications -- I want to set that straight.

Also on that there was a comment that doesn't this set New England on a path towards the states really taking on resource adequacy and I hope what came through yesterday is we don't perceive that to be the case in New England.

To put some numbers on a comment that Jeff Bentz just alluded to, the sum of the procurements pending under the Massachusetts legislation that may procure hydro that Angie O'Connor noted yesterday plus things in the works under previously purchased -- previously enacted legislation might add up to as much as maybe 6% of total capacity on a capacity value.

But it is noting that things like wind have a very low capacity that's 6% of our system, the other 94% is still stuff that is not state subsidized directly at least into the generation fleet. So we do not see this as like on the slippery slopes. The state is taking resource adequacy and doing 80% of the procurements maybe after 2050 by then there will of course be a new Commission so that will solve that problem.

Last let me note on timing issues -- and this is back to the great communicator's admonition about be careful when you ask the government to help. I'm going to differ a little bit from what you have heard from the last panel yesterday and comments you have heard from some of the leadership in other regions.

And here I think this synchronizes well with what you heard from Jeff. In New England we have a very active stakeholder process that is deeply engaged on these issues. We have articulated to our stakeholders a timing that we think is appropriate.

That is to bring something to you by late this year or early the next. We have indicated the drivers for that -- it is really driven by the timing of the potential procurements in the region. You may not call that an economic fundamental but it is a big economic effect.

What I am pointing out is that I think for New England as a region having a FERC deadline to deliver something by a tangible date is not productive for our region. Our stakeholder process is on a good course, is actively engaged in these issues.

At best such a deadline would not be terribly helpful because you are going to get something for us. The governance process in New England is not the same as it is in other regions.

And in addition if those fundamentals were to change, something that Jeff was alluding to, the region may want the flexibility to adapt the timing accordingly and an artificial regulatory deadline to bring a filing by a specific date may not give us the flexibility as a region to deal with changes in the timing of some of those potential procurements. That may make the region want to take more time with this.

So for those reasons I think -- and this is truly the highlight of a broad theme, the best steps forward in the near term may differ slightly across regions. We are all in slightly different places. In New England the primary issue we are concerned with is out of market, in with the new resources.

It's a very different issue on the issue front and center in Illinois. Accordingly, the near term solutions may appropriately be somewhat different in the two regions. I think the region in New England is on a good path to a productive resolution. There is a great deal of work to be done ahead but we look forward to that opportunity.

We look forward to the Commission's support and I would say what I look forward to mostly is that when we bring to you a filing and you have a quorum and you have by my estimation probably a backlog by then of some 800 to 1,000 cases needing approval that you will humbly view -- just doing the math on that while I was here.

That you will humbly view based on the urgency of everything that came up that the proposal we bring to you should be placed pretty much near the top.

MR. QUINN: So I guess we are going to move over to PJM, Stu do you want to go first?

MR. BRESLER: Sure thanks Arnie and thank you Chairman LaFleur, Commissioner Honorable and the staff for having us these two days. I certainly agree with the other panels that I think it has been a really, really fantastic session, lots of great information and dialogue and ideas so kudos to you on putting this together and leading it.

I figure it's probably a really good way to start off your comments by repeating something back to the Chairman as said earlier. So given what we are here to examine which is interaction of state public policy and these wholesale markets I would agree wholeheartedly it doesn't make any sense to try to judge or evaluate the legitimacy of the state actions in any way, shape or form.

The second best way to start your comments is to repeat back something that your CEO said so for us litigation just is not a viable strategy here. And so sort of fighting these things as they come up we don't believe is a good long-term position for us to be in.

States have you know the rights to do things and sooner or later that way will be in a manner that survives scrutiny under the FPA and so we need to figure out a way to harmonize and work through these things along with our states since that's the position we find ourselves in.

Having said that, and I think this came through in the last panel, we really think that a multi-faceted or multi-pronged approach here is required. And I don't think that those facets need to be accomplished sequentially. I think these things can move forward in parallel but I think there are several things that we need to do -- just to tick through them very briefly.

We need to offer our states a mechanism through which their desire to price attributes can flow through the markets. And we need to do that in a way where it is possible for not all of our states in the entire footprint -- I should say not all of our jurisdictions necessarily need to come together on that but rather a way it could work sub-regionally.

Carbon I think is the most obvious -- the poster child if you will of those attributes that could be priced. There may in fact be others that are possible as well frankly we haven't been able to think through how any others would work but certainly I think we need to leave the possibility open.

Earlier today we actually posted on our website a very brief document that was what was intended to get that conversation started and we sincerely hope that you know at least some of our states or jurisdictions will come to us and be willing to again engage in that discussion, how that could actually be done.

The second thing that I heard fairly directly during the last two days and I think Matt just sort of reinforced it for New England as well is we need to design a mechanism by which we can harmonize these state actions with the operation of in particular -- the capacity market.

And that needs to be done in a way that does not require load to pay twice for the capacity and also maintains the establishment of competitive price signals that are so critical to these markets being able to perform their long-term function which is to drive reliable and efficient operation and entry and exit of resources.

I think we can do that. We posted another document earlier today that actually is an update of an earlier one which was a straw sort of idea or proposal that PJM put forth along similar lines to what has been proposed in New England. I think it was referred to as a -- sort of a two-tier or re-pricing type approach to the capacity market that is intended again to achieve those goals.

I certainly heard a concern on the last panel -- the genius panel if you will about you know heading too far down that path and sort of the trade-offs if you will and I would certainly concede that any kind of approach along those lines is intended to counter-act an external intervention into the markets and I think therefore almost by definition will have trade-offs, will have warts on it.

But that doesn't mean that it is not something that we should evaluate and pursue and so I think that's the second thing that we need to do. And as was also noted on your last panel we already have a stakeholder process engaged at the beginning of walking down that path and I'll get back to that later.

I would also point out that any kind of a proposal like that does require definition of what amounts to a subsidy. What amounts to an external intervention that needs to be addressed?

We don't quite have something we can put out publicly yet but we are somewhat close and we will be releasing somewhat in the near future anyway our thoughts on how we might be able to make that determination again with the idea of initiating that discussion and really continuing it again through the stakeholder process we already have underway in PJM.

So that's sort of the capacity market side. The first one I touched on was the pricing attributes again is an energy market issue. And I think we all need to realize while we typically start these conversations with the capacity market I think the implications are actually much more significant for the energy market than they are for the capacity markets and so I need to come back there.

Because I think the third thing that we need to do and this is probably where we can use Commission guidance and help the most is we need to implement energy market pricing reform. I think I would like to refer to it as I know your father is energy market design but I was there when we put it in the first time so I can't do that.

But there are some components I think that need to be looked at as to exactly how they work. The negative offers I know Andy mentioned on his panel the eligibility of resources to set energy market prices, sort of an expansion of what was in the Commission's best pricing MOPR and to the extent we go down that path and we actually included this in our MOPR comments it is imperative that what goes along with that is a mechanism to provide the necessary incentives for resources to follow efficient ISO dispatch in the energy market.

To the extent we can actually increase those incentives we have seen multiple examples of how those incentives lead to innovation and more efficient provision of those types of services and so we think we need a serious look at how we incentivize resources to follow dispatch.

The last thing or the last item I'll note because it was brought up on multiple panels and so I think it bears being reinforced. And this one I think is really incumbent upon the RTO as the primary entity responsible for insuring reliable grid operations is we need to work resilience and the concept of resilience into those operations.

To the extent we do so it needs to be done in a way that then flows through the markets so again there is the transparent opportunity for competition to provide what's necessary to maintain system resilience and again we have seen the benefits from the standpoint of innovation and entrance into the market when those incentives are made transparent through the markets.

So I think those are sort of my list of kind of the things I heard that we need to address. Let me circle all the way back to the stakeholder process because I did hear some discussion on the last panel about the stakeholder process and I always joke and sort of paraphrase Winston Churchill with respect to the stakeholder process and say it's the worst form of RTO governance on the face of the earth with the exception of every other form of RTO governance, but it is absolutely positive.

I say that in joking, it's absolutely positively necessary. And yes there are compromises that come out, yes it can lead to suboptimal if you will approaches, but I can say without reservation that almost universally what comes out of a detailed stakeholder vetting of an issue is better than what went into it from a standpoint of proposals.

And so I think the stakeholder process is invaluable to what we do as ISOs and RTOs. Having said that

I will agree with my colleague to my left, deadlines and guidance from the Commission are always helpful with respect to the efficiency of how that stakeholder process works in getting through issues in a timely manner.

So I hope that answers your questions as far as what will be helpful and where I think we need to go and again thank you very much for the opportunity to be here. I'll wind up there.

MR. QUINN: Thank you, Andrew? You're the last word.

MR. PLACE: Well thank you that puts a very heavy burden. I did want to express again as everyone as mentioned here a great gratitude for this session the last two days, a huge dedication from all of you. How much this got into the forethoughts, the questions that have been asked, the digestion of all of the material that has been before you, what an epic undertaking for that. I'm sure I speak for everyone in the room and the room is crowded too.

I may as well quote Churchill since it came up but my favorite quote is, "It is not the end, or the beginning of the end, but the end of the beginning." Maybe that's not relevant but it is entertaining.

And I'll also note my third maybe nonsensical rationale here is that wiser folks than me have said a lot of words today. I don't want to keep anybody from a beautiful spring afternoon by being too repetitive.

That said what I have heard here I could not disagree with. There is a raw consensus on what are the issues before us, the challenge that is before us, the urgency points, maybe some slight differences of opinion but a general consensus that there is a stark need for addressing the questions here.

The heterogeneity point that not only between states and ISOs restructured, regulated, whether it is FERC or the ITOs or ISOs or what's happening with the states great need for internalizing that that heterogeneity exists and that it is likely to exist in the solutions we come up with.

I do have concerns about the accommodation routes. It always seems a bit like the square peg and the round hole that came up yesterday. But that said we can spill the milk, the cow is out of the barn mix -- pick whatever metaphor you want.

The -- and it was also said in the last panel we are living in the land of second best and perhaps that's good to keep in mind that we are not going to be looking for the perfect. And a good friend of mine in graduate school said, "Don't let the perfect get in the way of the good."

As Stu mentioned both the energy markets and the capacity markets -- the need to be attentive to the tools and mechanisms, what FERC can be very helpful with in this collaborative process is insuring that all of this complexity comes into us from so many different directions we are attentive to how we mitigate that in clever, innovating and supportive ways.

Pennsylvania is not facing the issues that New England and New York are facing in many ways you are ahead of us but I don't begrudge you your efforts to make those work within the competitive setting.

And I meant to say -- note number 1 to myself was to note the value of the market that this is an extraordinary valuable piece and we would be remiss 5 years from now we may be regretful of resources that have left the market perhaps but I think we would be ultimately regretful if we lose sight of the value that market brings to us.

The only other part I would make -- Stu mentioned and it's been noted several times agnostic to legitimate or illegitimate state policy. I came in probably two days ago thinking that I could thread that needle between those two but A -- I think that's an impossibility and B -- I think it is not a necessity.

As long as we are attentive to mitigating the impacts of those that come in or litigating the challenges if it cannot be mitigated. I don't see any value in being moralistic in what legislatures bring before any of us in any of our jurisdictions.

And finally perhaps the carbon question -- that's going to be challenging for any of us and any of your settings and the work we can do collaboratively through the state of call to process to see if embedding a carbon price in the energy market can mediate a lot of the concerns we have in our individual cases to me would be very fruitful work ahead of us. So with that I'll close, thank you.

MR. QUINN: Thank you very much. Commissioners do you have any comments?

CHAIRMAN LA FLEUR: Well thank you. I'll see if I can read these notes which I have been scribbling on for the last couple of hours. I want to start by thanking the team of folks at FERC who pulled together the last two days.

Certainly Arnie, Jamie, David and Amr but everybody on the large team who worked on this for the last couple of months or however long we have been working on it to make it valuable. And particularly the folks in the Office of External Affairs and all of the folks in the Office of the Executive Director who worked on logistics and security to pull it all together and I want to thank my own team for helping me lead the effort.

I want to thank all of the panelists who came on a Sunday and hung in with us for the last couple of days and all the folks who have been participating in the room, in the overflow rooms or watching online for your interest in the topic.

We really appreciate the level of interest we had and how honest and straight-forward everybody was which I think made it a very good discussion. I especially appreciated how many of our state colleagues were able to come. You really can't have the discussion of state policies without states so that would have pretty much made it useless.

I also want to thank Colette and her team for all of your help, all that you contributed the last couple of days in leading this and I know this isn't goodbye, I hope it's not goodbye but I'm deeply appreciative of the opportunity to work with you not just the last two days but the last two years.

So what I thought I would try to do is with some temerity is reflect back what I thought I heard just like you all did and some of the lessons I thought I learned.

So the first thing I definitely thought is that there is a commitment on the part of very many people who were on all sides of this issue to really giving it concentrated thought and attention. Nobody poo-poo'd it as an issue or whatever and I think that's very important.

Definitely heard loud and clear that different regions are in different places for various reasons but they are all committed to it for their own unique reasons. I just want to take a second and say that I don't want to spend the next two and a half years of my term defending my comment on the stakeholder process.

I value the stakeholder process but I did -- I thought, I think things like this are an opportunity to ask a question and where that came up if it puts a little heavy burden on us whichever one of the geniuses said, "Oh the stakeholder process is fine as long as you correct everything that comes up."

Well I'll just put on my 20/20 vision perfect judgment and do that because we have our own stakeholder process on the floor when we have the Commissioners.

In terms of the 3 doors that I started with so we will go in backwards order -- the 3rd door was re-regulation. I think the two most scary -- the most scary word I heard over the whole day was "un-restructuring" what a thought.

But nobody said they wanted re-regulation or taking back of resource adequacy. I would say New York with it's one state ISO came the closest by saying it depends but there just seemed to be a commitment to continue to use the wholesale markets for at least a piece of resource procurement.

In terms of the number 2 door litigation -- much as it's nobody's favorite strategy, litigation is happening. It will be decided including litigation before the Commission is a part of this I just don't think that will leave us with some kind of like -- Oh everything's fine now, it's all over -- that's just a step on the path.

So that brings us to a design solution and so starting with ISO New England as I knew coming in and as was clear over the last two days because they have been at the stakeholder process since last summer.

I think ISO New England is the farthest along and with the ISO New England proposal -- because the situation in ISO New England, the primary problem you seem to be solving is the state's desire to buy their own new resources. That makes the accommodate or harmonized solution as you have put forward that kind of feathers that in adapted to new resources.

To the extent people come and want to choose existing resources to pay differently than in the market that will give a different problem but that has not yet happened and I must have said 100 times in the last several months well ISO New England doesn't have ex parte so I could talk about ISO New England and I am very happy for that.

ISO New York -- we heard the word preliminary a lot from Brad Jones, he was talking about it in terms of where you are in the process but I have a fair degree of confidence that a one-state ISO and a state can work out policy. We will just still have to fulfill our responsibilities on the wholesale market as that goes forward.

In PJM I think I appreciate the proposals that were circulated last night and today. I think the problems in PJM are a little more thorny because the primary thing we are seeing in PJM so far is a desire to re-price existing resources because of attributes that the states want to price and so on accommodation or harmony, harmonization strategy if it involves repricing resources.

I mean I don't want to distance myself from the Minimum Offer Pricing Rule. I believe it is an important part of the market not just for market power but to make sure that you are actually setting a market price that represents market fundamentals.

But if what you are doing is re-pricing resources that a state re-priced and then you are re-pricing them back, it's neither accommodating nor will it lead to harmony. So it might be necessary but it is not a harmonious solution which means that I think for PJM if that's the problem you are trying to solve an achieve strategy of deciding what you want the market to buy is more likely to result in a -- it sounds like more likely to result in an actual resolution you know, and that is harder

I know.

But that's what I heard in the sessions I heard in terms of what people are looking for in PJM.

Longer term I think we have a clear message that we have to look beyond the capacity market, that price formation as we defined it in our dockets but other forms of energy market pricing reform, new ancillary products are very important -- I don't think the capacity market is going to solve everything I never have.

I do think as you get more low-marginal costs or zero marginal cost generation some of the non-zero cost traditional resources, conventional resources are going to need revenues from somewhere and it might be more from the capacity market than before as a higher percentage of their revenues, unless we really do something different with reserves or ancillary services.

So I don't think it's likely to go away without fundamental market redefinition.

So going forward I think there is a couple of basic work streams. So if FERC when we get back our quorum I think there will be a lot to do. I mean we heard from several people and I think myself that FERC has a role to play here, either as a forcing function with deadlines, resolving things that are before us, suggesting changes in the market, whatever that may be.

I'm extremely aware that I don't speak for the 3 or maybe 4 new Commissioners we are going to get. I'm probably not going to be Chairman, I guess I would say I'm definitely not going to be Chairman and I certainly don't blithely assume that they will all see the world exactly as I do.

I'm not even sure that I will see the world exactly as I do but I know they won't because everyone is different. But I will work as hard as I can with our staff to frame transparent options so when the people come in as with all the other issues before the FERC it will be laid before them as well we can.

In the meantime though you all have a quorum and our lack of a quorum should not keep the work from going forward where these programs are really being developed. And if there are things that we can do as individuals to help I would certainly pledge my commitment to do that while we work through however long this period is and thank you very much.

COMMISSIONER HONORABLE: And I'll be limited by that clock because hopefully by 5 I will have said everything that I needed to say. Pardon me, I want to begin by thanking our very capable and very experienced senior staff. As you can see it wasn't just in theory they absolutely have led this effort.

It was absolutely a staff-led Technical Conference and I shared with a number of you in stakeholder meetings prior to the Tech Conference we are in the very best hands and you saw that over the last two days and I wanted to compliment them along with Amr wherever he is -- there he is, and the entire team.

We have met with literally dozens of them over the course of months. I want to thank Cheryl and her team because we did a bit of horse trading in helping to offer suggestions to streamline it as best we could.

You really couldn't imagine how many of you offered to participate and who we wanted to participate and it was almost an unwieldly issue so I am very pleased to how well it was executed and that we really did accomplish the goals we set out to do.

We wanted to hear back the state of play right now in the markets in the Northeast where we are today, where we are headed and how on earth are we going to get there. And so many of you and I want to add a special thank you to our state colleagues and to the ISO staff and leadership and to all of you who work in the stakeholder processes each and every day.

I should also add when I was thanking staff to thank my personal staff and the staff here at FERC more broadly. And I can't leave out Mark Retlinsky and the security team, thank you gentlemen. I don't recall the last time we have met for two whole days and have had the luxury of doing so, so thank you for your service.

I want to thank you for three C's -- your candor and your cooperative spirit even as we have seen differences among you and going forward, your commitment, because it is going to take all of that in order for us to move forward and to help our energy and capacity markets become what they need to be.

And it is very clear that we are all invested in that cause. I do see light at the end of the tunnel certainly in New York with your work, thank you for sitting back at the table after two very long days.

Brad's proposal -- I wish you well with that. It does seem hopeful and ISO New England with your substitute action and yes even with PJM with your recent proposals and your ability to really harness the potential in a very diverse region I'm grateful to all of you.

I want to ask you in your post-Technical Conference comments along with the direction that you will get from our staff to consider a couple of points. I would like to hear your thoughts about these two pathways that we have heard a lot about -- pathway 2 the accommodate pathway; pathway 4 -- the achieve pathway and some of you have said you are on board with one and not the other.

Some of you have said we can do both, I would like to hear your thoughts about that. I would like to hear from the states especially and Jeffrey I was very pleased to hear you mention that you are going to visit with Robert about the clipper concept. I wanted to highlight that here in the record because we are very respectful of the states that come from the states in understanding the jurisdictional boundaries and the skepticism about giving FERC the ability to say grace or bless your work.

But I see that as a glimmer of hope too, as a way to move forward to aid and something I heard so many of you talk about the way that we can incorporate carbon pricing and the fact that we really think it's the key but that practically is it achievable -- so I'm looking forward to hearing from you all when the time is right about your thoughts states, about a forward market concept -- pardon me.

And I too would like to hear from you. A number of you have said you need guidance except for one of you, I think ISO New England. I think Matt said, "No we don't need any deadlines, we don't need your help."

But some of you have and you have said it a number of times. What is it that you need to hear from us? Again we are creating a record. What is the guidance that you need? How long do you need to act? We have heard that

3 years is too long.

So with that and if I might take a point of personal privilege to thank each of you -- I've been an Energy Regulator now almost 10 years, I'm a little long in the tooth for an Energy Regulator but I loved every minute of it and I hoped that you sensed that I've come here each and every day to work as hard as I could for the work that we collectively undertake.

I want to thank Cheryl who's been a true colleague long before I came to FERC and her team, there have been a number of them that have popped in and out over the years. Curt -- he was kind of one of my first advisers along with Jack. Cheryl let me kind of use them until I set up my staff here, there are so many -- there are so many beautiful things that you don't see about this agency that really lend to how wonderful it is to be a part of this place, more than the rankings and more than the survey results it is the people and how committed they are.

So on a personal note I want to thank you for indulging me and it's been an incredible opportunity and I'm not going anywhere so I hope to be here when the post-Technical Conference comments file and thank you again to our staff.

MR. QUINN: Thank you Commissioners. I have two or three logistical comments before we all say goodbye. As the Commissioners have noted staff will be issuing a Notice requesting post-Technical Conference comments.

Along the way we have been talking about pre-Technical Conference statements. Some folks have mentioned those are not all entirely on E-library but they should all be on the calendar page for the Conference to the extent that you heard something particularly interesting and you can't find it start looking at that calendar page.

Eventually that will all get to E-library. And then finally our security staff has asked that I remind you all to turn in your security badge on the way out the door, that helps them greatly and so they have been a great help here so I would ask you to be a great help on the way out and with that I'll thank you all and close the Conference.

(Whereupon the meeting was adjourned at 4:45 p.m.)

CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceeding before the FEDERAL ENERGY REGULATORY COMMISSION in the Matter of:

Name of Proceeding:

State Policies and Wholesale Markets Operated by ISO New England Inc., New York Independent System Operator, Inc., and PJM Interconnection, L.L.C.

Docket No.:

Place: Washington, D.C.

Date: Monday, May 1, 2017

were held as herein appears, and that this is the original transcript thereof for the file of the Federal Energy Regulatory Commission, and is a full correct transcription of the proceedings.

Gaynell Catherine

Official Reporter