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UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Technical Conference Regarding Carbon Pricing in Organized  
Wholesale Electricity Markets

Docket No: AD20-14-000

TECHNICAL CONFERENCE

Via WebEx  
Federal Energy Regulatory Commission  
888 1st Street NE  
Washington, DC 20426  
Wednesday, September 30, 2020  
9:00 a.m.

1 Opening Remarks from Sen. Sheldon Whitehouse, the Chairman  
2 and Commissioners

3 Panel 1: Legal Considerations for State-Adopted Carbon  
4 Pricing and RTO/ISO Markets

5 Panelists:

6 David R. Hill, (Columbia University Center on Global Energy  
7 Policy)

8 Kate Konschnik, Director of Climate & Energy (Duke  
9 University Nicholas Institute for Environmental Policy  
10 Solutions)

11 Ari Peskoe, Director (Harvard Electricity Law Initiative)

12 Matthew E. Price, Partner (Jenner & Block LLP)

13 Prof. Jim Rossi, Judge D.L. Lansden, Chair in Law  
14 (Vanderbilt University School of Law)

15 Dr. Roy Shanker (Independent Consultant)

16

17 Panel 2: Overview of Carbon Pricing Mechanisms and  
18 Interactions with RTO/ISO Markets

19 Panelists:

20 Dr. Joseph Bowring, Independent Market Monitor for PJM  
21 (Monitoring Analytics)

22 Richard J. Dewey, President and CEO (New York Independent  
23 System Operator)

24 Devin Hartman, Directoir of Energy and Environmental Police  
25 (R Street Institute)

1 (Panelists Continued)

2 Arne Olson, Senior Partner (Energy and Environmental  
3 Economics, E3)

4 Gordon van Welie, President and CEO (ISO New England)

5 Prof. Frank A. Wolak, Professor of Economics (Stanford  
6 University)

7

8 Panel 3: Consideration for Market Design

9 Group 1

10 Dr. Anthony Giacomoni, Senior Market Strategist, Advanced  
11 Analytics (PJM Interconnection)

12 Prof. William Hogan, Raymond Plank Professor of Global  
13 Energy Policy, John F. Kennedy School of Government (Harvard  
14 University)

15 Rana Mukerji, Senior Vice President, Market Structures (New  
16 York Independent System Operator)

17 Mark Rothleder, Vice President, Market Policy and  
18 Performance (California Independent System Operator)

19 Dr. Matthew White, Chief Economist (ISO New England)

20 Group 2

21 Clare Breidenich, Carbon and Clean Energy Committee Director  
22 (Western Power Trading Forum)

23 Travis Kavulla, Vice President of Regulatory Affairs (NRG)

24 Sherman Knight, President and Chief Commercial Officer  
25 (Competitive Power Ventures, CPV)

1 (Panelists Continued)

2 Michael B. Mager, Esquire, Partner (Couch White, LLP as  
3 Counsel for Multiple Intervenors)

4 J. Arnold Quinn, Senior Director, FERC-Jurisdictional  
5 Markets

6 (Vistra)

7 Harry Singh, Vice President (J. Aron & Company LLC)

8 Joseph Wadsworth, Head of Energy Market Affairs (Vitol on  
9 behalf of Energy Trading Institute)

10

11 Closing Roundtable Discussion

12 Panelists:

13 Laura Beane, Chief Renewables Officer (ENGIE North America)

14 Christopher Crane, President and CEO (Exelon Corporation)

15 Thad Hill, President and CEO (Calpine Corporation)

16 Brett Mattison, President and Chief Operating Officer  
17 (Kentucky Power)

18 Chris Parker, Executive Director (Utah Department of  
19 Commerce)

20 Paul Segal, CEO (LS Power)

21 Dr. Susan Tierney, Senior Advisor (Analysis Group)

22 Dena Wiggins, President and CEO (Natural Gas Supply  
23 Association, NGSA)

24

25

1 P R O C E E D I N G S

2 (9:04 a.m.)

3 MR. MILLER: All right. Good morning. My name  
4 is John Miller and I'm from the Commission's Office of  
5 Energy Market Regulation. We are happy to welcome you to  
6 this one day Commissioner led Technical Conference to  
7 discuss considerations related to state adoption of carbon  
8 pricing mechanisms in regions with reasonable transmission  
9 organizations or independent system operators, also known as  
10 RTOs and ISOs.

11 Before we begin with opening remarks, I wanted to  
12 outline some logistics for the Conference. We will have two  
13 panels this morning followed by a lunch break and two panels  
14 this afternoon. We will also have breaks in between and  
15 during panels as appropriate. Only the Commissioners,  
16 Senator Whitehouse, panelists and a small group of  
17 Commission staff will have speaking roles today.

18 This Conference is being webcast and transcribed.  
19 However, the Conference is not being recorded for future  
20 viewing. I would also like to remind all participants to  
21 refrain from any discussion of pending, contested  
22 proceedings. If anyone engages in these kinds of  
23 discussions, a FERC staff member will interrupt the  
24 discussion to ask the speaker to avoid that topic.

25 With those initial matters out of the way, I will

1 now turn it over to Chairman Chatterjee to begin the  
2 Conference.

3 CHAIRMAN CHATTERJEE: Thank you John and I want  
4 to extend my sincere thanks to everyone who has taken the  
5 time to join us today virtually. I've been looking forward  
6 to this Conference and important discussion a great deal. I  
7 have some brief remarks to share in a moment. Before I do,  
8 I'm proud to announce that we have an extremely  
9 distinguished guest who will get us started today.

10 It's a true honor and pleasure to introduce and  
11 welcome Senator Sheldon Whitehouse of Rhode Island. Senator  
12 Whitehouse is a senior member of the Senate Environment and  
13 Public Works Committee. He cofounded the Senate Climate  
14 Action Task Force to help build support for action on  
15 climate change.

16 He sits on Senate Democrats Special Committee on  
17 the Climate Crisis. Senator Whitehouse has introduced  
18 legislation to put a fee on carbon establishing a market  
19 incentive to reduce emissions while further generating  
20 substantial revenue to be returned to the American people.

21 He also led the bipartisan Future Act, signed  
22 into law in 2018 to help develop technologies that remove  
23 carbon pollution from the atmosphere. He also helped to  
24 secure infrastructure upgrades to support the deployment of  
25 America's first off-shore wind farm off Rhode Island's

1 coast.

2           On the EPW Committee, the Senator has worked to  
3 extend the renewable energy tax incentives that support  
4 hundreds of thousands of American jobs like the tax credit  
5 to help strengthened a growing American offshore wind  
6 industry. Senator Whitehouse helped to pass into law  
7 bipartisan advanced nuclear legislation. His measures will  
8 promote research and development and licensing for a next  
9 generation of nuclear reactors -- technology that holds  
10 tremendous promise for generating carbon free energy and  
11 reusing spent nuclear waste.

12           In addition to EPW, he's a member of the Budget,  
13 the Judiciary and the Finance Committees, a graduate of Yale  
14 University and the University of Virginia School of Law.  
15 Senator Whitehouse has served as Rhode Island's U.S.  
16 Attorney and State Attorney General before being elected to  
17 the United States Senate in 2006. Senator, thank you for  
18 being here and without further ado, the virtual floor is all  
19 yours.

20 Opening Remarks from Sen. Sheldon Whitehouse

21           SENATOR WHITEHOUSE: Well Neil, thank you for  
22 that extremely nice introduction. I'm not sure how  
23 distinguished I am, but I am grateful to you and to  
24 Commissioner Glick and to other members of the Commission  
25 for convening this important Conference and inviting me

1 today.

2           Let me open with the threat proposition we face.  
3 The recent bipartisan Commodities Futures Trading Commission  
4 Report, drafted with major corporations like Cargill, Oil  
5 Majors and leaders in finance, warns of a disorderly crash.  
6 Major investors like BlackRock warn of a fundamental  
7 reshaping of finance.

8           Freddie Mac warns of a coastal property value  
9 crash worse than the 2008 mortgage meltdown. Virtually  
10 every industrialized country's central bank warns of a  
11 carbon bubble crash. A Stanford report just predicted that,  
12 and I quote, "Global economic losses from climate change  
13 could reach 23 trillion dollars," three or four times the  
14 scale of the 2008 financial crisis.

15           These crash warnings focus separately on a  
16 coastal property value crash, a separate carbon bubble and  
17 insurance failure as risk becomes too unpredictable to  
18 value. But nothing says all three can't happen. The  
19 warnings are many, clear and well-founded, though we are  
20 well and truly warned and virtually every warning that is  
21 accompanied by a recommendation points to a carbon price.

22           So as to a carbon price, let me first dispel the  
23 notion that carbon pricing has had its demise politically.  
24 The recent Senate Democrats climate report discussed carbon  
25 pricing at length. I have multiple Senate co-sponsors for



1 my carbon fee bill. There are others. Our Senate  
2 Democratic Deputy Minority Leader just launched his own  
3 carbon fee bill.

4           It's an open secret that a Climate Leadership  
5 Council type bipartisan carbon pricing bill is in the  
6 offering. The MIT dashboard of climate solutions has carbon  
7 pricing as the most effective intervention. Pretty much  
8 every Republican official, or Republican leaning group that  
9 have recommended a climate policy has landed on a carbon  
10 price.

11           The centrist think tanks all recommend carbon  
12 pricing. A thousand economists publicly signed on to carbon  
13 pricing and even the polluter friendly Wall Street Journal  
14 editors have published columns supporting a carbon price.  
15 Carbon pricing makes eminent sense if you consider the  
16 international monetary fund calculation that fossil fuel is  
17 propped up by more than 600 billion dollar annual subsidy in  
18 the United States.

19           It is not easy to see how market theory tolerates  
20 a subsidy like that, flagrantly violating the negative  
21 externalities principle. Carbon pricing has worked in the  
22 Northeast's Regional Greenhouse Gas Initiative, generating  
23 economic advantage.

24           As a global solution, it is readily border  
25 adjustable and enforceable. And carbon pricing generates

1 revenues that can be put to economically productive use.  
2 Even the fossil fuel industry is slowly beginning to come  
3 around to the idea that a carbon price may be in its best  
4 interests. If you want to burn fossil fuel, you have to  
5 deal with your carbon emissions.

6           If you want innovation to deal with carbon  
7 emissions, you have to provide innovators a revenue  
8 proposition. With a carbon price, carbon removal has a  
9 revenue proposition. The trajectory of the fossil fuel  
10 industry is clear. The choice is whether it's a hard  
11 landing or a soft landing for shareholders and carbon  
12 pricing will be more conducive to a soft landing.

13           Carbon pricing can be a fee on carbon emissions.  
14 It can be an internal accounting adjustment as in many major  
15 American corporations, it can be a factor in dispatch  
16 calculations and it can inform policy, as has been confirmed  
17 by many courts that have thrown out regulatory decisions for  
18 failure to consider carbon pricing and the social cost of  
19 carbon.

20           So I hope FERC considers all of these options,  
21 both directly at the federal level, and by opening space for  
22 regional grids in sovereign states to pursue carbon pricing  
23 without a FERC impediment.

24           I will end where I began. When you are facing  
25 the risks of an economic crash, it's hard to anticipate when

1 the avalanche will start. It could be soon. It could be  
2 devastating. So I urge everyone to participate as there's a  
3 lot dependent on you getting this right. Because indeed a  
4 lot does depend on all of us getting this right.

5 Thanks Chairman Chatterjee and have a terrific  
6 conference.

7 CHAIRMAN CHATTERJEE: Thank you again Senator.  
8 You've been a strong voice on so many energy issues  
9 throughout your tenure and we at FERC have benefitted from  
10 your engagement and interest in the issues we tackle. In  
11 particular, you've been a champion of the work we've done to  
12 eliminate market barriers to storage, and distributed energy  
13 resources or DERs.

14 I appreciate your leadership and support on these  
15 issues and am proud that we have been able to move forward  
16 with both Orders 841 and most recently 2222. We are  
17 grateful to have you help us frame this significant  
18 conversation that we are having today and look forward to  
19 continuing to work with you on critical energy issues.  
20 Thank you so much for taking time out of your busy schedule  
21 to be with us this morning.

22 SENATOR WHITEHOUSE: Glad to be with you sir.  
23 Opening remarks of Chairman Chatterjee

24 CHAIRMAN CHATTERJEE: Now I want to also express  
25 my gratitude to my colleagues -- Commissioners Glick and

1 Danly for their work in collaboration to bring us here  
2 today. As with any Technical Conference this required a lot  
3 of staff work as well and some continued ingenuity as we  
4 gather participants virtually. For that I want to thank the  
5 team without whom we could not have organized this important  
6 and timely discussion.

7 And of course, I want to thank all the panelists  
8 for your time and perspectives. The statements and comments  
9 you've submitted already, have advanced and enriched our  
10 thinking on the topics we'll address today, and I look  
11 forward to diving deeper into the issues with you all.

12 Your perspectives and voices are invaluable to  
13 us. We are all here to address what boils down to a narrow  
14 but critical topic. When states or regions adopt a carbon  
15 pricing framework, what considerations does that raise for  
16 FERC in the markets we oversee. There's no dispute that  
17 states are actively exploring and adopting policies to curb  
18 emissions, and diverse stakeholders have embraced carbon  
19 pricing as an important tool in that effort.

20 Many of you view carbon pricing when correctly  
21 designed and implemented, as having the potential to be an  
22 efficient, least cost and transparent way to reduce  
23 emissions. That's why groups like the Natural Gas Supply  
24 Association have actively supported carbon pricing as a  
25 critical tool for decarbonizing energy systems.

1           All that said, although I've often shared my  
2   personal belief on confronting climate change, and the role  
3   clean energy resources can play in reducing emissions, I  
4   want to be clear. We are not here today to focus on the  
5   merits of various environmental policy goals or tools.

6           In any action we take I think a market based  
7   solution is preferable to heavy handed regulations. But I  
8   think it's important to be very clear about our starting  
9   point today. FERC is not an environmental regulator. We  
10   have neither the expertise, nor the authority to weigh in on  
11   how best to curb emissions.

12           What we do have is the expertise and the mandate  
13   to ensure just and reasonable wholesale rates. In our  
14   modern construct, that requires us to ensure that the  
15   organized wholesale markets we oversee, with their layers of  
16   complexity, their diverse footprints and their constantly  
17   emerging and evolving challenges, remain efficient and  
18   transparent.

19           In doing so, we can continue to protect consumers  
20   by ensuring a reliable supply of affordable energy at just  
21   and reasonable rates. The conversation we're having today  
22   is forward looking no doubt. And those state carbon pricing  
23   policies were the impetus for the discussion. In my view,  
24   it's a very natural extension of the important market  
25   protective work we've been focused on during my time as

1 Chairman.

2 I demonstrated my commitment to ensuring that  
3 competition can continue to create value for consumers.  
4 That's the consistent durable thread that binds the  
5 Commission's most significant actions under my leadership.  
6 You can see it in our work to ensure competitive capacity  
7 markets and to knock down barriers to storage and DERs.

8 You can see it in our actions to modernize and  
9 introduce competitive pricing principles under PURPA. You  
10 can even see it in looking to the emerging issues we're  
11 exploring like hybrid resources and barriers to offshore  
12 wind. Competitive markets are, in my view, the smartest  
13 path forward in this energy transition where our complex  
14 energy markets cannot be hermetically sealed from state  
15 environmental policies. That's just an undeniable fact.

16 And it's everything to anyone who's watched us  
17 over the past several years as we've grabbled with the  
18 thorny issues that arise at the intersection of state  
19 policies and our markets. We're at a pivotal point when it  
20 comes to these discussions -- a point that I think will  
21 ultimately lead to action in some shape or form.

22 As states continue having these conversations  
23 we've seen mounting pressure on lawmakers as well. And some  
24 of the proposals that have been floated, while presumably  
25 well intentioned, could actually bring with them more harm

1    than good. That's why I think as we face this crossroads,  
2    we have to take this issue head on. That's why I felt it  
3    was important for FERC to convene this dialogue and explore  
4    solutions from our pragmatic market based lens.

5               So the focus here is about the reality facing  
6    this Commission. As states and regions move forward with  
7    carbon pricing policies, sometimes conflicting policies, how  
8    do we ensure that our markets continue to deliver on their  
9    promise? What is our role and what is our responsibility in  
10   this moment?

11              To that end, we've gathered what I view as a  
12   blockbuster lineup of experts and key voices representing a  
13   range of interests. I couldn't be more pleased to jump into  
14   today's conversation. I'll be especially attuned to the  
15   discussion we're going to have at the outset about our  
16   statutory authority and mandates under the Federal Power  
17   Act.

18              I'll also be interested in the panelist's  
19   insights as we drill down into topics that touch on the  
20   efficiency and transparency in our markets. Ways to  
21   approach complex issues like leakage and resource shuffling  
22   and any potential implications for reliability and costs.

23              In preparing for today as I read the statements  
24   and submissions of the panelists, I was struck by a common  
25   theme. When it comes to grappling with these market issues,

1 the perfect should not become the enemy of the good. These  
2 issues are complex. The market footprints all differ and  
3 the policies bubbling up within that differ.

4 We may not have all the answers. Indeed, we  
5 almost certainly do not. But it's time for us to roll up  
6 our sleeves and confront the questions head on. With that,  
7 I'd like to give my fellow Commissioners an opportunity to  
8 share any opening remarks they may have beginning with  
9 Commissioner Glick.

10 Opening remarks of Commissioner Glick

11 COMMISSIONER GLICK: Thank you Mr. Chairman. And  
12 I want to thank you at the outset for agreeing to the  
13 request of a broad group of organizations that requested  
14 this particular Technical Conference. I think it's very  
15 timely and I want to commend you for agreeing to hold it.

16 Secondly, I wanted to start out for a second by  
17 commending Senator Whitehouse. I don't think there's anyone  
18 in the United States Senate that's worked harder, spoken  
19 more passionately about the existential threat that climate  
20 state poses, and I want to comment Senator Whitehouse for  
21 the great work that he's doing.

22 You know I was thinking about the other day, I  
23 was thinking about this Technical Conference. Thinking  
24 about what is says about where we are as a nation in terms  
25 of addressing the serious threat that climate change poses.



1 And there's no doubt. All you have to do is open up the  
2 newspapers or turn on the TV. Talk about the wildfires that  
3 are occurring out west, the wildfire season is a lot longer  
4 than it was before and the fires are certainly much more  
5 ferocious than they were.

6           Hurricanes -- we have an unusually large number  
7 of hurricanes this and many of them are hitting land. And  
8 not only do we have a lot of hurricanes, but they're also  
9 much higher in terms of intensity than they have been  
10 before. We have very strong cold snaps and very strong  
11 heatwaves.

12           I think of the heatwave we saw in the west back  
13 in the middle of August was just unbelievable in terms of  
14 the temperatures that we saw. And we also have significant  
15 drought on occasions. And so we're in a situation that's  
16 pretty clear to me and it doesn't matter whether it's to me,  
17 but to the vast majority -- and I mean vast majority of  
18 scientists around the world that we are in the midst of the  
19 existential threat again that climate change poses.

20           Now at the federal level, we haven't really been  
21 reading on this issue. And despite Senator Whitehouse's  
22 best efforts, we are -- the federal government hasn't really  
23 taken action. For better, for bad you could argue that.  
24 Some people still argue this is a hoax. It's amazing to me  
25 that that's the case, but we still hear that on occasions

1 from some folks.

2 But while we don't see action at the federal  
3 level, we're seeing a lot of action at the state level. The  
4 states and also private entities, corporations, individuals  
5 are taking action on their own. Very creative actions in  
6 many cases. And so that brings us to the Technical  
7 Conference that we're having today in the sense that we've  
8 already seen a number of proposals for states that have  
9 imposed -- at least regionally, imposed a price on carbon.

10 We've seen California adopt the cap and trade  
11 system. And we're going to see a lot more of that from a  
12 variety of states. States are going to take a lot of  
13 actions -- creative actions aimed at addressing climate  
14 change. And those actions have an indirect impact on  
15 wholesale rates, which is obviously within the jurisdiction  
16 of the Commission.

17 And so I think it's important that we take a  
18 serious look at this. Now again Mr. Chairman, I wanted to  
19 reiterate what you said just to, you know, point out and  
20 really embellish the fact that this Conference is not about  
21 FERC's authority, or FERC's wanting to set its own carbon  
22 price.

23 As you pointed out and rightly so, FERC's not an  
24 environmental regulator. That's up to other federal  
25 agencies. That's up to Congress and that's up to state

1 legislators around the country. And we're going to see  
2 action from some of them at some point.

3 But that doesn't mean we don't impose carbon  
4 pricing. As I said before it has an indirect impact on the  
5 justice and reasonableness -- potential on the justice and  
6 reasonableness and of the rates that are charged in  
7 wholesale markets and also whether those markets are unduly  
8 discriminatory.

9 And so I think I'm hoping to hear today from the  
10 various panelists about Section 205 of the Federal Power  
11 Act. An RTO or states, or some other entity files a request  
12 under Section 205 to implement a change in tariffs, and RTO  
13 tariff and ISO tariff based on trying to accommodate various  
14 state original proposals in terms of imposing carbon prices.

15 I think we have not only the ability, but we have  
16 the requirement to take a look at. So I want to hear from  
17 the various panelists what is our legal authority there?  
18 And how do we ensure that rates remain just and reasonable  
19 and not unduly discriminatory?

20 Finally Mr. Chairman, I wanted to make one last  
21 point. Now as I mentioned before, states are taking a lot  
22 of creative actions. It's not just in terms of carbon  
23 emissions or carbon pricing. They're adopting clean energy  
24 standards. They're adopting all sorts of proposals aimed at  
25 preserving zero emissions generation.

1           And it's not -- I don't think that it's up to us,  
2   or it's not legally, we're not legally authorized, to  
3   essentially block those state programs. I'm concerned that  
4   some may view the situation in which FERC approves a  
5   regional carbon price pursuant to an RTO as an excuse for  
6   pre-empting or blocking state clean energy programs.

7           I think it's pretty clear under the Federal PAC  
8   we don't have that authority. The courts have said that as  
9   well. It's up to the states to determine what resource mix  
10  they should have in their various states around the country.  
11  And again, I don't want to be seen or anyone be seen, as  
12  trying to use this particular topic as a way to block those  
13  state programs. And I think that's not appropriate, not  
14  legal, and certainly I don't think that's good policy as  
15  well.

16           So with that I'll stop. But I want to thank the  
17  panelists for coming from all over, for virtually  
18  participating all over the country. And I look forward to  
19  hearing your remarks and again, I want to thank you Mr.  
20  Chairman, and commend you for moving forward with this  
21  Technical Conference.

22           CHAIRMAN CHATTERJEE: Thank you Commissioner  
23  Glick. Commissioner Danly.  
24  Opening remarks of Commissioner Danly

25           COMMISSIONER DANLY: Good morning. I just want

1 to start by saying I appreciate everybody's willingness to  
2 join us this morning and for my colleague's opening  
3 statements. The subject that I'm truly interested in right  
4 now is the extent of the Commission's jurisdiction, what are  
5 legal authorities and obligations are.

6 I'm much less interested in the question of  
7 implementation. That's something that finally utilities can  
8 work through and will have the opportunity to weigh the  
9 merits of those filings if and when they come. What I want  
10 to know is what our obligations are in the panelists' views  
11 to ensure just and reasonable ways. I look forward to  
12 getting into that subject in the first panel, thank you.

13 CHAIRMAN CHATTERJEE. Thank you Commissioner  
14 Danly. And I'll turn it back over to John.  
15 Panel 1: Legal Considerations for State-Adopted Carbon  
16 Pricing and RTO/ISO Markets

17 MR. MILLER: Thank you Mr. Chairman. The first  
18 panel today is entitled Legal Jurisdictions for State  
19 Adopted Carbon Pricing and RTO ISO Markets. Each panelist  
20 will introduce themselves and has the option to give initial  
21 opening remarks of no longer than three minutes.

22 After that we will begin a question and answer  
23 session. As we begin with opening remarks, we remind all  
24 participants to refrain from any discussion of pending  
25 contested proceedings. If anyone engages in these kinds of

1 discussions, a FERC staff member will interrupt the  
2 discussion to ask the speaker to avoid that topic.

3 I will call each panelist in turn to give their  
4 opening remarks. At this time panelists, if you have not  
5 yet switched on your cameras, please do so. First we have  
6 David R. Hill of the Columbia University Center on Global  
7 Energy Policy. Please go ahead with your remarks Mr. Hill.

8 MR. HILL: Good morning Chairman Chatterjee and  
9 Commissioners Glick and Danly. Thank you very much for  
10 inviting me to present some views today concerning the  
11 integration of state carbon pricing and control regimes into  
12 the FERC jurisdictional wholesale electricity markets. This  
13 is an important topic and I'm pleased to be able to offer a  
14 few thoughts on some legal considerations relevant to these  
15 issues.

16 My views are explained more fully in the written  
17 statement I have submitted for the record. But they can be  
18 summed up here pretty quickly. Yes, I believe the authority  
19 and jurisdiction exists under sections 205 and 206 of the  
20 Federal Power Act for an ISO or an RTO tariff and market  
21 design to integrate state carbon pricing and carbon control  
22 policy. And it potentially could be unjust, unreasonable or  
23 unduly discriminatory for it not to do so.

24 The plain words of the Federal Power Act give  
25 FERC authority over rates and charges for or in connection

1 with wholesale sales of energy, and all rules and  
2 regulations affecting or pertaining to such rates or  
3 charges. The courts have said that the rules or  
4 regulations must directly affect rates, but just as the  
5 Supreme Court found the wholesale demand response did, so  
6 also may state carbon pricing and carbon control regimes  
7 incorporated into a wholesale market design directly affect  
8 jurisdictional rates and charges.

9           FERC has determined that it has sufficient  
10 authority to direct and enable the development and operation  
11 of competitive wholesale power markets. In the FERC v. EPSA  
12 case, as you know the Supreme Court noted approvingly that  
13 FERC undertakes, and this is a quote, "undertakes to ensure  
14 just and reasonable wholesale rates by enhancing  
15 competition."

16           FERC has done that by accepting or directing  
17 rates, terms and market designs that promote market  
18 efficiency, and seek to produce lower costs for consumers.  
19 And it already has determined, correctly in my view, that it  
20 has jurisdiction over wholesale energy sales that include  
21 state-created renewable energy credits, emissions  
22 allowances, and Regional Greenhouse Gas Initiative costs.

23           In the absence of preemptive federal laws or  
24 regulations, states can lawfully establish their own climate  
25 change policies and can price carbon. The FERC

1 jurisdictional markets incorporation of state carbon pricing  
2 would help promote the efficient and transparent markets  
3 both FERC and the courts have support in the past.

4           Moreover, I think interpreting the Federal Power  
5 Act, that FERC jurisdiction over the integration of state  
6 carbon pricing in the wholesale power market designs may  
7 well be compelled by applicable administrative law doctrine.

8           Of course, whether or not a sufficient factual  
9 showing has been made in any particular case, to demonstrate  
10 that a tariff filing is just and reasonable under FPA  
11 Section 205, or to show that an existing tariff is unjust,  
12 unreasonable or unduly discriminatory under 206, depends on  
13 the facts and circumstances in a particular case.

14           But I believe given an adequate factual showing,  
15 the FPA gives FERC sufficient jurisdiction to allow or to  
16 require the incorporation of state carbon pricing and  
17 control policies into a FERC jurisdictional rate and market  
18 design. Thank you very much for inviting me to participate  
19 in this Conference today. Back to you John.

20           MR. MILLER: Thank you very much Mr. Hill. Next  
21 up we have Kate Konschnik, Director of Climate and Energy at  
22 the Duke University Nicholas Institute for Environmental  
23 Policy Solutions. Go ahead please Miss Konschnik.

24           MS. KONSCHNIK: Thank you. Good morning and  
25 thank you for convening this Technical Conference and for



1     inviting me to speak. I'd like to make three initial  
2     points. First, we have generation based and consumption  
3     based state carbon pricing currently reflected in four power  
4     markets.

5             Second, policies addressing greenhouse gases are  
6     often treated as exceptional, which constrains our ability  
7     to draw from experience. We need not focus exclusively on  
8     the Commission's orders approving or accepting CAISO tariff  
9     revisions to accommodate California's carbon regime.

10            Many of the actions to be discussed here today,  
11     whether taken by states, markets, or FERC, will have  
12     non-climate analogues. For instance, state requirements  
13     imposing environmental or labor compliance costs are  
14     regularly reflected in wholesale energy prices.

15            In just the same way the allowance costs incurred  
16     by generators under the Regional Greenhouse Gas Initiative,  
17     are reflected in their market bids. There's nothing  
18     groundbreaking here.

19            Third, the Federal Power Act poses no fundamental  
20     obstacle to markets taking steps to harmonize tariffs with  
21     state policies through carbon pricing. This comports with  
22     the authority allocated to the Commission, and reserved to  
23     the states under the Act. The Commission may approve tariff  
24     revisions that absorb or reflect state carbon pricing while  
25     remaining in its lane as an economic regular.

1           I appreciated the Chairman's articulation of his  
2 north star -- value to consumers. The 2000 Creed case  
3 speaks of electricity as a simple, fungible product. Those  
4 days are over. Of course many people do not know or care  
5 where their electricity comes from. But a significant and  
6 growing number of consumers do, including large corporate  
7 and industry consumers that are household names in America.

8           They want low carbon electricity, and they want  
9 the market to deliver this differentiated product. When it  
10 doesn't, they go out of market to find what they want. They  
11 contract with ITPs, they self-generate, they negotiate the  
12 spoke PPAs with utilities. They also go to state  
13 legislatures.

14           State climate policy is the prerogative of the  
15 states. But when it's not reflected in, or effectuated by  
16 the bulk power markets, this out of market activity is less  
17 effective in achieving the state's goals while dulling the  
18 signals that support market entry and exit. This leads to  
19 overbuild and makes markets less efficient.

20           Fortunately, FERC jurisdictional markets have the  
21 ability under current law to harmonize their tariffs with  
22 state law, to value in attributes sought by consumers. Of  
23 course hearing from the states directly on this topic will  
24 also be critical, and I hope they will be included in future  
25 conversations on this topic. Thank you.

1           MR. MILLER: Thank you very much Miss Konschnik.  
2   We now have Ari Peskoe, Director of the Harvard Electricity  
3   Law Initiative. The floor is yours Mr. Peskoe.

4           MR. PESKOE: Thank you Chairman Chatterjee,  
5   Commissioner Glick and Commissioner Danly for organizing  
6   this event and for inviting me to participate.

7           Whether a state imposes a carbon price on  
8   generation facilities or load-serving entities, pricing  
9   emissions is a permissible state action under the Federal  
10   Power Act. Like many regulations, a state-set carbon price  
11   may raise sellers' production costs.

12                       The Commission allows sellers to  
13   recover in wholesale rates compliance costs associated with  
14   emissions regulations. And the Commission would have no  
15   basis to prevent regulated entities from passing through  
16   costs of a state-set carbon price.

17           Notices in this docket focus this panel on legal  
18   issues with a proposal to "integrate" a state-set carbon  
19   price into an RTO/ISO market. As I understand that charge,  
20   the Commission is interested in whether there are legal  
21   barriers that would prevent it from approving a tariff that  
22   adjusts price formation or dispatch processes, to reflect  
23   buyer's preferences for low emission energy, or to account  
24   for the cross border effects of sellers, including  
25   compliance costs in their offers.

1           As I provide in my additional filing in this  
2 docket, the Commission has already found RTO/ISO tariffs  
3 that integrate emissions compliance costs are just and  
4 reasonable. The Commission may also be interested in its  
5 authority to approve a state-set carbon price filed by an  
6 RTO/ISO.

7           Over the past two decades, the Commission has  
8 attempted to continuously improve RTO/ISO markets, including  
9 by adapting them to industry changes. The Commission has  
10 justified its findings that proposed changes to these  
11 markets are just and reasonable on numerous grounds,  
12 including that changes enhance competition, guide resource  
13 entry and exit, compensate resources at prices that reflect  
14 their value, improve dispatch, and ensure prices allow  
15 sellers to recover their costs.

16           This non-exhaustive list illustrates that in  
17 reviewing proposed tariff filings, the Commission is not  
18 constrained by any particular definition of just and  
19 reasonable. The Federal Power Act's capacious ratemaking  
20 standards provide the Commission with flexibility to improve  
21 the operation of RTO/ISO markets, including by approving an  
22 RTO/ISO carbon price and rules that integrate that price  
23 into the market design.

24           Approving a tariff that sets and integrates a  
25 carbon price would not transform the Commission into an

1 environmental regulator. The Supreme Court's most recent  
2 decision about the scope of the Commission's authority  
3 teaches that when the Commission "does no more than follow  
4 the dictates of its regulatory mission to improve the  
5 competitiveness, efficiency and reliability of the wholesale  
6 markets," courts will be reluctant to cut off the  
7 Commission's jurisdiction in the absence of a clear  
8 statutory bar.

9           Integrating a carbon price can fit well within  
10 the Commission's mandate as a market regulator. Finally,  
11 facilitating carbon emissions reductions is not strictly an  
12 environmental goal. Market participants, including the  
13 largest utilities, have made emissions commitments.

14           Investors are demanding emissions disclosures.  
15 High-emitting plants are retiring. Interconnection queues  
16 are dominated by non-emitting resources. Policymakers are  
17 requiring reductions. Financial regulators are warning  
18 about the costs of inaction, including not pricing  
19 emissions.

20           No serious conversation about the future  
21 direction of the power industry ignores carbon emissions.  
22 The Commission has a duty to encourage the industry's  
23 orderly development. It should not dismiss carbon pricing  
24 as someone else's job. Thank you.

25           MR. MILLER: Thank you very much Mr. Peskoe.

1 Next we have Matthew E. Price, Partner at Jenner & Block.

2 Please go ahead Mr. Price.

3 MR. PRICE: Good morning. I appreciate the  
4 opportunity to serve as a panelist for this Technical  
5 Conference. And I appreciate the Commission's decision to  
6 convene this Conference on a very important subject.

7 Now as John noted, I'm a partner with the law  
8 firm of Jenner & Block, but I'm here today to express my own  
9 personal views and I am not representing the interests of  
10 any client. In announcing the Conference, the Commission  
11 has asked whether it could approve a Section 205 filing by  
12 an RTO that incorporates a state determined carbon price  
13 into the RTO's market design. And I believe the Commission  
14 can do so.

15 Under Section 205, the Commission must approve a  
16 tariff filing if the proposed tariff is just, reasonable and  
17 not unduly discriminatory. And reasonableness is a zone.  
18 There is more than one reasonable approach to market design.  
19 So if an RTO were to make such a filing, the Commission  
20 would need to ask does it satisfy these standards.

21 Now depending, of course, on the record evidence  
22 submitted by the RTO, I believe the Commission could find  
23 such a proposed tariff to satisfy Section 205. First,  
24 carbon emissions are, from an economic standpoint, a  
25 well-accepted externality. A marginal cost of production

1 not currently reflected in price signals.

2 Now there may be disagreement about the best  
3 public policy for addressing this externality. But remember  
4 that an RTO is a private entity that makes decisions  
5 concerning its membership through its internal governance  
6 process. It's certainly reasonable for a private entity to  
7 decide to account for this well-recognized externality when  
8 dispatching its members resources.

9 The Commission does not itself become an  
10 environmental regulator by accepting the RTO's choice as  
11 reasonable. In Section 205 proceedings, FERC acts in a  
12 reactive role, so it only need conclude that the RTOs'  
13 approach is one of potentially several reasonable approaches  
14 -- not the best or only permissible approach.

15 Second, states have adopted a wide range of  
16 policies governing the power sector in an attempt to reduce  
17 carbon emissions. But there is broad agreement that a  
18 carbon price would be the most efficient, but states face  
19 obstacles in adopting an effective carbon price because they  
20 cannot regulate power production occurring in other states.

21 So they have opted for less sufficient methods to  
22 promote carbon reduction. And an RTOs' decision to  
23 incorporate a carbon price into its market design, ensures  
24 that the states can achieve their policy goals while also  
25 promoting the efficiency of wholesale market outcomes.

1           Finally, by accepting such an RTO filing, the  
2   Commission does not impose any federal policy on to  
3   unwilling states. States have allowed their load serving  
4   entities to join an RTO with the understanding that the RTO,  
5   through its internal governance, will make market design  
6   decisions governing the RTOs' footprint.

7           Many market design decisions will  
8   affect different states differently, and indeed the status  
9   quo affects certain states that want to curb carbon  
10   emissions, but can't do so in the most efficient manner.

11          Simply put, interstate effects are an inevitable  
12   consequence of being part of an interstate market. I look  
13   forward to the Commission's questions and the panelist  
14   discussion. Thank you.

15          MR. MILLER: Thank you very much Mr. Price. We  
16   now have Jim Rossi, Judge D.L. Lansden Chair in Law at  
17   Vanderbilt University School of Law. Go ahead please  
18   Professor Rossi.

19          MR. ROSSI: Thank you John and I want to thank  
20   the Commissioners and their staff for convening this  
21   Technical Conference and for including me in it. I've  
22   submitted some more detailed comments including citations to  
23   statutes and legal principals. But today in my introductory  
24   remarks, I want to highlight four guideposts to help frame  
25   analysis of the Commission's jurisdiction over carbon



1 pricing in organized markets.

2 First jurisdiction -- and here I'm echoing a  
3 theme that many of the other panelists have already touched  
4 on. FERC authorizing or approving an organized market sales  
5 tariff that reflects a carbon price is consistent with the  
6 Federal Power Act. Its most basic level, carbon price  
7 associated with electric power production is no different  
8 from any other input cost which could be reflected in FERC  
9 authorized rates.

10 Such an approach is not foreclosed by anything in  
11 the Federal Power Act. Second, what legal standard would  
12 apply to evaluation of such a tariff? Assessing the  
13 legality of a jurisdictional organized market rate  
14 reflecting a carbon price, the just and reasonable standard  
15 would apply. And it would be important for the Commission  
16 to identify who's setting and enforcing the carbon price  
17 and for what purposes.

18 An organized market can integrate the carbon  
19 price into tariffs in order to promote efficiency, reducing  
20 barriers to entry for competitive power markets, or it might  
21 do so based on efforts by the RTO or ISO to harmonize or  
22 accommodate the environmental policies of its member states.

23 The theory on which the RTO or ISO relies will  
24 influence the reasons and the evidence it's expected to  
25 provide to support the tariff under the just and reasonable

1 standard. Case law and existing precedent, gives the  
2 Commission broad leeway to approve an organized market  
3 tariff under the just and reasonable standard.

4           Though under Section 205, there's some limits on  
5 FERC's ability to modify state-set carbon prices in those  
6 tariffs. Third, I want to talk to the issue of preemption.  
7 To the extent the Commission were to exercise its authority  
8 to regulate organized market tariffs that integrate  
9 state-set carbon prices, it's important to consider  
10 potential state preemption effects.

11           As I discussed in my more detailed comments,  
12 integrating state prices in organized market tariffs is best  
13 understood as constituting a floor for, not a ceiling on the  
14 carbon -- the state carbon prices. I would encourage FERC  
15 to think carefully about this and possibly do things like  
16 including a state preemption savings clause in its orders  
17 should it issue them involving carbon pricing.

18           Fourth, I want to talk about state programs. And  
19 Commissioner Glick touched on this a little bit. In my  
20 view, absent a clear indication that a state intends  
21 otherwise, integration of a carbon price into an organized  
22 market sales tariff, is independent of any existing state  
23 energy resource program that FERC does not presently  
24 regulate.

25           Both courts and FERC have recognized how many

1 state clean energy programs are simply beyond FERC's  
2 jurisdictional reach, including clean energy or renewable  
3 portfolio standards, zero emission credits, and unbundled  
4 renewable energy certificates. It would exceed the  
5 Commission's jurisdiction to use a carbon price and a  
6 wholesale tariff to pass judgment on existing state programs  
7 that favor clean energy resources, unless the state  
8 explicitly chooses for carbon pricing to apply to or  
9 supersede those programs. Thank you and I look forward to  
10 the discussion.

11 MR. MILLER: Thank you very much Professor Rossi.  
12 Our final panelist is Roy Shanker, Independent Consultant.  
13 Please go ahead Doctor Shanker.

14 DR. SHANKER: Thank you. Stuck on mute for a  
15 moment. I want to thank the Commission for having me here  
16 today. I also want to emphasize I'm on my own, wearing my  
17 own hat, and I feel like I've been somewhat thrown to the  
18 wolves as the only non-attorney on the panel.

19 So I thought I'd try just to a few Q and A's to  
20 quickly go through the ones I did submit. First, I think I  
21 agree with everybody that should there be a national carbon  
22 policy -- pricing policy? And the answer is yes. How  
23 should it be implemented and structured? It should be a  
24 uniform tax and it should be across all sectors.

25 And the goal should be a uniform policy that

1 leads to the types of general conclusions about efficiencies  
2 that have been offered here today, but I don't actually  
3 think they're true within the structure being discussed.

4           How should it be adopted? I think the Senator  
5 was clear. This is a federal legislative action. I think  
6 the Commissioners all agreed on that. And at least when  
7 you're starting to talk about integrating things, should be  
8 that legislation. It shouldn't be a regulatory direction.

9           What should the role of the Commission be? I  
10 think that I agree with everybody. There is no bar to  
11 particularly under 205, for recognition of underlying costs  
12 that would be imposed by a regulatory scheme within a state  
13 to introduce carbon prices that would keep them from being  
14 recognized as just and reasonable at a very generic sense.

15           I'm sure there are some structures that could be  
16 presented that the Commission might find problematic. But  
17 there's a second hat here which I think is much more  
18 problematic and more interesting which is that's the  
19 Commission in a reactive role under its current authority.  
20 By inference I seem to think that some of the discussion was  
21 pointing towards a proactive role, and in terms of fostering  
22 or facilitating such policies at the state level, and I  
23 think that steps beyond the current authority of the  
24 Commission.

25           And that's the line that presumably Congress

1 comes to solve by adjusting legislation and redirecting  
2 authority under the Power Act so the Commission could play  
3 that role. I don't think it can now. A major distinction  
4 between the recovery of costs that our state initiated,  
5 versus a policy initiation by the Commission. And that  
6 should be clear.

7           And the last is I'll switch hats, is there other  
8 considerations as to why the Commission should keep this in  
9 mind? And it goes to the notions of efficiencies that  
10 various authorities have introduced. The stationary utility  
11 sector is only about 27 percent of CO2 emissions nationally.  
12 What we're talking about in the wholesale markets were  
13 probably at most 18 to 20 percent.

14           We look at the segment of voluntary programs,  
15 we're probably taking ourselves down to 10 percent. And  
16 remember this is only a small piece of the pie as we're  
17 going forward. And then if we look at various  
18 implementations across the different RTOs, we're getting a  
19 bulkier solution that has absolutely no relationship to the  
20 clean efficiency that people are looking for.

21           It sounds good but in general, usually what we're  
22 seeing in the various programs are preferences and pick and  
23 choose winners and losers and the notion of efficiency is a  
24 talking point, not a reality. And if we had time, I could  
25 just go over my career and point out 20 or 30 clients, with

1 small changes in electric pricing and material impacts  
2 increasing emissions.

3           You have to be very careful with the hope for  
4 impact versus the reality of what you do when you're working  
5 at such a vulcanized level. And so I think without  
6 legislative guidance restricting the role to the reactive  
7 under 205, that's probably limited what the Commission can  
8 and should do. Thank you.

9           MR. MILLER: Thank you very much Doctor Shanker.  
10 And thanks to all of our panelists. We will finally begin  
11 the question and answer session. If a panelist would like  
12 to answer a question, please use the WebEx raise your hand  
13 function. Alternatively, if you are having issues with that  
14 function, please turn on your microphone and indicate to me  
15 that you would like to respond.

16           I will call on panelists that indicated that they  
17 would like to answer in turn. Once I do so, please turn on  
18 your microphone and respond to the question. When you have  
19 completed your answer, please turn off your microphone and  
20 lower your virtual hand in WebEx. With that, I will now  
21 turn it over to the Commission for their questions. Please  
22 go ahead Mr. Chairman.

23           CHAIRMAN CHATTERJEE: Thank you John. I want to  
24 begin by thanking all of the panelists for both your written  
25 and oral testimony. You guys have given us a lot of great

1 material on which to build upon and develop a record. I  
2 want to start. My first question will go to Miss Konschnik.  
3 What jurisdictional considerations should the Commission be  
4 aware of when considering a proposal to integrate a carbon  
5 price set by a state or group of states into an RTO/ISO  
6 market design?

7 MS. KONSCHNIK: Thank you Chairman. So it  
8 depends and you'll be hearing about the states FERC  
9 jurisdictional markets and the diversity and I would start  
10 by saying Doctor Shanker was talking about how if we were to  
11 start seeing these synchronies during a state driven climate  
12 crisis, we would have a vulcanized solution. I technically  
13 agree, but I would ask compared to what?

14 And I think today we have a vulcanized situation  
15 and we have proliferation of states energy policies that are  
16 causing conflict frankly, particularly in capacity markets,  
17 but in a number of the markets. My question or my answer  
18 would depend on which markets we're talking about. I think  
19 with the single state markets, it is a more straight-forward  
20 conversation.

21 You've got, you know, Mr. Price said these are  
22 private entities that have their own governance process. If  
23 through that governance process they decide to reflect state  
24 policy and harness state policy and therefore row in the  
25 same direction, and achieve market efficiencies that way --

1     that seems a more straightforward task for both the RTO and  
2     for FERC in reviewing those rates.

3             It gets tougher with the multi-state. And so the  
4     jurisdictional questions that are then are not only the  
5     authorities allocated to the Commission and reserved to the  
6     states in the Federal Power Act. I'm talking if we got that  
7     flooring between what states regulate in terms of generation  
8     and retail sales, and what the Commission is regulating in  
9     terms of wholesale rates.

10            But also, the jurisdictional -- of the different  
11     states in different directions and having different  
12     policies. So I think if you did that I would probably go  
13     back to what Mr. Price said. And a lot of this is the  
14     machinations that would take place in the market itself  
15     through its governance structure to try to balance all of  
16     those interests and ultimately, what would be teed up to the  
17     Commission.

18            NRG would be yep, here's our result. Here's our  
19     -- we've made a substantial showing, and this is you know  
20     just and reasonable. And then it would be up to the  
21     Commission to approve or deny.

22            CHAIRMAN CHATTERJEE: Thank you for that. I want  
23     to open it up to any of the other panelists who want to  
24     weigh in on this particular question regarding  
25     jurisdictional considerations.



1           MR. MILLER: Thank you Mr. Chairman. I see that  
2 Mr. Price would like to respond. Mr. Price go ahead.

3           MR. PRICE: Thank you. And to the extent  
4 Chairman Chatterjee, by jurisdictional considerations you  
5 mean the division of jurisdiction of the Federal Power Act  
6 between the states that regulate generation facilities, and  
7 the Commission which regulates wholesale energy prices.

8           I don't think, including carbon priced, in an RTO  
9 dispatch mechanism really presents significant  
10 jurisdictional problems because in that kind of tariff the  
11 Commission would be regulating generation facilities. They  
12 would be regulating prices for wholesale energy and I think  
13 the best analogy in support for that in the Keystone law is  
14 a case and I think Mr. Peskoe said it, which is Epson versus  
15 FERC, and the Supreme Court's holding in that response  
16 context that so long as what the Commission is doing is  
17 trying to improve the outcomes of wholesale markets, that  
18 that's within the Commission's jurisdiction to do.

19           And outside the wholesale market mechanism of  
20 course, the Commission's action would have no import. It  
21 would only be regulating within the confines of the  
22 wholesale market tariff itself, and I think the Commission's  
23 jurisdiction to do that is well established.

24           CHAIRMAN CHATTERJEE: Thank you for that Mr.  
25 Price. Moving on. It has been suggested that there are two

1 types of leakage -- emissions leakage, and economic pricing  
2 leakage. We're going to address those concepts in greater  
3 detail in a later panel. But in simple terms, emissions  
4 leakage occurs when carbon pricing shifts emissions from one  
5 state or region to another, rather than reducing emissions.

6 And economic or pricing leakage occurs when the  
7 costs of carbon pricing and/or energy price and the price  
8 effects of carbon pricing are borne or outside of the carbon  
9 pricing state or region. If the Commission receives a  
10 proposal under Section 205 from a multi-state RTO or ISO to  
11 integrate a price on carbon, established by one state, can  
12 you all discuss how, if at all, the presence of either or  
13 both types of leakage would affect the Commission's  
14 analysis under the just and reasonable standard?

15 I will open up that question to anyone on the  
16 panel who wishes to respond. John?

17 MR. MILLER: Thank you Mr. Chairman. I  
18 apologize, Mr. Shanker?

19 DR. SHANKER: Yes.

20 MR. MILLER: Go ahead please.

21 DR. SHANKER: This is where, Mr. Chairman, this  
22 is where I think that proactive versus reactive line starts  
23 to be approached. It's almost impossible for what you pause  
24 not to happen. The only solutions that avoid it -- I don't  
25 want to be just sort of a theorist thing, you know, having

1 uniform carbon price across all sectors. That's the answer  
2 to your question.

3 But when you look at what is actually happening  
4 with any of the proposals, there's leakage everywhere. And  
5 when you start to encourage too much of the proactive you  
6 could make it worse. And the essence of what you're saying  
7 is when do I look at these transfers and make a judgment  
8 between its simple cost recovery, which I agree with  
9 everyone else. It's totally reasonable under 205, and it  
10 reaches the level of being a policy action where you're  
11 making policy choices between the states.

12 There is a great quote that came in some of the  
13 subsidy issues with respect to actually combined cycles from  
14 the Pennsylvania Commission. The Chairman at the time, I  
15 won't guess which one, that simply was responding to another  
16 state initiative to subsidize new combined cycle facilities.  
17 And they said, "You understand what you're doing is going to  
18 ruin the conservation programs on design."

19 The same thing happens here with leakage. The  
20 initiatives by individual states can be easily accommodated,  
21 certainly by price. They can go into the dispatch. They  
22 could show up as a cost element. They're already prices are  
23 part of dispatch prices.

24 There's a level of materiality when you start to  
25 distort the activities of the other states and the absence

1 of federal leadership and uniform policies. That's  
2 absolutely necessary. And right now we don't have that  
3 authority.

4 CHAIRMAN CHATTERJEE: So to follow-up in your  
5 view Mr. Shanker, could the Commission accept such a  
6 proposal as just and reasonable without any provision to  
7 mitigate the impacts of leakage -- either type of leakage?

8 DR. SHANKER: Not to be evasive, I think there's  
9 a question of materiality. It's the simple programs that we  
10 have now. Certainly in the east, show the cost line item  
11 and it goes forward. And I don't think anybody has said,  
12 "Boy, you're putting your thumb on the scale in terms of  
13 leakage, and my state is getting -- or my prices are getting  
14 distorted by those policies." We're quickly going to be  
15 approaching where that materiality figures you having to  
16 interpret just and reasonable under the concerns you just  
17 raised.

18 And unfortunately, there's not an objective  
19 criteria. And so I keep pointing back to somebody else has  
20 to take the lead on the legislative side and then your job  
21 becomes a lot easier.

22 CHAIRMAN CHATTERJEE: Would anyone else like to  
23 weigh in on this question?

24 MR. MILLER: Mr. Chairman I have several  
25 respondents in the queue. Next I will call on Jim Rossi.

1                   MR. ROSSI: I agree with everything Mr. Shanker  
2   had to say about the topic. And I do think the reactive  
3   proactive frame is an important one to think about here. I  
4   think it's important to distinguish leakage from  
5   discrimination and rates because I think that a complaint  
6   about rate discrimination is FERC jurisdictional, whereas  
7   we'll have to see how things evolve. You don't want to put  
8   the cart before the horse, but issues related to leakage and  
9   the appropriate adjustments for leakage are likely going to  
10  be better directed to particular states and their policies,  
11  or to RTO government.

12                   So as I see it, unless FERC itself is making its  
13  own adjustments to rates to address leakage, this seems to  
14  be outside of the kinds of bottom up carbon pricing  
15  mechanism this workshop is discussing. Maybe that will come  
16  down the road, but you know, I worry about putting the cart  
17  before the horse there because we don't really have the  
18  particular examples to deal with.

19                   And finally, this does I think nicely build on  
20  Kate's observation that you know, the single state models  
21  are one approach. The RGGI model is another approach as we  
22  move to the larger RTO footprint. That's where I think this  
23  difficult issue is going to hit the road. And it's a  
24  difficult policy issue as well as a jurisdictional issue,  
25  thank you.

1           MR. MILLER: Mr. Chairman, I also have Mr. Peskoe  
2 in the queue. Mr. Peskoe go ahead.

3           MR. PESKOE: Thank you. Mr. Chairman you asked  
4 about environmental leakage and I think economic leakage.  
5 In its 2018 order approving amendments to the California ISO  
6 EIM, my understanding is the Commission did approve changes  
7 to that market that integrated the state's concern about a  
8 CO2 emissions leakage. Now we could argue whether or not  
9 those rules are going to be effective, but it's my  
10 understanding in my read of the Commission's order that it's  
11 already crossed that barrier of approving a tariff  
12 amendment that implements the state's concern about emission  
13 leakage.

14           With regard to economic leakage, I think there  
15 the Commission has quite broad authority. And as I  
16 mentioned in my opening statement, just and reasonable is a  
17 broad standard and the Commission has approved RTO/ISO  
18 tariff amendments based on numerous theories.

19           And so I think any number of those may apply  
20 here. And very briefly, let me just push back on something  
21 that Doctor Shanker said. He seemed to suggest, at least my  
22 understanding, was that when it considers a particular  
23 RTO/ISO tariff, the Commission should consider efficiency by  
24 looking at the entire economy, or by looking at emissions  
25 across the economy in other sectors.

1           I'm not aware of the Commission looking at  
2   specific approvals of RTO/ISO tariffs in such a broad  
3   context. The only thing I can think of is when back in the  
4   '60's and '70's and looking at pipeline applications, the  
5   Commission might consider whether the natural gas was going  
6   to a high value use, but that was under a different  
7   statutory standard -- the public convenings and necessity  
8   standard. I'm not aware of anything in the power act that  
9   the Commission would have such broad authority to look  
10  across the whole economy when it considers specific 205  
11  filings. Thank you.

12           MR. MILLER: Mr. Chairman I have one more name in  
13  the queue. Kate Konschnik, please go ahead.

14           MS. KONSCHNIK: Thank you. I just wanted to make  
15  two quick points. One building on what Ari was saying about  
16  California. The way that California is, or CAISO achieved  
17  this, is quite similar to the sort of general principle of  
18  state environmental regulations and compliance costs being  
19  passed through.

20           There, in the multi-state EIM they decided that  
21  if California resources were being exported to a non-party  
22  constrained market, they still needed to have their carbon  
23  bid reflect those are real complaints costs that they have.  
24  Whereas in the other direction, EIM resources only needed to  
25  have carbon bid if they were being delivered to California.

1 Not the only way to solve this as Ari said, the Commission  
2 has approved that tariff.

3 My second point is just that this week is just  
4 happening right now and to Doctor Shanker's point, may not  
5 -- to the level of materiality you get because for instance  
6 RGGI prices are so low, but that we are already having this  
7 leakage.

8 And I think there's a big question about how  
9 much. So I would just ask that the first step in some of  
10 these multi-state markets might be to figure out how to more  
11 accurately track power flows across state lines between  
12 carbon constraints states and non-carbon constraint states,  
13 so that we have that information available to market  
14 participants. Thanks.

15 CHAIRMAN CHATTERJEE: Thank you. I've got a  
16 couple more questions and I want to be sensitive to my  
17 colleagues' time, but Doctor Shanker, you were referenced a  
18 couple of times there and I just wanted to very briefly give  
19 you an opportunity to respond if you would like to.

20 DOCTOR SHANKER: Yes thank you. And I think it  
21 was taken a little out of context. There was the notion  
22 that the Commission shouldn't be looking at national  
23 efficiency standards is exactly what I'm saying is unless  
24 somebody changes the law you shouldn't.

25 That's beyond the scope of your authority. But



1    somebody has to take that authority to make your job doable  
2    in a reasonable way. The efficiency -- several of the  
3    concepts that were brought up, and I think you'll hear more  
4    from the people talking about specific leakage problems, the  
5    notion of tracking citadels and powerful, certainly on an  
6    old contract pass basis is very difficult and in fact  
7    impossible.

8                    And the notion of what you have improved  
9    certainly I think you had jurisdictional authority for it.  
10   I don't know that you haven't for California. But I think  
11   the predicate underlying that is probably was incorrect, and  
12   I think you will probably hear some comments explaining the  
13   details of that from time to time.

14                   But to clarify what I was trying to talk about is  
15   the materiality has kept you from having to confront the  
16   vulcanization issue and once you come to that materiality,  
17   you then have to go and say does your jurisdiction allow you  
18   to go further?

19                   And I think the answer is that you start getting  
20   involved with material transfers between states. You're  
21   treading the line that may be pushing something in a Hughes  
22   type tethering that really shouldn't be there and that  
23   should only be there based on somebody using the legislative  
24   to reach that firm.

25                   But I wasn't suggesting that today when you get

1 something in front of you under 205, you automatically do a  
2 national NEPA type official -- on.

3 CHAIRMAN CHATTERJEE: Thank you for your  
4 response. We can stay on this topic for a while, but I want  
5 to keep it moving. My next question is for Mr. Hill. In  
6 your comments, you state that a situation could arise where  
7 the Commission would have to find pursuant to 206, that the  
8 absence of the tariff term integrating carbon pricing was  
9 unjust, unreasonable and abundantly discriminatory. Can you  
10 elaborate on that point a bit more and perhaps provide a  
11 hypothetical example illustrating that point?

12 MR. HILL: Thank you Mr. Chairman. In my  
13 statement really what I was referring to was the threshold  
14 legal question. And that really there is just one -- from  
15 my understanding, a Supreme Court precedent, there really is  
16 one applicable standard.

17 It's the just and reasonable  
18 standard. And so for the very same reason that the  
19 Commission would be able to accept a tariff or market design  
20 under 205, incorporating a state carbon price, it could  
21 actually under 206, look at the tariffs or the market  
22 designs out there and decide that they were not dealing with  
23 issues in a just and reasonable way.

24 I think that so, it's really just dealing with  
25 kind of the point I was making in the statement is really a

1 threshold legal question, looking at the economic  
2 consequences of state carbon pricing, and state carbon  
3 control policies. All in the FERC jurisdictional markets  
4 and seeing whether or not the operation of the -- the  
5 current market designs and tariffs were operating in a just  
6 and reasonable way and the Commission could decide that they  
7 weren't.

8 I don't know that I have a hypothetical in mind  
9 as to what I think would actually meet that threshold. I  
10 was really just for purposes of the statement saying that I  
11 think that at least the legal authority exists on a proper  
12 showing for the Commission to actually take action under  
13 206.

14 CHAIRMAN CHATTERJEE: Excellent. Thank you for  
15 your response as well as for your excellent written  
16 testimony. I want to be sensitive to my colleagues, so I'm  
17 just going to ask one final question to Mr. Price. Your  
18 remarks speak to the reactive nature of the Commission's  
19 role. Do you see a proactive role for the Commission in  
20 this area?

21 MR. PRICE: Thank you for the question Chairman  
22 Chatterjee. I think there could be a proactive role. As  
23 Mr. Hill just suggested, I think you know, could say that  
24 the absence of a constraint unjust and unreasonable. But  
25 the Commission if it were to take that stuff would -- I

1 think they're a higher burden.

2           You would need to demonstrate that you know, it  
3 would be unreasonable for any RTO or public utility to  
4 conclude otherwise. And I understood that the subject  
5 matter of this Conference was the Commission's authority to  
6 act in a reactive posture to receiving such a filing from an  
7 RTO.

8           So I think the Commission could do that. I  
9 think there is a authority for it. But I think the inquiry  
10 is quite different than when the Commission is acting in a  
11 reactive role in simply assessing the reasonableness amidst  
12 the range of reasonableness of the option that's put forth.

13           CHAIRMAN CHATTERJEE: Thank you for that. I  
14 misspoke. I do actually have one final question for Mr.  
15 Peskoe. And if you can make it short and sweet so I could  
16 turn it over to my colleagues, but I do want to follow-up.  
17 In your remarks you cite FERC versus EPSA, where the U.S.  
18 Supreme Court upheld the Commission's demand response  
19 pricing rule.

20           Can you elaborate on the applicability of this  
21 precedent to the consideration of carbon pricing in  
22 Commission jurisdictional markets pursuant to a Section 205  
23 schedule or tariff filing as opposed to a rulemaking?

24           MR. PESKOE: Thank you Mr. Chairman. I think  
25 FERC v. EPSA speaks to the broad authority the Commission

1 has over wholesale markets. The portion that I questioned  
2 was that when the Commission does no more than follow the  
3 dictates of its regulatory mission to improve the  
4 competitiveness, efficiency and reliability of the wholesale  
5 markets, courts are going to be reluctant to cut off the  
6 Commission's jurisdiction.

7           You can also look at the 1968 natural gas case,  
8 Permian Basin, for some similar statements about the broad  
9 authority FERC has under the Power and Gas Act. So that's I  
10 think the most relevant takeaway from that case. That as  
11 long as what the Commission is doing in approving a carbon  
12 price, is looking to improve the effectiveness efficiency of  
13 the market, then the Commission has authority to act.

14           CHAIRMAN CHATTERJEE: Thank you. And with that I  
15 will turn it over to Commissioner Glick.

16           COMMISSIONER GLICK: Thank you Mr. Chairman. I  
17 appreciate that. And appreciate the testimony we heard this  
18 morning. I want to start with a question for everybody,  
19 although Miss Konschnik mentioned earlier the distinction  
20 between state, the single state carbon price and a single  
21 state RTO I should say, and a multi-state RTO.

22           I was wondering if anybody's legal analysis  
23 differs. If we got a proposal, a 205 proposal at FERC from  
24 a single state RTO like New York and California, versus a  
25 multi-state RTO like PJM or New England.

1                   MR. MILLER: Commissioner Glick, oh apologies Mr.  
2 Shanker. I have you in the queue. I see that Kate  
3 Konschnik has her hand up. Kate please go ahead.

4                   MS. KONSCHNIK: Did I come in ahead of Doctor  
5 Shanker, is that?

6                   MR. MILLER: Yes you did.

7                   MS. KONSCHNIK: Okay, great. Thank you. So  
8 great question Commissioner Glick. I don't think that there  
9 is a different legal rationale. I just think things, sort  
10 of the political economy of this, the governance structure  
11 and process gets messier and I do think you have more of  
12 these leakage concern issues. You potentially have more  
13 again in the throes of the governance process in the market,  
14 you've got order adjustments, you've got opt-in/opt-out you  
15 know, proposals.

16                   So thinking through all of that, you have and to  
17 Doctor Shanker's point, I agree with him. It's very  
18 technically challenging to track power flows within one  
19 control area. And so figuring out how to do that. And so  
20 technically and politically, it can become more difficult.  
21 I feel it is the same legal analysis in terms of 205  
22 authority by the Commission to approve the -- or  
23 disapprove, the tariff proposal that comes before it.

24                   MR. MILLER: Thank you Miss Konschnik.  
25 Commissioner Glick, I have two other panelists who would

1     like to respond. Would you like me to go ahead?

2                 COMMISSIONER GLICK: Yes please.

3                 MR. MILLER: Okay. Up next I have Matt Price, or  
4     forgive me, Doctor Shanker.

5                 DOCTOR SHANKER: That's okay. I'm the one  
6     messing up the raise hand symbol. I'd say ditto to the last  
7     comment. I agree that I think the difference is that  
8     inherent in 205 is the just and reasonableness and the  
9     issues you are raising are subjective.

10                And so I mention the notion of approaching a  
11     decision line that materiality starts to overlap with a  
12     determination of jurisdictional authority. That's inherent  
13     in the notion of just and reasonable. At least on my side  
14     of the world as I think about it, it does.

15                And when you have those political lines, the  
16     winners and losers start to become very visible. You start  
17     to get issues of portioning of money. This isn't  
18     hypothetical. You'll hear later Anthony Giacomoni from PJM  
19     will talk about their modeling different states in and out  
20     within PJM, sort of a checkerboard kind of phenomenon and  
21     different rules.

22                And one of the things you'll see is some very  
23     perverse results like higher carbon prices lead to higher  
24     emissions under certain rules. And that's when suddenly you  
25     realize that this is a lot more complicated than you

1 thought, and that absent some unifying guidance, you're  
2 going to be pressed beyond just a decision about just and  
3 reasonable and starting to make policy that I think is way  
4 outside of the Commission's jurisdiction.

5 And I refer you that sometimes it's  
6 jurisdictional creep. You get sucked into something that's  
7 going to force you ultimately to make a decision that's  
8 beyond the scope of the de minimis things that we let go  
9 through right now.

10 MR. MILLER: Commissioner Glick. I have one more  
11 panelist in the queue. That would be Matt Price.

12 MR. PRICE: Thank you. So the fundamental answer  
13 to your question in my mind Commissioner Glick, is that no,  
14 the analysis doesn't differ. But I guess I would answer  
15 your question by looking back to Chairman Chatterjee's  
16 question about emissions leakage and economic leakage.

17 Because I think both emissions leakage and  
18 economic leakage at a high level are more exaggerated when  
19 you have a multi-state RTO where there is more  
20 interconnection among states. And emissions leakage is a  
21 reason why states want to have carbon prices. And because  
22 they can't regulate production in other states, so they  
23 have to adopt less efficient measures to try to support low  
24 emissions policies.

25 And so it seems to me the argument for enabling



1 states to achieve their policy goals is an even stronger  
2 environment where you would otherwise have higher emissions  
3 leakage. Now by the same token, you have more economic  
4 leakage -- that is greater economic effects in other states.

5 But with respect to that, I would say that that's  
6 just an inevitable consequence of having an interstate  
7 market that virtually every market design decision that an  
8 RTO will take in a multi-state region is going to have  
9 economic leakage in the sense of economic effects that are  
10 different, depending on what state you're in.

11 So that's why I think fundamentally the analysis  
12 is the same if there aren't even stronger reasons for  
13 finding a carbon price to be just and reasonable in a  
14 multi-state RTO.

15 COMMISSIONER GLICK: Is there anyone else who  
16 wants to respond to this particular question?

17 MR. MILLER: I do not see any other hands  
18 Commissioner Glick.

19 COMMISSIONER GLICK: Mr. Price if I can follow-up  
20 with you, but also others as well. And Doctor Shanker in  
21 particular as well. So this issue of leakage is  
22 interesting, and obviously it's complicated. But you know  
23 we talk about just and reasonable which certainly is a key  
24 standard of the Federal Power Act on Sections 205 and 206.

25 In some ways not unduly discriminatory standard.

1 But I wondered Mr. Price and if others want to comment on  
2 whether if you don't address leakage, you might be engaging  
3 in undue discrimination and undue treatment between  
4 different generators.

5 MR. PRICE: Well I think and thanks for the  
6 question Commissioner Glick. I think arguably yes. I think  
7 there are arguments on the other side. To me the issue of  
8 undue discrimination is one that often arises from opponents  
9 of carbon pricing in the field, recognizing carbon pricing  
10 would introduce undue discrimination into the marketplace.  
11 And that I don't think is correct.

12 You know the standard from your discrimination is  
13 just essentially whether there is some reason to distinguish  
14 among entities because they're differently situated. And  
15 recognizing different emission profiles, I think is sort of  
16 a different situation that one generator might find itself  
17 in versus another, is an adequate reason to treat them  
18 differently.

19 DR. SHANKER: John may I respond?

20 MR. MILLER: Please go ahead Doctor Shanker.

21 DR. SHANKER: Yeah. This is sort of the same --  
22 Commissioners, it's the same issue that you're approaching  
23 the line. I'll just the PJM example and say four states  
24 adopt carbon standards and nine don't or vice-versa. And  
25 what do you do with no matter how you adjust there's going

1 to be some form inherently of leakage in that.

2 And now you're put in the position -- someone  
3 brings that to you. I agree the leakage is a material  
4 element of your just and reasonable determination, but now  
5 you have to essentially start to pick winners and losers  
6 across the flip. And the efficiency implications aside,  
7 which cause me trouble, I don't know how you avoid doing  
8 that and that's why I'm trying to differentiate between  
9 proactive and reactive and the need for federal guidance as  
10 overhead to clean up your jurisdictional question.

11 If we had a national standard your answers would  
12 be simple. You could do it. You could -- the Commission  
13 could be assigned the power sector obviously, and it would  
14 be easy for you to do this job. Without that, you're in a  
15 very subjective role, particularly in multi-state because  
16 leakage always winds up particularly in that, the winners  
17 and losers.

18 It's changes in output among the different  
19 facilities that may not necessarily just reflect carbon  
20 intensiveness, but may affect the interaction of carbon  
21 intensiveness and market design. And you're somewhat adrift  
22 in terms of what's the right criteria for how you determine  
23 that.

24 MR. MILLER: Commissioner Glick, I have two other  
25 panelists in the queue. Would you like me to proceed?

1 COMMISSIONER GLICK: Yes please.

2 MR. MILLER: Okay. Up next I have Kate  
3 Konschnik, go ahead please.

4 MS. KONSCHNIK: All right thank you. Yes. I  
5 just wanted to -- I agree with a lot of what Doctor Shanker  
6 said and I think in the sort of reactive space where you're  
7 getting a price from a state, it does mitigate these  
8 concerns. I think you could, if one were pricing carbon, or  
9 if FERC were seeking a carbon price to pre-determine the  
10 winners and losers, to make sure for instance no emitting  
11 generators ever cleared again.

12 Yes, then I think you are in the  
13 discriminatory zone. I think if there is a price that is an  
14 expression of an attempt to price the externality of the  
15 pollution caused by emitting generators, or to value an  
16 attribute that consumers are coming to the market looking  
17 for, then yes, there will be winners and losers.

18 That is always true wherever the price is set and  
19 whatever is included in the price.

20 MR. MILLER: And finally I have Ari Peskoe. Go  
21 ahead please Mr. Peskoe.

22 MR. PESKOE: Thank you. I just wanted to say  
23 that you know like just and reasonable and duly  
24 discriminatory is a subjective standard. I think it's  
25 difficult to kind of go through recent Commission orders and

1 kind of find a consistent definition of what unduly  
2 discriminatory is. It's basically up to the Commission to  
3 decide to find some reason basis to distinguish or not  
4 distinguish among resources and therefore find undue  
5 discrimination or not.

6 So again I would just say the Commission has  
7 broad flexibility here and it certainly doesn't present any  
8 sort of jurisdictional bar that would prevent FERC from  
9 finding one way or another.

10 COMMISSIONER GLICK: Thank you. Is there anybody  
11 else who wants to speak?

12 MR. MILLER: Commissioner Glick, I do not see  
13 anyone else with their hand raised.

14 COMMISSIONER GLICK: Okay great. Just a couple  
15 additional questions. Let's start with Professor Rossi. I  
16 just want to -- you mentioned this in your testimony and  
17 also your written testimony. I was wondering if you could  
18 elaborate a little bit on a statement you made in your  
19 written testimony when you said that carbon prices were  
20 reflected in an organized market tariff would not trigger  
21 the full preemptive effect FERC set rates for wholesale  
22 power sales.

23 That's an important issue we've been dealing with  
24 a significant amount of the interaction between state  
25 policies and FERC wholesale market regulation. I was

1     wondering if you could expand on that a little bit in your  
2     statement.

3                 MR. ROSSI:   Sure.   Thank you.   Three points.  
4     Number one -- a carbon price that's simply included as an  
5     environmental compliance cost and generators did request,  
6     does not require FERC to make a just and reasonable  
7     determination about the carbon price.

8                 This can be passed through just like any other  
9     costs, so that doesn't trigger the preemptive effect of say  
10    Hughes, right?  And number two -- what if a state carbon  
11    price were to target the wholesale rate?  This would trigger  
12    the full preemptive effect of Hughes.

13                Where the RTO, not the state, enforces the state  
14    carbon price by placing it in a tariff, I do think we need  
15    to examine the topic of preemption and there are a couple of  
16    questions that come up.  As in Hughes, is the carbon price  
17    tethered to a wholesale market participation?  If the state  
18    is setting the price independent of the wholesale market, to  
19    me this doesn't seem to be tethered to prices is the  
20    contract for differences program that was challenged in  
21    Hughes twice.

22                The second question that comes up is how broadly  
23    is the state setting the carbon price.  For example you  
24    could imagine a state basing its carbon price on a general  
25    cost of carbon that applies to multiple regulatory programs.

1 And in One Oak, it was important to the Supreme Court that a  
2 state law that applied broadly, not just to natural gas  
3 pipelines, the state anti-trust laws there, did not target  
4 the wholesale rate.

5 So I think we need to do some preemption analysis  
6 there to evaluate the extent to which whatever the RTO or  
7 ISO's incorporating and enforcing in a tariff that FERC  
8 approves, whatever that -- whatever occurs there, the extent  
9 to which that actually does preempt the state.

10 And the final point, even if we were to find that  
11 Hughes type preemption applied to a state carbon price  
12 that's approved by FERC, I don't think this freezes, or caps  
13 the state's carbon price in the future. FERC's approval, in  
14 other words, would just be the floor not the ceiling. The  
15 state can always adopt an increase in the carbon price in  
16 the future and enforce that itself, allowing the generator  
17 then to pass through the cost of that additional  
18 environmental compliance cost in FERC authorized rates. And  
19 that would not trigger FERC's preemption setting a ceiling  
20 on that price.

21 So you know, I think it's complicated. I think  
22 the preemption analysis here is complicated. There are  
23 multiple steps to it and for that reason I think FERC has to  
24 think carefully in this realm, and it might even consider  
25 giving some guidance to states or clarifying when it does

1 not intend to preempt states, or cap state carbon prices,  
2 thank you.

3 COMMISSIONER GLICK: Does anyone else want to  
4 comment?

5 MR. MILLER: Commissioner Glick I see a hand from  
6 David Hill. Go ahead please Mr. Hill.

7 MR. HILL: Commissioner Glick, I mean this is a  
8 really good question and a very tough one. I agree with  
9 what Mr. Rossi was saying there about the use case analysis.  
10 I touch upon this actually in my statement -- this set of  
11 issues in the written statement. I do think a lot of it  
12 goes right to the question about whether or not the state is  
13 trying to set a new rate.

14 And that seems to be what the Hughes case goes  
15 toward and is the state targeting the FERC jurisdictional  
16 rate. I think that once the -- and I do think the entire  
17 Conference here, which focuses on the FERC jurisdictional  
18 market, incorporating a state-set carbon price. If that's  
19 really what it is doing, then the preemption issue really  
20 should be mitigated.

21 I think the one question you asked earlier in  
22 terms of the kind of the role of the ISOs, or FERC really,  
23 in terms of environmental policy and I touch upon this in my  
24 written statement too. Again, I think that if the FERC  
25 stays to its role, it's proper jurisdictional role, and then



1 the ISOs and RTOs are incorporating the state-set carbon  
2 pricing and state carbon control policies, rather than FERC  
3 establishing what those policies are as an initial matter,  
4 then it should mitigate the real preemption issues and  
5 concerns.

6 COMMISSIONER GLICK: And John?

7 MR. MILLER: Commissioner Glick I have now three  
8 other panelists in the queue. I will call on Kate  
9 Konschnik. Miss Konschnik?

10 MS. KONSCHNIK: I apologize. I think I just  
11 didn't lower my hand from before.

12 MR. MILLER: Okay. No problem. Thank you. I  
13 see Matt Price, Mr. Price?

14 MR. PRICE: Thank you. So just very quickly. I  
15 don't really see any preemption issue arising from a state  
16 determined carbon price. And when a state sets a carbon  
17 price, it's regulating the production of electricity in the  
18 same way that the state regulates the production of  
19 electricity when it recognizes REC's or zero emission  
20 credits, or any other aspect of production which is squared  
21 away from the state's authority to do.

22 And when the RTO then picks up that state's  
23 determined carbon pricing and incorporates it into an RTO  
24 market design, the RTO is submitting to FERC a federal rate  
25 to be approved by FERC. And so that's, you know,

1 fundamentally different than the Hughes case where the state  
2 was acting outside of the FERC market in attempting to  
3 adjust FERC determined prices.

4 The premise of the description here is that the  
5 RTO is submitting to FERC for its own approval and  
6 incorporation into the FERC price, some recognition of the  
7 states on the state determined carbon value. So the  
8 preemption seems to me to be sort of a misplaced concept in  
9 this context.

10 MR. MILLER: Thank you Mr. Price. And  
11 Commissioner Glick, finally I have Doctor Shanker wanted to  
12 respond.

13 DOCTOR SHANKER: Yeah I actually have a question  
14 more for David Hill, a clarification. Assuming the paradigm  
15 that I think I heard you explain, what does it mean to you  
16 if say in one sector like transportation, carbon pricing in  
17 a state by state actions is \$150.00 a ton and in another  
18 sector like electricity, it's \$10.00 or \$15.00 a ton. Is  
19 that an indicium of a policy that's on its face  
20 discriminatory in the jurisdiction of the state and  
21 something the Commission should be considering?

22 Or is it just another happen stance and you look  
23 at the \$15.00 in our hypothetical as like a RGGI cost that  
24 goes in and the Commission ignores it?

25 MR. HILL: I guess I would say in response to

1     that is it's not the Commission's job to figure out whether  
2     or not the state environmental policy makes sense. It is  
3     the Commission's job to figure out whether or not the state  
4     is trying to override and interfere with a FERC  
5     jurisdictional rate.

6             DR. SHANKER: And I guess the problem that starts  
7     to come in when you see those kinds of differentiations,  
8     because now you're targeting different sectors in different  
9     ways and assume now let's say you're in a multi-state RTO,  
10    this is where the creep and the movement from the subjective  
11    evaluation of just and reasonable starts to cause me  
12    problems.

13            But when you see that, you know, it's sort of a  
14    cumulative evidence that something is going on inside is  
15    just the objective. Is there other goals like picking  
16    winners or losers? A bunch of other things that come up.  
17    And I think this is one of the complications people need to  
18    see and think about.

19            And the more it gets material, the more difficult  
20    it is to draw the line about what you're seeing in front of  
21    you for that just and reasonable determination.

22            COMMISSIONER GLICK: Well in the interest of time  
23    I'm not going to ask anymore questions. Commissioner Danly  
24    is probably waiting. So I just want to say quickly Doctor  
25    Shanker, I mean I think there's no doubt that it will be

1 more efficient if we had some sort of national carbon  
2 pricing versus different state carbon pricing.

3 But as I mentioned earlier in my opening  
4 statement, that's not happening any time soon. And states  
5 certainly have the ability and the authority, both under the  
6 Federal Power Act and other statutory authorities, to  
7 implement their own carbon pricing. If they choose a  
8 different carbon price for transportation, versus electric  
9 generation. Maybe that doesn't make sense, but that's  
10 certainly not FERC's role, nor is it the federal  
11 government's rule, unless the federal government wants to  
12 pass legislation and preempt the state's ability to pursue  
13 greenhouse gas emissions regulation.

14 So I think from my perspective, at least the  
15 Commission has a responsibility to ensure again are just and  
16 reasonable and not unduly discriminatory and I think we need  
17 to go into that particular view and not the view of well  
18 we've got to wait for the federal government because again  
19 the federal government is AWOL on this issue at this point.  
20 Thank you.

21 DR. SHANKER: Just to clarify, I don't disagree  
22 with your description of jurisdiction there. What I'm  
23 trying to point out is that there's a level which the  
24 materiality starts to raise the difference between proactive  
25 or reactive. Wearing the reactive hat, I think your

1 description of FERC and FERC's ability and authority is  
2 exactly correct.

3           The states can do what they want. I think up  
4 those lines, but in the most part the jurisdictional  
5 authority is straightforward. It's on the proactive side as  
6 things get more material, you're going to inevitably find  
7 yourself rammed into the proactive decision making whether  
8 you like it or not. And that's where I get troubled about  
9 the absence of a true policy.

10           Certainly as we sit now, what you described I  
11 don't disagree.

12           COMMISSIONER GLICK: Thank you. Thank you Mr.  
13 Chairman.

14           CHAIRMAN CHATTERJEE: Commissioner Danly.

15           COMMISSIONER DANLY: Thank you Mr. Chairman. So  
16 this first question is for Professor Rossi and Mr. Peskoe.  
17 I completely agree with Mr. Peskoe's point that the  
18 Commission has to evaluate the 205 filings under our merits  
19 individually. That is the mandate we have in conducting our  
20 adjudication.

21           My question really is to explore what the limits  
22 of state powers are. And this is retreading the same ground  
23 a little bit of plans that we talked about. But can you  
24 imagine, and we're getting into a little bit of  
25 philosophical hypo territory here.

1                   Circumstances in which the state  
2 policy are so -- the magnitude of the effect of the state  
3 policy is so great that accommodations to the state's  
4 policies, even recognizing that the states have total  
5 authority under the Federal Power Act to regulate  
6 generation, that we push ourselves into territory that  
7 either just on its face is not, or that is so outsized that  
8 it amounts to tethering.

9                   I'm wondering if in your opinion legally it is  
10 relevant and it really does come down to whether or not the  
11 purpose as a state establishment of wholesale rates, or if  
12 the effects are close enough to that that would fall within  
13 the territory fuse. I'm just curious to get your thoughts  
14 to a hypo.

15                  MR. ROSSI: Just to elaborate on that a little  
16 bit. I already spoke to this a bit in my response to  
17 Commissioner Glick. But let me clarify. I do think, you  
18 know, One Oak does suggest that a state law that applies  
19 broadly to all industries might have more of a safe harbor  
20 on this front and might be outside of the realm of the  
21 possibility of things that could conceivably target a  
22 wholesale rate.

23                  But I do think if the state law is specific to  
24 the electric power sector, I don't think that's facially  
25 problematic. I do think though the next question then would

1 be whether that state law actually does in fact target the  
2 wholesale rate which as Hughes would suggest, depends on  
3 whether the carbon price in that state law is enforced by  
4 the RTO is tethered to wholesale market participation.

5           And I think as Mr. Hill suggested, if the state  
6 setting the price independent of the wholesale market, this  
7 is not tethered to prices. It's the contract for  
8 differences program challenged in Hughes would be right? So  
9 if it's based -- if the price is set based on environmental  
10 attributes, I think it's probably in a safe harbor. On the  
11 other hand, if the state is developing a record of setting  
12 the price because of deficiencies or gaps in the wholesale  
13 price -- what it sees as gaps in the wholesale price, then I  
14 think that's going to be more likely to be in that realm of  
15 targeting wholesale market participation.

16           COMMISSIONER DANLY: Mr. Peskoe, I'd be grateful  
17 for your thoughts on this subject if you have any.

18           MR. PESKOE: Sure. Thank you for the question.  
19 No, I agree with everything that Professor Rossi said there.  
20 The only thing that I might add is that you know, under  
21 recent Supreme Court decisions -- I'm thinking of the  
22 Virginia uranium case, whether the state's purpose would  
23 matter in a preemption analysis, or whether the key fact  
24 here under the Federal Power Act case law would just be that  
25 sort of tethering effect.

1           Given that it wouldn't be tethered, I don't think  
2   it would be preempted. So I'm sort of struggling with what  
3   the hypothetical might be where it would be preempted, but  
4   I'm happy to explore this with you offline.

5           COMMISSIONER DANLY: I solicited a hypo from you.

6           MR. ROSSI: Here would be the hypo. Suppose  
7   Maryland wanted to do the contract for differences, but do  
8   it as a carbon price right? So you essentially are doing  
9   the same thing, but just call it a carbon price.

10          MR. PESKOE: Yeah. We should tell states not to  
11   do that.

12          MR. ROSSI: Yeah right, we shouldn't do that  
13   right. So you know a carbon price I guess, is just a  
14   regulatory tool, but we still have to lift up the hood and  
15   see how it's being applied and what function it's serving --  
16   you know how it's being set and what function it's serving.

17          MR. ROSSI: But collectively I don't think we can  
18   look to the state purpose or motivation, that's hard.

19          COMMISSIONER DANLY: That is difficult. I mean  
20   the question is you have a universal 15 million percent tax  
21   on emitting generation let's say. That in itself is not by  
22   the strict terms tethered anything, it is merely universally  
23   applicable tax. Those would be presumably at least by  
24   principle, minimal to being passed through. I'm assuming  
25   you don't disagree with that.



1           MR. ROSSI: I don't' see that as being a tether  
2 to the wholesale price. Yeah.

3           MR. PESKOE: I agree.

4           COMMISSIONER DANLY: Okay. So another question I  
5 had -- actually before we go on, does anybody want to add  
6 anything to that because I really am curious to hear what  
7 people's thoughts are.

8           MR. MILLER: Commissioner Danly I do not see any  
9 other -- oh forgive me, I see David Hill. Your hand is  
10 raised. Go ahead please Mr. Hill.

11          MR. HILL: Thank you John. I just did it at the  
12 very last second there. Commissioner Danly I think this  
13 whole point, you know, the last page of Justice Ginsberg's  
14 opinion in the Hughes case that goes to this whole point of  
15 kind of the intersection of some of the upstate  
16 environmental policies with the rest of the holding and the  
17 discussion in the Hughes case, I think can present some  
18 difficult implementation questions.

19          And of course those were the subject of  
20 litigation concerning the zest. I think there's -- it is a  
21 question where I think there are going to be fact specific  
22 circumstances as to exactly what the state is doing in some  
23 of these cases. I think a broad based carbon price, or  
24 carbon tax, or carbon control regime though is going to be  
25 -- should be generally permissible, I think and in terms of

1 its accommodation and incorporation within a FERC  
2 jurisdiction tariff.

3 COMMISSIONER DANLY: Thank you. So I have  
4 another question which is fairly open-ended. Oh, actually  
5 before I get to that, I'm assuming from everybody's comments  
6 from what I've heard that there's nobody on the panel who  
7 believes that FERC has the mandate or authority to simply  
8 unilaterally propose a universal carbon pricing system.  
9 That's what I'm getting, and I just want to make sure that  
10 I'm correct about that. Does anybody dissent from that  
11 viewpoint? I'll give a second to click the "raise hand" in  
12 case.

13 MR. MILLER: Commissioner Danly, I am seeing Ari  
14 Peskoe's hand. Go ahead please Mr. Peskoe.

15 MR. PESKOE: Oh great. I mean I think it would  
16 just be based on the record. If the Commission develops a  
17 record that it would be just and reasonable to impose that  
18 carbon price to improve the effectiveness of the market. I  
19 don't see any inherent jurisdictional bar.

20 COMMISSIONER DANLY: Okay. So you take a fairly  
21 broad view. I would be curious to hear any dissenting  
22 viewpoints that think that Mr. Peskoe is completely  
23 incorrect and that we are in fact not able to do that.

24 DR. SHANKER: John?

25 MR. MILLER: Go ahead please.

1           DR. SHANKER: I's Roy Shanker. I agree with  
2 Commissioner Danly. This is the spectrum of materiality  
3 that I was trying to refer to before. When you're in a  
4 reactive role to a state coming in or an RTO your sort of  
5 box that's 205 seems to be very clear. When you're in a  
6 proactive role which you're depositing, I think that you  
7 better be able to point to something specifically in the  
8 Power Act that allows you to do that.

9           And its simplistic dichotomy, but it seems to  
10 work to answer a lot of the kinds of concerns you're  
11 expressing here. And I would agree with where your  
12 conclusion comes out of this. It's sort of -- it's not just  
13 one bridge, it's a lot of bridges too far. And that's why  
14 the ultimate end here, particularly when you look at things  
15 like along second best and considerations, is there has to  
16 be something in the find theory.

17           People can claim all sorts of things about  
18 efficiency when you look at the electric sector only, and  
19 have a vulcanized approach, it just doesn't exist. I mean  
20 it's an excuse. Some would say this was more efficient,  
21 whatever. The notion of efficiency in this context on such  
22 a small portion of what we're looking at is just it's not  
23 real. And to use that as a building block to be so  
24 proactive is just -- I don't even see how it can meet the  
25 205 standard quite frankly, but it certainly I don't see how

1     you would move beyond without some sort of legislative  
2     mandate.

3                 MR. MILLER: Thank you. Commissioner Danly,  
4     forgive me, Commissioner Danly I have two other panelists  
5     who would like to respond.

6                 COMMISSIONER DANLY: Great.

7                 MR. MILLER: Matt Price go ahead please.

8                 MR. PRICE: Commissioner Danly, so my first  
9     response to your question is that's obviously not a decision  
10    the Commission needs to reach if it were to have a 205  
11    filing place before it. So it's a question that wouldn't  
12    need to be answered. But I do think that there's a real  
13    question about whether the Commission could in fact reach  
14    that conclusion that a carbon price is required under  
15    Section 206.

16                And I guess there is, you know, Mr. Shanker  
17    referred to you know, is there some text in the Federal  
18    Power Act, and I think there is some text to support it and  
19    that's Section 202A which directs the Commission to promote,  
20    encourage, regional coordinating entities like RTO's. And  
21    the Commission relied on 202A when it established RTO's in  
22    Order 2000.

23                And 202A is clear about the purpose of  
24    encouraging RTOs. It says the purpose of insuring an  
25    abundant supply of electric energy with the greatest

1 possible economy and with regard to the proper utilization  
2 and conservation of natural resources. So to me that  
3 actually indicates that it may be appropriate, and perhaps,  
4 you know, arguably required.

5           The Commission could still reach that conclusion  
6 under Chevron. For an RTO to account for state  
7 environmental policies in its market design, or impose a  
8 carbon price of its own, because in Congress's view, the  
9 fundamental economic purpose of an RTO is necessarily  
10 intertwined with environmental considerations, so that  
11 pursuing an economic purpose without regard for  
12 environmental considerations is arguably would be  
13 inconsistent with Congress's directive.

14           So I do think that's within the Commission's  
15 discretionary power under Chevron to interpret its statute.

16           MR. MILLER: And Commissioner Danly I have  
17 Professor Rossi wanted to respond to that.

18           MR. ROSSI: Two quick points. I understand  
19 carbon pricing is a regulatory tool that would be similar to  
20 say market based rates, or minimum offer pricing rule right.  
21 So number one, the FPA doesn't mention any of these things,  
22 but it's delegation of authority to FERC to set just and  
23 reasonable rates is pretty propitious and would include  
24 them. And even if it didn't, these would fall within FERC's  
25 authority to regulate practices affecting wholesale rates

1 under 205 and 206 of the FPA.

2 I thought about 202. I think that's an  
3 interesting argument that Mr. Price makes as well. The  
4 second point -- and here I think we just have to look to the  
5 case law. The real question I think is not whether anything  
6 specific in the FPA mentions carbon pricing, but whether  
7 FERC is foreclosed. Whether anything in the FPA forecloses  
8 FERC approving a rate that includes a carbon price or using  
9 Section 206.

10 I do think with 206, one of the open questions --  
11 I don't know the answer to it. But one of the open  
12 questions is that according to the D.C. Circuit in it's  
13 2000 Council decrees opinion, the Supreme Court's never  
14 ruled on whether FERC can use 205 or presumably 206 as well  
15 to regulate environmental impacts itself.

16 So I do think that's an open question and one  
17 that needs to be evaluated and examined and the Commission  
18 ought to have very good arguments to support such an  
19 assertion of jurisdiction if it does so. Because I think  
20 this could be the riskiest approach preferred to take in  
21 intervening in carbon pricing for electric power, at least  
22 in terms of litigation risks.

23 COMMISSIONER DANLY: Were we to rely upon that  
24 part of the mandate yes, but if what we're doing is looking  
25 purely at whether the let's say not even necessarily

1 un-anticipatable, but even anticipatable effects for price  
2 distortions, then we are firmly back into the heartland of  
3 FERC's interests.

4 MR. ROSSI: It's squarely in your wheelhouse  
5 Commissioner. I think if the argument is this is to reduce  
6 barriers to competition.

7 COMMISSIONER DALY: Right.

8 MR. ROSSI: And facilitate a competitive market,  
9 I think you are squarely in your wheelhouse. But if you are  
10 drawing on broader purposes of regulating carbon to protect  
11 the environment, that's where I think Council decrees really  
12 does raise the question of whether you have that  
13 jurisdiction.

14 COMMISSIONER DANLY: And Mr. Peskoe is quite  
15 right when he said that it propends inferred upon what the  
16 record that's developed is going to show to make whatever  
17 determination is. It seems to me that it would be fairly  
18 difficult to use Section 206 to unilaterally impose that,  
19 even if we add theoretical concerns that we were to wish to  
20 address.

21 And I guess part of it is we would see -- what's  
22 imaginable and which there is no 205 for many RTO and we  
23 have a patchwork quilt system that results in all of the  
24 distortions and inefficiencies that for example Mr.  
25 Shanker's testimony talks about.

1           That would be one scenario. But to do it  
2 preemptively to use that term non-technically, to simply  
3 move ahead and act on our own. I for one would be a little  
4 bit reluctant to do that, and I'm assuming that even Mr.  
5 Peskoe would agree that the record there would be a little  
6 bit harder to establish. But if you don't I don't want to  
7 put words in your mouth, rebut that if you want to.

8           MR. PESKOE: Just very briefly I think you could  
9 develop quite a record -- extensive record that market  
10 participants, investors, consumers, et cetera treat carbon  
11 pollution very differently than other environmental  
12 problems. As I mentioned in my opening statement, I think  
13 we often put this in -- the carbon pollution in the  
14 environmental box because obviously it is emissions.

15           But frankly, the issue is really its driving  
16 investment in the sector in a way that really nothing else  
17 is. And so, you know, it's FERC's role as the ultimate  
18 regulator across on a national level, if it determines that  
19 the efficient way of allowing market participants to meet  
20 their goals they've committed to, to allow policy makers as  
21 well to achieve goals, is to impose a carbon price. I don't  
22 think that's beyond the Commission's authority.

23           And as I said I think could develop quite a  
24 robust record on the salience of carbon in the industry's  
25 future.



1                   COMMISSIONER DANLY: Thank you. Mr. Hill did you  
2 have any thoughts on this? I'd be curious to hear what you  
3 think.

4                   MR. HILL: So thanks Commissioner Danly. I  
5 actually had raised my hand, but then I just got done  
6 sending a note to John saying oh, if we're out of time I'll  
7 pass. But so, thank you for calling on me anyway. I will  
8 say just a couple of things. I think that if I agree with  
9 what Professor Rossi was saying there about the FERC's  
10 jurisdiction being, of course, very broad of what it is  
11 doing is focused on improving the operation of the wholesale  
12 market and the efficiency of the market.

13                   That said, I also think that if FERC were on its  
14 own motion to go out there and set a carbon price, and  
15 decide what it thought the appropriate sort of amount of  
16 carbon emissions from the electric sector was and what the  
17 social impact of that was as an initial matter, as opposed  
18 to incorporating within a jurisdictional tariff.

19                   What the states had done or what an environmental  
20 regulator like EPA had done, I think that is -- that walks  
21 pretty far a field into areas where it's either going to  
22 present some very difficult jurisdictional issues with what  
23 other agencies have, whether it's the Clean Act, what the  
24 states now over generation facilities number one.

25                   And number two, I think it starts to raise what

1 would also be some very difficult preemption issues that  
2 otherwise we certainly don't have if what the ISOs and the  
3 RTOs are doing is incorporating and accommodating state  
4 environmental policies.

5 COMMISSIONER DANLY: Any other comments on that  
6 from anyone? John?

7 MR. MILLER: Commissioner Danly, the only --  
8 Doctor Shanker is the only one in the queue.

9 DR. SHANKER: Yeah a couple of things. One, I  
10 have to say I don't think particularly given the notion of  
11 efficiency, that Section 202A applies here with respect to  
12 what Ari Peskoe mentioned. The second is you might try and  
13 put the hat on of thinking about this in terms of where  
14 efficiency clearly was a transparent and obvious objective  
15 and result. The standard market design initiative, the  
16 attempt to unify what we see as maybe best practices in RTOs  
17 across the entire country.

18 And the political result of those efforts was not  
19 very encouraging. So the reality may be that there are some  
20 questions of why here that are beyond my expertise. I don't  
21 think you have that authority in terms of the way you pose  
22 the initial question. But as a practical matter, we've  
23 already had a test case where efficiency was unambiguous --  
24 benefits on a national basis were unambiguous and it got  
25 wrapped in the response to the state and federal legislative

1 response.

2 That always should be a touchstone when you start  
3 to think about things like this and sort of grander  
4 structures without the legislative support.

5 COMMISSIONER DANLY: Thank you. So that is the  
6 last question that I had. Just before I turn it back to  
7 Chairman Chatterjee, I wanted to say thank you to everybody  
8 for appearing. This is the main subject that I was  
9 interested in. I'm going to leave the remainder of the  
10 Technical Conference to my two colleagues, but thank you  
11 everybody for your thoughts this morning and thank you Mr.  
12 Chairman.

13 MR. MILLER: Forgive me Mr. Chairman. Do you  
14 have any remarks?

15 CHAIRMAN CHATTERJEE: I just again want to thank  
16 my colleagues and the panelists for the excellent back and  
17 forth. I think we've run over our time, well through the  
18 break, and so I just want to thank everyone, and I think  
19 turn it back over to you John, to move to the next panel.  
20 Panel 2: Overview of Carbon Pricing Mechanisms and  
21 Interactions with RTO/ISO Markets

22 MR. MILLER: Thank you Mr. Chairman. Before we  
23 begin Panel 2 I had a request from one of our Panel 2  
24 panelists to do a quick mic check. I think he was having  
25 some trouble. Arne Olson are you able to unmute and

1 confirm? Arne forgive me, I'm not hearing you now. I'm  
2 going to have a member of our IT team reach out to you.

3 All right. So our second panel for this morning  
4 is entitled, " Overview of Carbon Pricing Mechanisms and  
5 Interactions with RTO/ISO Markets." Oh forgive me, before I  
6 hop into that I just want to turn to my panel 1 panelists.  
7 Please sign-out of the WebEx meeting. If you would like to  
8 continue watching the Conference, you may use the public  
9 webcast link on the Conference event page at FERC.gov.

10 And now we'll begin panel 2. So again our second  
11 panel for this morning is entitled, "Overview of Carbon  
12 Pricing Mechanisms and Interactions with RTO/ISO Markets."  
13 Just to repeat a few reminders from the earlier panel. Each  
14 panelist will have three minutes to give any opening  
15 remarks. At that time we will begin a question and answer  
16 session. Following this panel, we will break for lunch. As  
17 we begin with opening remarks, we remind all participants to  
18 refrain from any discussion of pending, contested  
19 proceedings.

20 If anyone engages in these kinds of discussions,  
21 a FERC staff member will interrupt the discussion to ask the  
22 speaker to avoid that topic. I will call each panelist in  
23 turn to give their opening remarks. First up we have Joseph  
24 Bowring, of Monitoring Analytics, the Independent Market  
25 Monitor for PJM. Please go ahead Doctor Bowring.

1 DR. BOWRING: Thank you, can you hear me?

2 MR. MILLER: Yes I can hear you sir.

3 DR. BOWRING: Great. So thank you for the  
4 opportunity to participate today, I appreciate it. The  
5 stated purpose of the Tech Conference is to discuss  
6 considerations related to the adoption of carbon pricing by  
7 states within Commission jurisdictional organized wholesale  
8 power markets. My focus is on PJM.

9 In PJM 13 states and the District of Columbia are  
10 the essential decision makers on the adoption of carbon  
11 pricing in the absence of federal legislation. If the PJM  
12 states decide that carbon is a pollutant with a negative  
13 value, a market approach to carbon is preferred to an  
14 inefficient technology or unit specific subsidy approach, or  
15 inconsistent RPS rules that in some cases subsidize carbon  
16 emitting resources.

17 Implementation of a carbon price is a market  
18 approach which would let market participants respond in  
19 efficient and innovative ways to the price signal rather  
20 than relying on planners to identify specific technologies  
21 or resources to be subsidized.

22 The carbon price could be based on target  
23 emission quantities, or be based on the choice of a  
24 preferred price. Implementation of a carbon price using  
25 RGGI or a similar market mechanism by the states would mean

1     that the states control the carbon price and that no FERC  
2     approval of the price would be required, and no significant  
3     PJM rule changes would be required.

4             The carbon price would simply become part of the  
5     marginal costs of power plants and the impacts on production  
6     and consumption decisions would be market based. States  
7     would control the resulting revenues. This is the case  
8     regardless of the number of states that join RGGI or a  
9     similar market.

10            Environmental requirements and renewable energy  
11     mandates have already had and continue to have a significant  
12     impact on PJM markets. The cost of emissions credits,  
13     including NOCS and SOCS CO2 are included already in energy  
14     offers. These prices are part of the marginal costs of  
15     power plants. Impacts on production and consumption  
16     decisions are market based.

17            Environmental requirements and initiatives at  
18     both the federal and state levels and state renewable energy  
19     mandates and associated initiatives have resulted in the  
20     construction of substantial amounts of renewable capacity in  
21     the PJM market, especially wind and solar resources. REC  
22     markets created by state programs, and federal tax credits  
23     have significant impacts on PJM markets already.

24            But state renewable programs in PJM are not  
25     currently coordinated with one another, are generally not

1 consistent with PJM market design or PJM prices, have widely  
2 differing objectives, have widely differing implied prices  
3 of carbon or are not transparent on prices and quantities.

4           The effectiveness and efficiency of state  
5 renewables programs would be enhanced if they were  
6 coordinated with one another and with PJM markets, and if  
7 they increase transparency. The states and PJM could agree  
8 if they decided it was in their interests with the  
9 appropriate information for PJM and others on a single  
10 carbon price and on how to allocate the revenues from a  
11 carbon price that would make all states better off.

12           A mechanism like RGGI leaves all decision making  
13 with the states. A single carbon price established across  
14 PJM would be the most efficient way to reduce carbon output  
15 if that's the goal.

16           So PJM markets could provide a flexible mechanism  
17 to limit carbon output by incorporating a consistent carbon  
18 price and offers reflect that in PJM's economic dispatch and  
19 to distribute revenues. Complex rules addressing leakage  
20 issues are not necessary and can have unintended  
21 consequences. Thank you and I look forward to the  
22 discussion.

23           MR. MILLER: Thank you Doctor Bowring. We will  
24 now have Rich Dewey, President and CEO at New York  
25 Independent System Operator. The floor is yours Mr. Dewey.

1           MR. DEWEY: Good morning. Thank you John. I  
2 want to thank Chairman Chatterjee, Commissioner Glick and  
3 Commissioner Danly for extending the invitation. Also, FERC  
4 staff to allow me to participate in these proceedings. I  
5 submitted comments on behalf of myself and the New York ISO  
6 just to summarize very briefly.

7           New York ISO enthusiastically welcomes the  
8 opportunity to participate in these discussions because  
9 these topics are so important to the radical transition that  
10 our industry is going through. And I think that it's timely  
11 to be able to talk through some of these issues.

12           New York ISO's mission statement commits to  
13 serving public interest and providing benefit to consumers  
14 through ensuring reliability and open fair, competitive  
15 markets. These objectives have aligned very well with New  
16 York State's public policy since the markets were created,  
17 and have served to provide tremendous benefits to consumers  
18 through the achievement of significant cost reductions  
19 totaling billions of dollars that we've achieved through  
20 fuel efficiency, that we've achieved through improvements of  
21 the heat rate, and not to be lost on us or our constituents,  
22 the corollary impact that these efficiencies have reduced  
23 already emissions of carbon dioxide, and other pollutants  
24 through the efficient operation of the power system.

25           New York State recently enacted aggressive



1 legislation that establishes significant targets that will  
2 further transform the industry, including broader economic  
3 economy-wide targets that will be very challenging to  
4 achieve. Not to get into the details, but New York State is  
5 targeting a 70 percent renewable supply by 2030, a carbon  
6 free electric system by 2040, and essentially a carbon  
7 neutral economy by 2050.

8           In establishing these goals essentially New York  
9 State is relying on the decarbonization of the electric  
10 system to achieve the broader economic and economy-wide  
11 goals. In order to keep the alignment between New York's  
12 policies and the markets that are in place, evolution to  
13 these roles is going to be necessary and is going to be  
14 important to achieve in a timely manner.

15           Additionally, achievement of those outlying goals  
16 are going to require significant investment in innovative  
17 technologies and commercialization of emerging new  
18 innovative choices which otherwise would absent a carbon  
19 price, would be very, very challenging to bring to market.

20           We established and started the process in 2017 of  
21 our carbon markets -- carbon pricing market rule proposal.  
22 We established this through our governance with  
23 stakeholders, including collaboration with New York State,  
24 essentially to allow -- create the opportunity for New York  
25 state to establish a social cost of carbon that's in line

1 with the state's policies so that we could include that in  
2 our optimization engine, and our economic dispatch for  
3 energy.

4           We've identified this as the most cost effective  
5 and efficient means to allow New York State to transform the  
6 power grid to achieve the goals that are aligned with public  
7 policy. Additionally, we feel that aligning our market  
8 rules, and incorporating the cost of carbon will create the  
9 most effective pricing signal that allows us to achieve  
10 reliable operation of the power grids and conform with the  
11 most -- with the strictest reliability standards in the  
12 nation, impacting and aiding the reliability of our most  
13 important city, New York City.

14           Recent polling by New Yorker's done by Sienna  
15 College indicates both strong public support for New York  
16 State's clean energy policies, as well as rising recognition  
17 of the value that carbon pricing presents to achieve the  
18 goals to create the most efficient market outcomes within  
19 New York State.

20           And additionally, public health advocates have  
21 identified carbon pricing as a valuable tool to accelerate  
22 the transition of our power system and eliminate those  
23 pollutants that most impact disadvantaged, urban  
24 communities.

25           With that, I thank you again for the opportunity

1 to participate and I look forward to a robust dialogue  
2 between the Commissioners, FERC staff and my colleagues,  
3 thanks.

4 MR. MILLER: Thank you Mr. Dewey. Next is Devin  
5 Hartman, Director of Energy and Environmental Policy at R  
6 Street Institute. Go ahead please Mr. Hartman.

7 MR. HARTMAN: Thank you John, can you hear me all  
8 right?

9 MR. MILLER: I can hear you fine thank you.

10 MR. HARTMAN: Perfect thank you. Thank you Mr.  
11 Chairman and Commissioners for convening this discussion  
12 today. And thank you for inviting my personal  
13 representation of our institute on this matter. I only  
14 speak, however, for my own personal views on this issue.

15 Suffice to say that right now reconciling state  
16 climate policy and federal electricity policy is at an  
17 absolute premium. The Commission started to recognize this  
18 growing trend in 2017 when it hosted the Technical  
19 Conference on State Policies, but since then we've sort of  
20 resorted to a more ad hoc reactive approach to reconciling  
21 our differences.

22 And suffice to say that the status quo is not  
23 going to be sustainable. So it's absolutely imperative that  
24 we pivot back to the more proactive form of pursuing a  
25 federal solution on this. And there's really no better

1 place to start than carbon pricing. Carbon pricing as noted  
2 by previous speakers, is both something that can be at least  
3 on paper, the least cost solution to reducing emissions, but  
4 it's also something that's fully compatible with wholesale  
5 electric competition.

6 And I really applaud the Commission for framing  
7 this Technical Conference as state led carbon pricing  
8 initiatives, because ultimately whether this conversation is  
9 fruitful down the road really depends on whether states want  
10 to pursue this in the first place.

11 And so as we pivot into more of the technical  
12 parameters that this panel was charged with, I think it's  
13 critically important to recognize that the economic  
14 performance of carbon pricing, both generally as well as  
15 specific types of instruments of carbon pricing, is  
16 incredibly dependent on the institutional context at a  
17 regional and state level.

18 I'll let other panelists get into the more  
19 regional specific considerations, whereas my comments to  
20 start here will focus a bit more on categorizing some of the  
21 state context and what the implications are for the economic  
22 efficiency of carbon pricing instrument choice and  
23 configurations within those types of choices.

24 So to begin with, it's very obvious that states  
25 are incredibly heterogeneous along two parameters of this

1 discussion. One, the pre-existing policy landscape that  
2 they find themselves in and then two, the role that they  
3 view carbon pricing going forward. And while states exist  
4 on a continuum on this front, at risk of over  
5 simplification, I'll categorize it into two categories.

6           One -- there's a subset of states that do not  
7 explicitly want to pursue carbon emission reductions yet,  
8 but may in the future. And another change you have some  
9 that have really thrown a whole variety of policies at this  
10 issue. And that's very important as we move forward in any  
11 kind of carbon pricing dialogue because the former camp will  
12 have considerations that conform a bit more to the  
13 conditions that an economic textbook approach would have in  
14 this, whereas the latter, you start looking at key  
15 interactive effects between different policy mechanisms and  
16 affecting economic efficiency considerations.

17           And so without getting into the details just yet,  
18 I'll make one clear distinguishing factor that I think is  
19 very important for this, and that's to recognize the  
20 difference between price and quantity instruments for the  
21 type of states that have already implemented a whole variety  
22 of policies.

23           In particular, a lot of price instruments can  
24 have additional emissions reduction effect, but can impose  
25 different types of cost considerations depending on how

1 complementary policies are configured. Whereas on the  
2 quantity instrument side, a lot of times you view those more  
3 as a like a backstop approach in context with states by  
4 themselves.

5           And there's a whole variety of additional  
6 technical implications therein that we should dive into.  
7 And I'll conclude by just simply making the point that  
8 state, regional and federal stakeholders are currently  
9 making decisions with imperfect information. This type of  
10 Technical Conference is imperative to start to identify what  
11 are our mutual objectives across all stakeholder groups?

12                       Where are the information gaps?  
13 How do we drive additional records, additional research and  
14 additional dialogue that can start to move the process  
15 forward, both in terms of whether states and regions want to  
16 initiate it, as well as what questions they may have and  
17 what to frame out and address up front before a potential  
18 205 filing. Thank you for the opportunity today.

19           MR. MILLER: Thank you Mr. Hartman. We will now  
20 have Arne Olson, Senior Partner at Energy and Environmental  
21 Economics. Mr. Olson is your audio working now?

22           MR. OLSON: Yeah can you hear me John?

23           MR. MILLER: I can hear you fine, thank you. Go  
24 ahead please.

25           MR. OLSON: Great, thank you. Thank you Chairman

1 Chatterjee and Commissioners, thank you for the opportunity  
2 to speak to you today about this important topic. Over the  
3 past two decades at E3, I have had the privilege of working  
4 with numerous companies, government agencies and  
5 environmental organizations throughout North America on the  
6 means for achieving deep decarbonization of the electric  
7 grid.

8           While each power system is a function of its own  
9 unique geography, we observe again and again that the most  
10 effective policies are ones that harness market forces to  
11 maximize market participants' choices and leverage diversity  
12 across broad geographies. Carbon pricing provides  
13 incentives to reduce generation from high emitting  
14 resources, and to invest in low emitting ones. It treats  
15 all abatement strategies equally, regardless of technology  
16 type or geographic location, and can be linked with other  
17 economic sectors, affording further opportunities to seek  
18 out low-cost abatement measures. A stable long-term carbon  
19 pricing system is truly the holy grail for climate policy.

20           However, carbon pricing only really works well  
21 when there is a single price across an entire market. Our  
22 studies find that applying a carbon price to only some states  
23 can increase both costs and emissions, by shifting  
24 production from gas generation in states with carbon pricing  
25 to coal generation in states without.

1           Border adjustments may work temporarily for a  
2 state like California, which is a unique case with nearly a  
3 defensible border, but market settlements would quickly  
4 become intractable if there were different carbon prices for  
5 each state. Effective carbon pricing requires a strong,  
6 farsighted federal carbon policy, something that has been  
7 elusive, to say the least, in our polarized political  
8 environment.

9           In the absence of federal policy, thousands of  
10 individuals, companies, and state and local jurisdictions  
11 have taken matters into their own hands through voluntary  
12 early investment in clean energy resources. These actions  
13 have truly transformed the industry, creating mature,  
14 self-sustaining markets for wind power, solar power, grid  
15 batteries and other technologies.

16           This Commission's policy to create organized  
17 wholesale power markets has resulted in tremendous benefits  
18 for consumers in jurisdictions with clean energy  
19 initiatives, as well as those without. Organized markets  
20 marshal load and resource diversity and facilitate access to  
21 generation across broad geographic areas.

22           Our studies of market expansion in the west show  
23 that these benefits multiply under high renewable  
24 penetrations. However, I fear that these benefits may be in  
25 jeopardy, if organized markets come to be viewed as hostile



1 to voluntary clean energy initiatives.

2           If you have read the Arthurian legends, you'll  
3 recall that the Knights of the Round Table never found the  
4 holy grail. With California and the rest of the west on  
5 fire this summer, we cannot afford such a failure today. A  
6 well-meaning pursuit of the future of carbon regulation --  
7 of the perfect future carbon regulation must not be made the  
8 enemy of the good that is already happening today. Thank  
9 you for the opportunity to provide these comments and I'll  
10 look forward to the discussion that follows.           MR.

11 MILLER: Thank you very much Mr. Olson. Up next is Gordon  
12 van Welie, President and CEO at ISO New England. Please go  
13 ahead Mr. van Welie.

14           MR. VAN WELIE: Thank you John. Can you hear me?

15           MR. MILLER: I can hear you fine, thank you.

16           MR. VAN WELIE: Excellent thank you. First my  
17 thanks to the Chairman, the Commissioners and the Commission  
18 staff for hosting this Conference. We think the wholesale  
19 markets' ability to facilitate state resource choices is  
20 critical to the markets' future. And the manner in which  
21 this is accomplished will affect the means by which resource  
22 adequacy is achieved in the region.

23           In recent years, the New England states have  
24 become leaders in the important fight against climate  
25 change. Their primary tool to effect rapid de-carbonization

1 has been to sponsor clean energy resources outside of the  
2 wholesale markets, which makes the owners of these resources  
3 largely indifferent to market prices. Accordingly,  
4 subsequent participation by these sponsored renewable  
5 resources in the wholesale markets also has the consequence  
6 of interfering with price formation.

7           We know that we cannot operate a reliable power  
8 system without a healthy supply of balancing resources in  
9 addition to the new clean energy resources. Recent studies  
10 have shown that, if we are to fully de-carbonize the New  
11 England economy, we will need more of these balancing  
12 resources.

13           Today, most of these balancing resources are  
14 unsponsored by the states and are wholly reliant on pricing  
15 in the competitive markets. The dilemma is that the  
16 out-of-market actions can cause price suppression, which may  
17 lead to the retirement of these balancing resources when  
18 they are still needed to ensure reliability.

19           It is clear the wholesale markets and state  
20 energy policy are not working well together, leading to  
21 work-around solutions such as the Minimum Offer Price Rule  
22 and CASPR. Unfortunately, to date, the region has not been  
23 able to agree on a solution that avoids these mechanisms  
24 while also assuring resource adequacy and just and  
25 reasonable compensation for all resources.

1           ISO New England has long advocated for carbon  
2   pricing as a solution that allows markets to efficiently  
3   price emissions without harming price formation. That said,  
4   we also recognize that any solution requires a coordinated  
5   effort with state and federal policymakers, and our  
6   stakeholders.

7           Many policymakers are concerned that carbon  
8   pricing will lead to cost increases in the wholesale  
9   markets. We believe that those increases will be  
10  significantly offset by reductions in state programs and  
11  reductions of the capacity market. But we believe we can  
12  implement a methodology called net carbon pricing whereby  
13  the emissions fees on resources are automatically rebated to  
14  wholesale buyers through our wholesale settlement systems,  
15  thereby minimizing the cost impact.

16          This methodology will create powerful incentives  
17  within the wholesale market to accelerate the clean energy  
18  transition by producing additional revenues for renewables,  
19  the nuclear units, and the most efficient balancing  
20  resources. A final bonus is that it will reduce dependency  
21  on the capacity market and eliminate the need for the MOPR  
22  and CASPR.

23          The ISO is working with our stakeholders to study  
24  the future of the grid and markets by conducting analyses of  
25  a range of options to better align the market and state

1 policies. Although we consider net carbon pricing to be the  
2 most efficient solution, we recognize that there is also  
3 significant interest in a forward clean energy market.  
4 Consequently, the Markets Committee of our Board of  
5 Directors and subsequently our Board, has asked us to  
6 evaluate both options in the regional initiative. Thank you  
7 again for the opportunity to discuss these important issues.

8 MR. MILLER: Thank you Mr. van Welie. Our final  
9 panelist is Frank A. Wolak, Professor Economics at Stanford  
10 University. Please go ahead Professor Wolak.

11 MR. WOLAK: Thank you very much for the  
12 opportunity to speak on a topic that has taken up a  
13 significant part of my research and policy outreach activity  
14 over the past decade. I'd like to make three points.  
15 First, that carbon pricing -- not green subsidies, is the  
16 least cost way to reduce the carbon content of an  
17 electricity sector in a national or global economy for that  
18 matter.

19 Second, it is impossible to measure precisely the  
20 carbon content of electricity imported into a regional  
21 wholesale market from a neighboring control area. And  
22 third, in an uncertain economic environment, there is a  
23 difference between a carbon tax and a cap and trade market,  
24 and the more uncertain business's usual emissions are, the  
25 more this favors a carbon tax versus a cap and trade market.

1

2           So the first point I like to explain to my  
3 students is simply subsidizing green is a much more  
4 expensive way to reduce greenhouse gas emissions than taxing  
5 brown. And rather than go into the entire discussion of  
6 this that's in my written testimony, I just want to make  
7 sure and to make as many folks as possible aware of the vast  
8 and growing literature in energy and environmental  
9 economics that essentially demonstrates this point again and  
10 again and again.

11           And so my only hope is that gets out there, so  
12 that we find out that the best and the least cost way to  
13 reduce greenhouse gas emissions to tax brown rather than to  
14 subsidize green and will make much more progress on  
15 addressing the climate challenge.

16           On the topic of the carbon content of imported  
17 electricity. California's cap and trade market includes all  
18 greenhouse gas emissions from generation delivered and  
19 consumed in California, regardless of where it's produced.  
20 And so measuring the carbon content of electricity produced  
21 in state is easy. The emissions at a plant are measured in  
22 real time.

23           In contract for imports, you can only measure the  
24 flows of the energy into the state. You cannot measure what  
25 color those electrons are. Are they green, brown, or what

1 other shades in between. And historically what this means  
2 is that you measure the carbon content of an import by  
3 essentially the supply arrangement between the California  
4 party and the generator.

5           So for example, a contract between an importer in  
6 Arizona and Southern California that is from a coal fired  
7 power plant would essentially get booked as the carbon  
8 content of the coal fired power plant. However, this  
9 contract based approach to measuring the carbon content of  
10 electricity imports, allows retailers in California to  
11 effectively be reshuffle who they contract with in order to  
12 reduce the carbon content of their imports by how what  
13 contract they sign with what out of state supplier with  
14 potentially no net change in generation units in the western  
15 interconnection.

16           And so, what the major less from California's  
17 experience with this dealing with this reshuffling process  
18 is that there really is no way to eliminate reshuffling or  
19 in the case of just which is a more pernicious case of  
20 leakage, the best you can do is simply minimize its impact,  
21 and that the only way you can completely eliminate it, is to  
22 essentially make the geographic footprint of the carbon  
23 market at least as large as the geographic footprint of the  
24 wholesale electricity market.

25           Now on the topic of cap and trade versus carbon

1 tax, there's a well known economic theory that every carbon  
2 tax has an equivalent carbon emissions cap that achieves the  
3 same equilibrium price. However, this equivalence relies on  
4 essentially certain marginal cost and compliance, and a  
5 certain demand for allowances.

6           When there's uncertainty, these factors  
7 essentially break that equivalence between a carbon tax and  
8 a cap and trade market. And a stable predictable price of  
9 carbon into the distant future is essentially what I tell  
10 all of my students is the world necessary to address the  
11 climate challenge.

12           And in a recent paper in the American Economic  
13 Review, my co-authors and I demonstrate that before the  
14 start of the California market in 2013, aggregate business  
15 and usual emissions for the state over the term of the cap  
16 and trade market, were so uncertain that essentially the  
17 equilibrium price of allowance was likely to be either at  
18 the floor of the program, or the ceiling of the program.

19           And we argue that this is pretty much a property  
20 of all cap and trade markets and why we typically see that  
21 the price of carbon in these markets is at the floor, which  
22 makes it extremely difficult for a cap and trade market to  
23 provide that stable predictable price of carbon into the  
24 distant future.

25           And then in other research more recently, we've

1 implemented a number of economic experiments using our web  
2 based energy market game that essentially replicates  
3 electricity markets with carbon pricing, renewable portfolio  
4 standards, et cetera, and found that in an uncertain  
5 economic environment for three possible definitions of  
6 equivalent cap and trade and carbon tax markets, wholesale  
7 electricity prices were significantly higher under a cap and  
8 trade market, than under a carbon tax market for equivalent  
9 system conditions in our controlled environment.

10           These results demonstrate an important benefit of  
11 essentially a carbon tax. It's a publicly available input  
12 price as a number of the participants have already  
13 mentioned, it's no different than a price of fuel. There's  
14 also a --

15           MR. MILLER: Mr. Wolak, I apologize for  
16 interrupting, we're over time here, so if you could please  
17 wrap up, thank you.

18           MR. WOLAK: Sure. The final benefit is that if  
19 you set a carbon tax, each state can set a separate tax for  
20 its carbon and in that sense actually get treated just like  
21 an input and it would, therefore, eliminate this need that  
22 we have to determine the carbon content of imports as we  
23 have in California.

24           And facing different prices of carbon would be no  
25 different from people facing different prices of input



1     fuels. Thank you very much.

2                   MR. MILLER: Thank you Professor Wolak, and again  
3     I apologize for the interruption. We want to make sure we  
4     leave time for the Q and A. So with that, thanks again to  
5     all of our panelists for your opening remarks. We will now  
6     begin the question and answer session.

7                   If a panelist would like to answer a question,  
8     please use the WebEx raise hand function. If you're having  
9     trouble with that function, you can turn on your microphone  
10    and alert me, or feel free to send me a message in the WebEx  
11    chat here to indicate that you would like to respond. We  
12    will call on panelists who indicate they would like to  
13    answer in turn. Once I do so, please turn on your  
14    microphone and respond. And when you have completed your  
15    answer you may turn off your microphone and lower your hand  
16    in WebEx.

17                  With that I will now turn it over to the  
18    Commission for their questions. Please go ahead Mr.  
19    Chairman.

20                  CHAIRMAN CHATTERJEE: Thank you John. And thank  
21    you to all of our panelists. I'm going to start with a  
22    specific question. How do RTO and ISO markets currently  
23    incorporate the cost of emissions compliance in general?  
24    How did the eastern RTOs modify their market rules to  
25    reflect compliance with RGGI? How did CAISO incorporate

1 California's cap and trade law for CO2 emissions in the  
2 CAISO administered markets? And what are some important  
3 lessons learned from these experiences?

4 If I could pose this to Doctor Bowring, Mr.  
5 Dewey, to Gordon and to Professor Wolak, I appreciate any  
6 input.

7 DR. BOWRING: So this is Joe Bowring. So the  
8 answer is quite simple. In the case of PJM and the RGGI  
9 costs, no changes to the rules were necessary. RGGI costs  
10 simply became an input cost, they were added and became a  
11 short marginal cost for generation that worked through the  
12 dispatch and the markets worked without any significant  
13 changes.

14 So really the PJM markets adapted to RGGI  
15 seamlessly, and it's exactly the same way the costs of SOCS  
16 and NOCS emissions permits have been incorporated in the PJM  
17 markets. So incorporating a carbon price, incorporating the  
18 price of emissions has been done seamlessly, and entirely  
19 consistent with the function of PJM markets. Thanks.

20 MR. MILLER: Thank you Doctor Bowring. Mr.  
21 Dewey?

22 MR. DEWEY: Thank you Mr. Chairman. Very, very  
23 similar situation in New York. The compliance costs subject  
24 for any environmental obligations, RGGI included, subject to  
25 review by our market monitoring unit and our market

1 mitigation team for applicability are just incorporated into  
2 the offers the suppliers provide. And that in turn is  
3 included into our dispatch, so no real changes to the rules  
4 required in New York as well, fairly seamless in terms of  
5 the implementation.

6 MR. VAN WELIE: So Mr. Chairman, it's the same as  
7 what was described by Doctor Bowring and Rich Dewey. I  
8 would add one other point though. I think the problem is  
9 that RGGI's price is not high enough, so the allowances are  
10 too abandoned, and therefore the price is low.

11 And so it's not worked to achieve to be the  
12 driver on the clean energy translation, which has caused the  
13 states to turn to out of market incentives in addition to  
14 RGGI. And so as much as we would like to avoid the need for  
15 something like the Minimum Offered Price Rule, until we put  
16 a real price on carbon that's sustainable, a standard price  
17 on carbon, through the RGGI model, or through some other  
18 means, we're going to be stuck with this problem.

19 MR. MILLER: Thank you and Professor Wolak?

20 MR. WOLAK: Yes. In California as I discussed in  
21 my opening remarks, the basic idea is if you can identify  
22 the source of the import, then you will pay for the carbon  
23 content just like you would as an in-state generator in the  
24 sense that you would purchase the allowance for the carbon  
25 content of that resource, or imports that are essentially

1 from unspecified out of state sources.

2           So for example, imports that come in during real  
3 time, California has come up with an administratively  
4 determined default carbon content that you will pay for the  
5 carbon content of the electricity that's being imported into  
6 the state. The big issue that really made California have  
7 such a challenge is this desire to stamp out reshuffling.  
8 That is, as I think hopefully California learned over the  
9 past 20 years, that is essentially maybe 10 years, that is  
10 impossible.

11           And so what instead is essentially attempting to  
12 at least minimize its impact, and this was recently, changes  
13 to the energy, the EIM market in the west that essentially  
14 has a minimum reshuffling way of allocating allowances --  
15 not allowances, excuse me, emissions, to imports in the EIM  
16 market.

17           CHAIRMAN CHATTERJEE: Thank you to all of you for  
18 that. Sticking with you Professor Wolak, but I also want to  
19 hear from Doctor Bowring and Mr. Olson. Do or can existing  
20 carbon pricing mechanisms ensure economically efficient  
21 outcomes?

22           MR. WOLAK: I would love to answer that. I mean  
23 I think Gordon van Welie really raised the heart of the  
24 issue which is if you could raise the price of allowances of  
25 carbon, I think you would get a very efficient solution.

1 But as it is now, we're keeping the price of carbon rather  
2 low and in order to then do things that we would like to do,  
3 folks are coming -- states are coming in and passing  
4 mandates that have unfortunately, hidden costs of carbon  
5 that are significantly higher than the cost of carbon that's  
6 coming out of the market.

7           So you're actually paying a whole lot more than  
8 you would for getting a lot less than you'd get if you just  
9 were willing to raise the price of carbon. The big problem  
10 with the price of carbon is just simply the fact that  
11 everyone sees it. But everyone can't see the implicit cost  
12 of carbon in say a renewable portfolio standard or an energy  
13 efficiency standard or other kinds of supports for green  
14 policies.

15           And in that sense, that's how they manage, I  
16 guess, to be implemented in spite of the overwhelming amount  
17 of research in economics that essentially shows there are  
18 more expensive ways of reducing greenhouse gas emissions.

19           CHAIRMAN CHATTERJEE: Doctor Bowring?

20           DR. BOWRING: Yes. So I agree with everything  
21 Professor Wolak said. I would just add the simple answer to  
22 your question is yes, it is efficient. But it is efficient.  
23 It is the most efficient way to address that is the goal.  
24 And if it becomes incumbent on the states to have a carbon  
25 price which they think is reflective of their actual

1 targets.

2 I agree with Professor Wolak also about pricing  
3 versus cap and trade. We've seen the differences there.  
4 But there's a difference between efficiency and  
5 effectiveness. And I also agree, and we've quantified the  
6 fact that there are very different implied prices of carbon  
7 embedded in the current RPS standards than is explicit in  
8 the carbon price.

9 But the simple answer to your question is yes  
10 thank you.

11 CHAIRMAN CHATTERJEE: Mr. Olson?

12 MR. OLSON: I think we all agree that in theory  
13 if you could apply a carbon price across a broad market  
14 geography, across an entire market footprint, that would be  
15 the most efficient way to reduce carbon emissions. I think  
16 the challenge we have is that we have 50 states that each in  
17 a sense have their own implied carbon price, and we have no  
18 leadership at the federal level for what that carbon price  
19 ought to be nationwide.

20 So that the challenge is that when you apply 50  
21 different carbon prices within interstate markets where  
22 there is no ability to control, or even measure the carbon  
23 content of imports, as Professor Wolak pointed out, that you  
24 could end up in a situation, and we've seen this in our  
25 computer models where a piecemeal carbon pricing ends up

1 with the worst result of no carbo pricing at all.

2 In other words, we've seen a case where a  
3 piecemeal carbon pricing results in both higher emissions  
4 and higher costs because as I said in my opening remarks, it  
5 ends up shifting generation from generation in states with  
6 carbon pricing to co-generation states. That's the  
7 challenge we're seeing now in our federal state system.

8 CHAIRMAN CHATTERJEE: Thank you for that Mr.  
9 Olson. I next want to turn to Mr. Hartman who I think may  
10 have wanted to opine on that last question, so please feel  
11 free to do so, but I also want to know that in your view,  
12 can you explain how revenue from carbon pricing is  
13 generated? What factors should be considered when  
14 allocating this revenue Mr. Hartman?

15 MR. HARTMAN: Thank you Mr. Chairman. So I think  
16 to your question on revenues, there a couple performance  
17 parameters that we may want to keep in mind. Of course  
18 there's some modeling that indicates that whether you  
19 allocate that to the producer or consumer side, you could  
20 see effects on leakage.

21 You could see different side effects on long-run  
22 incentive structures, which I think is an important  
23 consideration in this space. And some of that, I think does  
24 depend on the relative elasticities of the supply and demand  
25 side over those similar times. So I think that's important.

1

2           When we get into thinking about the overall cost  
3   profile that this has and especially from a cost of load  
4   perspective, which is where I think you're going to see some  
5   of the more binding political constraints. That's where you  
6   start getting into I think some of the revenue recycling  
7   considerations and how it affects the incidents on different  
8   stakeholders.

9           And there's a big difference between how much you  
10   want to factor in equity considerations for certain types of  
11   stakeholders, versus overall economic efficiency. And there  
12   may be some tradeoffs that get made, and some value  
13   judgments that get made in that space.

14           And so I do think that as we -- in a lot of the  
15   conversations I've had with regional stakeholders, there's  
16   been a bit more interest in exploring the allocation of that  
17   back on the load side. And there's going to be a question  
18   too, of what is that mechanism? There's the question of who  
19   you allocate it to, but then how do you allocate it, which  
20   matters very much to us all too.

21           You know, do you do it on sort of a flat  
22   consumption basis? Do you do it on some aspect of overall  
23   like pro rata incidents that the policy has on different  
24   types of stakeholders? I think it's an area that would  
25   really benefit from a lot of additional research as well



1 too.

2 CHAIRMAN CHATTERJEE: Thank you for that. Mr.  
3 Olson or Professor Wolak, would you like to opine on this  
4 question as well?

5 MR. WOLAK: I certainly would. Yes. I mean I  
6 guess the first thing I would say is you know, I guess you  
7 know, a dollar is a dollar. And where the revenue comes in  
8 from the carbon tax is essentially a dollar of you know,  
9 similarly to any other government revenue that gets raised.  
10 And the good news about a tax on brown is that you can  
11 achieve what economists like to call the double dividend.

12 In other words, what you're doing is  
13 simultaneously improving environmental quality. In the  
14 process you're generating revenues. Those revenues can be  
15 used to offset distortionary taxes. So for example, think  
16 income taxes can be lowered, therefore fostering economic  
17 growth and other kinds of beneficial economic activity.

18 So that would be my first point is just to say  
19 look a dollar is a dollar. You want to spend that dollar  
20 where you think it's going to as a matter of public policy,  
21 do you know, what serves your interest. And this idea that  
22 you need to spend it some place where it's raised, is really  
23 I think, a bit of a red herring.

24 MR. OLSON: This type of a policy places the RTOs  
25 in a bit of an awkward position as being the collections

1 agent for state policy or federal policy. And just in that  
2 sense, the disposition of the revenues that it collects must  
3 also be a matter of public policy. And so the RTOs ought to  
4 look to the federal and state policy makers that have  
5 enacted the policies for guidance to how the disposition of  
6 those funds ought to go about.

7 CHAIRMAN CHATTERJEE: Thank you all. For my next  
8 question I want to shift back to our RTO/ISO  
9 representatives. We've heard from many stakeholders that  
10 leakage is a concern in implementing carbon pricing in  
11 RTO/ISO markets. Can you please explain how emission's  
12 leakage and economic or pricing leakage can occur due to  
13 carbon pricing? And I'll actually open that up to the whole  
14 panel, anyone who wishes to weigh in.

15 MR. MILLER: Mr. Chairman I have several  
16 panelists in the queue here. First Gordon van Welie, go  
17 ahead please.

18 MR. VAN WELIE: Mr. Chairman, I'll answer that  
19 question in a moment. If you wouldn't mind, I'd like to  
20 just go back and make an observation about some of the  
21 conversation that's just occurred.

22 CHAIRMAN CHATTERJEE: Of course.

23 MR. VAN WELIE: So I think it's more than just  
24 transparency in terms of the carbon price, and I think it's  
25 -- there's obviously a big political dimension around how

1 one allocates and deals with the revenues that are being  
2 collected, which is one of the reasons I think we've  
3 advocated for net carbon pricing.

4           And the reason I say this is that I think it  
5 solves a political problem at one level, but it also at a  
6 very practical level, solves another problem. We know that  
7 as we embark on decarbonizing the economy, we get increased  
8 electricity, we're going to add more and more resources.  
9 And the conundrum is the resources that are required to  
10 truly balance the system are going to run less and less  
11 often.

12           So energy prices will be lowered and the  
13 opportunity to add things in the energy market will be  
14 lowered over time. And so the conundrum is how do you pay  
15 for these resources? They will be critical, and you will  
16 need more of them. And so I think to build on something that  
17 Frank Wolak said, the revenues that go to these balancing  
18 resources are very important.

19           And so I think it's this very practical  
20 consideration around carbon pricing. If we don't solve the  
21 problem that I described through steering more revenues to  
22 those clean resources, and to the cleaner resources, we will  
23 have to find other ways to do that. And I guess the point I  
24 would make here is that I don't think the Commission can  
25 escape making a judgment at some point in the future.

1           And there was a big conversation in the prior  
2 panel around the Commission's jurisdiction and efficiencies  
3 and so forth. And in the end, the lack of carbon pricing  
4 and the means by which the states are pursuing  
5 de-carbonization are going to create other inefficiencies  
6 and other distortions that are going to force the  
7 Commission to react at some point.

8           And we've all watched the discussion around the  
9 Minimum Offer Price Rule. I think this problem is going to  
10 come to a head more quickly in PJM, New England and New  
11 York. And I would just emphasize that we can solve the  
12 problems around leakage. I think in the scheme of things  
13 it's not a trivial problem. It's not unimportant. But I  
14 think those are problems that can be solved. And so that's  
15 the main point I wanted to make here. Thanks for allowing  
16 me to make it.

17           CHAIRMAN CHATTERJEE: Thank you.

18           MR. MILLER: Mr. Dewey?

19           MR. DEWEY: Thanks Mr. Chairman. Those are some  
20 great observations. You know one of the things I think I'll  
21 pick up on with Gordon was starting to talk about a little  
22 bit you know, when you look at what's going to be needed to  
23 operate you know, these power grids with increasing amounts  
24 of renewable, intermittent resources, carbon pricing I  
25 think, and we do believe in New York, there's the greatest

1 opportunity to as efficiently and effectively transform the  
2 grid and do so in the best economic means for consumers.

3           It's not something that can exist in a vacuum in  
4 and of itself. We have to look at some of the other  
5 requirements that are going to be necessary to provide the  
6 necessary revenue streams for some of those resources that  
7 will become increasingly important during times of low  
8 renewable source output. But necessary to maintain  
9 reliability.

10           So we look at it as it's really an evolution of  
11 the entire set of market rules. Carbon pricing being a  
12 very, very important component to help achieve the policies  
13 that the states have established and maintain the efficiency  
14 and the effectiveness of markets. But there's going to be  
15 additionally going to be compatible changes that are going  
16 to be necessary in the energy ancillary service markets, and  
17 also in potentially the capacity markets to help make sure  
18 we maintain that competitive balance and get the kind of  
19 performance and reliability in the generation fleet that's  
20 going to be necessary to hit the reliability needs.

21           The issues that you raised about cost allocation  
22 are very important. I think that from a standpoint, even  
23 within a single state ISO like New York, we have pretty  
24 large disparity in terms of where within our footprint  
25 renewables have already cited the infrastructure that's

1 available to us or not from the transmission standpoint to  
2 move the power around and coming up with a fair and  
3 effective means to allocate those costs is a critical  
4 component.

5           Sometimes you know, we look at equity. We want  
6 to make sure that the LVMP's align with the most effective  
7 production of those resources, but also that we don't unduly  
8 penalize customers who are living in areas that just can't  
9 be served, or we can't get that renewable resources to them  
10 until the infrastructure is build out.

11           So transmission infrastructure build out is an  
12 important component of the mix as well.

13           MR. MILLER: Thank you Mr. Dewey. Doctor  
14 Bowering, you're next in the queue.

15           DR. BOWRING: Thank you. So leakage really  
16 simply means if you have a carbon price for example in one  
17 state and not in another, that you may reduce the dispatch  
18 of carbon emitting resources in that state, but they could  
19 be replaced through the dispatch of carbon emitting  
20 resources in another state.

21           So it simply means there's an impact from one  
22 area to another. Leakage is unavoidable. And if you think  
23 about leakage in a broader sense, there are decisions made  
24 by unit owners, generation developers all the time that have  
25 an effect on other states. So leakage is simply a fact of

1 markets.

2           If you build an efficient from one cycle in one  
3 state which displaces a coal unit in another state, then  
4 that's a form of leakage. But that's not to be opposed. So  
5 I don't think that we need complex rules for dealing with  
6 leakage.

7           One can had lots of super  
8 complicated rules they never fundamentally address the  
9 issue. I think that's one of the points that Professor  
10 Wolak was making. You can't actually do it properly. You  
11 can't measure the carbon content of power flows across an  
12 area, which is all the more reason to try to provide the  
13 states the information necessary to try to come to a single  
14 carbon price across, for example, the entire PJM footprint.

15           So leakage is unavoidable, even between PJM say  
16 and other areas surrounding it, but it's not a reason not to  
17 proceed with carbon pricing, thanks.

18           MR. MILLER: Mr. Chairman, I have two more  
19 panelists I the queue. Mr. Olson?

20           MR. OLSON: We reflect what Doctor Bowring said  
21 and what Professor Wolak has said before that leakage is  
22 inevitable in a system where there's a carbon price in one  
23 geographic area and not in another geographic area. I think  
24 of it as when you push the water into one corner of a  
25 bathtub, as long as the same amount of water is in there,

1 it's going to find its equilibrium level.

2           You might turn down generation in one area, but  
3 generation will have to increase in another area as long as  
4 the generation fleet is fixed. The way that -- and so  
5 states need to take this into consideration when they're  
6 considering the effectiveness of carbon pricing policy.

7           That I think, is one of the reasons why states  
8 have opted to go a different route, which is to put in place  
9 policy to change the generation fleet. In other words to  
10 incent investment in new low carbon resources. That to me  
11 is like putting a rock in the bathtub. That actually  
12 reduces the amount of water in the bathtub and reduces  
13 emissions from fossil generators somewhere on the system.

14           You can't always tell where, but that policy when  
15 implemented from a state perspective, at least is marginally  
16 effective and can be measured with respect to its  
17 effectiveness of reducing carbon emissions.

18           MR. MILLER: And finally, Devin Hartman.

19           MR. HARTMAN: Thank you. First off I'm going to  
20 circle back to one aspect of the revenue question and then  
21 come back. And my prior comments on the revenue side are  
22 really referring to just an RTO tariff context. There is --  
23 Doctor Wolak's point did raise the point of if you start  
24 considering the broader legislative instruments, that does  
25 get you into the tariff being able to tax that is not good.



1           And I'd be remiss not to put in a plug for  
2   reducing discretionary taxes in lieu of then taxing --  
3   introducing a tax on emissions I should say. And that's  
4   where you do get that double dip of net growth plus the  
5   environmental benefit as well.

6           Now on the leakage side, I think there's a couple  
7   aspects to kind of dissect. One is the short-term operating  
8   leakage, and then there's two long-term leakage. And the  
9   long-term leakage gets you more into like facility's  
10   relocation and some substitution effects that I think can be  
11   both within an industry, and then between industries.

12           And that's where I think some of the short-term  
13   dynamics can be addressed I think potentially better in RTO  
14   systems than probably any other type of industrial  
15   organization that we've seen to potentially contain leakage.  
16   And that's simply because we have very granular data on a  
17   temporal spatial basis to assess the carbon intensity of the  
18   given system.

19           And that's why I was encouraged by sort of not  
20   intended for this purpose, but some development for  
21   coordinated transaction scheduling right, where you started  
22   to have like shared supply curves between regions and seeing  
23   some benefits on that side. I think there are some lessons  
24   learned there, notwithstanding a clear opportunity for  
25   unintended consequences, which is what I think Doctor

1     Bowring was beginning to raise.

2                     But the last point here onto the long-term  
3     effects. A lot of RTO carbon pricing assessments that have  
4     been done to date, has been focusing more on static economic  
5     deficiencies, some of the dynamic long-term effects are  
6     harder to quantify and you have to kind of simulate a lot  
7     more. There's more guess work involved. But that does get  
8     you into some challenging territory.

9                     And that's where I think we need to start having  
10    the conversation about what is the overall effect on the  
11    cost profile to load because that will ultimately affect  
12    some of the substitution affects in particular, it shifts  
13    the marginal abatement cost curve, not just within the  
14    industry, but across industries, as we see other sectors  
15    like transportation and the industry sector explore  
16    opportunities to decarbonize cheaply through  
17    electrification.

18                    So we need to be very cognizant of those type of  
19    affects in the long-term when we put all the pieces  
20    together.

21                    CHAIRMAN CHATTERJEE: Thank you for that Mr.  
22    Hartman. Before I ask my final question, I just want to  
23    note we started this panel about 15-20 minutes late because  
24    the last one went long. And I think as this one goes long  
25    as well, it's indicative of that complexity and rich

1 material that we have before us.

2           And so, I'll just ask all of you on the panel, as  
3 well as staff, I want to make sure Commissioner Glick has  
4 time to ask all of his questions, so if you guys could  
5 please bear with us, thank you for your patience and stay a  
6 little bit past 12:00 so that Commissioner Glick can ask all  
7 of his questions. My final question again for the whole  
8 panel, but if we can just keep the answers truncated so  
9 Commissioner Glick has time and Gordon and Rich already  
10 touched on this a little bit.

11           But beyond leakage, what are some of the other  
12 challenges for carbon pricing in multi-state RTO and ISO  
13 markets where carbon reduction objectives vary among states?  
14 And what are some possible solutions that you think merit  
15 further discussion or exploration? Again, I open that up to  
16 the whole panel, but just please if possible keep your  
17 answers brief so I can turn it over to Commissioner Glick.

18           MR. MILLER: Doctor Bowring, you're first in the  
19 queue. Go ahead.

20           DR. BOWRING: Thank you. So one of the things  
21 we've said over time again very briefly, is that there are  
22 ways, if some of the states in PJM for example, do not want  
23 to do carbon pricing or think that they would be unfairly  
24 harmed by it, there are ways for the states to get together,  
25 take account for all the revenue, maybe 20 billion dollars a

1 year in the case of some carbon prices in PJM and  
2 redistribute some of that revenue.

3 So there would be a single carbon price across  
4 the footprint, but there would be revenue redistribution  
5 which could be handled mechanically through a PJM system,  
6 but which would require an agreement among the states. But  
7 that is eminently doable. Thank you.

8 MR. MILLER: Thank you Doctor Bowring. Devin  
9 Hartman you're next, go ahead please.

10 MR. HARTMAN: Mr. Chairman that's a very astute  
11 observation and it's a very difficult question to answer.  
12 But one I think is ultimately deciding what is going to be  
13 the determining factor of the price level and how do we  
14 consider like the unintended consequence of certainly the  
15 political or regulatory risk of changing that price level?

16 And I think it's safe to assume that we're  
17 putting states in the position of determining that level in  
18 this context, but that's where we get into thinking about  
19 how you drive long run investment decisions, whether that's  
20 through a state IRP process, or that's under a merchant  
21 model, we start really affecting the financial market's  
22 ability to allocate capital efficiently if we introduce a  
23 lot of unnecessary risk.

24 Whereas, if we start to have a little bit more  
25 long-term pricing stability on this front, then that let's

1 markets go to work much more efficiently.

2 MR. MILLER: Thank you Mr. Hartman. And I have  
3 Professor Wolak next in the queue, go ahead please.

4 MR. WOLAK: Yeah. I guess the thing that I think  
5 can be done is following on to a topic that Joe talked  
6 about, Joe Bowring talked about, which is essentially  
7 understanding what is the implicit cost of a number of these  
8 state policies that are unrelated to carbon pricing? So in  
9 other words, for the entities in say the WEC or the entities  
10 that are in PJM, to understand essentially here is the  
11 implicit cost of what you're trying to do versus a carbon  
12 price.

13 Making that sort of information available to all  
14 parties can I think help to facilitate the process of moving  
15 forward to a more rational policy simply because there are  
16 some extremely high costs that can be hidden that don't  
17 achieve as much as a very low cost of carbon might.

18 And the only disadvantage as I said, of the cost  
19 of price of carbon, is the fact that it's very transparent  
20 to all market participants.

21 MR. MILLER: Mr. Chairman, I have two other  
22 panelists, Gordon van Welie, go ahead please.

23 MR. VAN WELIE: So your question about you know,  
24 what alternatives exist. This is exactly the question that  
25 we are exploring with our stakeholders at the moment. It's

1 also the reason that our Board has asked us to prioritize  
2 the two studies that I described for a clean energy market  
3 and the net carbon pricing methodology.

4           And I think there's two dimensions to this  
5 problem. The one is how does one drive investment in clean  
6 resources? And I think both of those two alternatives could  
7 arguably do that. The other question though is how does one  
8 steer revenues to other resources and create an incentive  
9 for resources that emit carbon today to reduce their carbon  
10 emissions, and award the cleanest of the subset, or the  
11 cleanest of the set of balancing resources with additional  
12 revenues to solve that resource adequacy problem described.

13           At the moment it appears that only net carbon  
14 pricing, or carbon pricing in general would solve that  
15 problem. So it's not to say that we will ultimately be able  
16 to implement something like that in the region, because it  
17 will require I think the states to agree to it. But I think  
18 we shouldn't lose sight of the fact that we've got these two  
19 problems.

20           One is driving the clean energy transition and  
21 investment in clean energy. The other is retaining enough  
22 resources to balance the system that emerges during the  
23 course of the clean energy transition. I think Arne Olson  
24 did a really outstanding job illustrating that through the  
25 studies that he's done around the country.

1           MR. MILLER: Thank you Mr. van Welie, that's a  
2 good segue. Mr. Olson you are next up in the queue.

3           MR. OLSON: The thing I wanted to highlight is  
4 this transition that we need to go through from the world  
5 that we live in today to the one where we need to get to.  
6 So in effect what we have today is a lack of agreement,  
7 general societal agreement on what the price of carbon ought  
8 to be.

9           So as a result, you have thousands of  
10 individuals, companies, states, local jurisdictions acting  
11 on their own based on their own guess, estimate view of how  
12 valuable it is to reduce carbon emissions and acting in a  
13 whole bunch of uncoordinated ways that are at best highly  
14 inefficient and at worst, counterproductive.

15           Nevertheless, people want to do things now. They  
16 want to take early actions to address this problem that is  
17 so glaringly obvious. Where we need to get to is a societal  
18 agreement on what the price of carbon ought to be, so that  
19 we can get electrification of vehicles and buildings and  
20 emission reductions in the industrial sector, and  
21 agricultural sector and electricity sector all on the same  
22 footing, all on the same playing field, so that the least  
23 cost abatement opportunities can be sought out across the  
24 entire economy.

25           That's where we need to get to. There's a big

1 gap between where we are now and where we need to get to.  
2 So how do we manage that transition through continuing to  
3 invest in clean energy resources, continuing to make sure  
4 that the system has the resources it needs to be operated  
5 reliably and that we solve the resource adequacy problems in  
6 this sort of political polarized world that we live in where  
7 it's very difficult to make investments in resources that  
8 might emit a little bit of fossil generation. That's the  
9 challenge that I see us facing today.

10 MR. MILLER: Thank you Mr. Olson. Mr. Chairman  
11 we have no more panelists in the queue.

12 CHAIRMAN CHATTERJEE: Well I again want to thank  
13 all of the panelists for both your written and oral  
14 testimony, and the conversation today. And I want to  
15 express my apologies to Commissioner Glick, and thank him  
16 for his patience and turn it over to him. And please,  
17 please everyone stay on so we can go through all of his  
18 questions, thank you.

19 COMMISSIONER GLICK: Thank you Mr. Chairman and  
20 I'll be brief. I want to start with Mr. van Welie. You  
21 know it's interesting you work out of New England ISO covers  
22 six states, six New England states. And while they have  
23 very similar policies in many aspects, they're not always  
24 sympatico and it's always hard to get even two states to  
25 agree on something, but six.



1           So I was wondering you know you had indicated  
2   earlier the concept if we go to some sort of net carbon  
3   pricing regime or something like that, and then eventually  
4   that would -- the states would do away with their other  
5   subsidies aimed at clean energy resources.

6           I'm just curious what the reality is. I mean  
7   first of all I wonder if you can get six states to agree on  
8   a single carbon price, and also to eliminate various  
9   subsidies. But secondly, states have other policy interests  
10  and sometimes it's creating jobs in the state. We see that  
11  with subsidies with all sorts of generation. Gas fired  
12  generation gets subsidies all the time but we never talk  
13  about that.

14           But or states sometimes want to either encourage  
15  investment or make sure plants don't close down so to  
16  provide subsidies to other resources. So my question for  
17  you is given the situation, what's the likelihood that we'll  
18  get to that situation where states will all come together  
19  and agree on a carbon approach and get rid of all their  
20  other programs that are aimed at clean energy?

21           MR. VAN WELIE: Well I think the likelihood in  
22  the short run is lower. I'm hoping over time states will  
23  warm up to the idea. I think it does come down to the  
24  question of what distortions do we want to live with. I  
25  don't think we live in an imperfect world. I think there's

1 things you observe Commissioner are correct. I don't think  
2 the states are necessarily in harmony in New England with  
3 regard to how fast they should go in de-carbonization.

4           It is a problem. But I think as we have all  
5 learned over the past couple of years, there's another big  
6 problem out there that I keep putting on the table, which is  
7 this issue of how are we going to achieve resource adequacy?  
8 But we have a mechanism for doing that today -- it's the  
9 capacity market.

10           And you know, in the Northeast we've been  
11 embroiled in capacity market wars now pretty much since they  
12 were invented. But we can't escape the reality that  
13 resources that are required to balance the system as Arne  
14 Olson has showed, will have to be paid for somehow.

15           And the opportunity for receiving revenues in the  
16 energy market are going to diminish over time, we know that.  
17 And so the question then becomes how do you want to solve  
18 that problem? And if the fix there is more burdensome than  
19 doing net carbon pricing, or carbon pricing in some form,  
20 then perhaps we get a transition into net carbon pricing and  
21 we can leave the part that we have today intact and that  
22 carries us forward through the clean energy transition.

23           If we don't confront this problem, I think we  
24 will end up having to re-evaluate the market construct  
25 holistically. And it's not to say there are not solutions

1 to that problem either, but I think the trade offs are those  
2 trade offs as I see them.

3 MR. MILLER: Mr. Chairman. I see that Mr. Dewey  
4 has a response, go ahead please.

5 MR. DEWEY: Hello Commissioner. That was a great  
6 question. You asked Gordon how he was going to get all of  
7 his New England states in agreement. I haven't gotten all  
8 my New York States in agreement yet. So you know, one of  
9 the things that we you know, I think is very, very useful,  
10 and I'm glad that this dialogue is taking place, is some of  
11 the studies and the analysis that looks at the effectiveness  
12 of a carbon price, and the efficiency as opposed to some of  
13 the other mechanisms that are employed by states that  
14 achieve these policies I think is very valuable.

15 I think the public dialogue around those  
16 efficiencies and the recognition realization, the value that  
17 markets have demonstrated in achieving sort of the lower  
18 cost efficient approach, can be changed, can be adapted to  
19 incorporate that carbon price to help the states that have  
20 these aggressive clean energy bills can do so, I think is a  
21 very valuable dialogue.

22 But I think that that's a starting point we've  
23 got to get to, and I think that these conversations I think  
24 will help with that. But we're definitely not there yet.

25 MR. MILLER: Commissioner Glick, I see that

1 Doctor Bowring also has his hand raised.

2 DOCTOR BOWRING: Thank you, you just heard  
3 briefly, I don't think it's essential that all PJM states  
4 agree on what the single carbon price is. So if there's to  
5 be a single carbon price in PJM, there could still be a  
6 redistribution of revenues mechanism which could offset  
7 different carbon -- which could effectively provide  
8 different carbon prices, different revenues to states given  
9 the single carbon price.

10 I think clearly the market works best with a  
11 single carbon price across the footprint. Having different  
12 carbon prices in different states would create a range of  
13 issues, but there are revenue redistribution mechanisms if  
14 the states chose to go that way and agree on it, that could  
15 solve that problem.

16 And just on the revenue adequacy issue that keeps  
17 getting raised. I believe that the current market  
18 mechanisms will work appropriately if you have a carbon  
19 price and you need more revenue and that ends up resulting  
20 in both an offsetting increase in the energy prices, and  
21 carbon price, but a reduction in energy price as a result of  
22 the further integration of renewables is the capacity  
23 market design if it does the energy offset properly, it will  
24 appropriately compensate those flexible resources that we  
25 need. Thank you.

1           COMMISSIONER GLICK: I agree. You might be able  
2 to say that there is a price suppressant effect, but that's  
3 an argument for another day. If I can just touch on what  
4 Mr. van Welie said and actually something you mentioned  
5 earlier Mr. Dewey, and I think obviously PJM is just as  
6 interested Doctor Bowring, right?

7           And that is on resource adequacy. I agree that  
8 we have an issue. And we're clearly going to need much more  
9 flexibility and we're going to need more flexible resources  
10 at least available as we grow to more intermittent  
11 generation. And that's not -- it doesn't take a genius to  
12 recognize that.

13           I think the issue is where we're kind of stuck in  
14 this box of energy markets and capacity markets, and that  
15 we're constantly tinkering with those particular markets.  
16 Not necessarily achieving the goals that we want in terms of  
17 availability and access to flexible resources.

18           So I understand this is more of an argument for  
19 another day, but I think we -- well it would be helpful to  
20 have a broader dialogue about how to address those resource  
21 adequacy issues outside of the carbon pricing mechanism, or  
22 state public policies in clean energy.

23           But nonetheless, it's a tough one that needs  
24 attending to. I'm sorry John, is there anyone else who  
25 wants to respond before I ask my next question?

1           MR. MILLER: I see a few hands here. Forgive me.  
2   Some of the hands were lowered. So Professor Wolak, I see  
3   your hand is raised, do you have something to respond to?

4           MR. WOLAK: I just wanted to wholeheartedly  
5   endorse what Commissioner Glick just said in the sense that  
6   I think long-term resource adequacy is long-term overdue in  
7   terms of revisiting in this new world. So particularly,  
8   given the intermittency of the energy in the sense of we're  
9   in a world where really the shortfall you're worried about  
10   is we learned in California in August '14-'15, it's not  
11   having adequate capacity to meet demand.

12           It's having adequate energy when you need it.  
13   And the construct that respects that is certainly I think  
14   necessary.

15           MR. MILLER: Thank you Professor Wolak.  
16   Commissioner Glick, there are no other panelists I the  
17   queue.

18           COMMISSIONER GLICK: Okay. I appreciate that.  
19   Let me go on to my next question. And I won't extend this  
20   much further, but I was hoping that all the panelists could  
21   address this because as we mentioned earlier in the first  
22   panel, we are going to be asked if when states or RTOs, RTOs  
23   in particular, come to us with a 205 filing, we're going to  
24   be asked to opine on whether the pricing mechanism that's  
25   proposed is just and reasonable and not unduly

1 discriminatory or preferential.

2           And I'm wondering if you all, each of you, have  
3 any thoughts on what we should look for in determining  
4 whether the carbon mechanism -- the carbon pricing mechanism  
5 is just and reasonable and not unduly discriminatory.

6           MR. MILLER: Commissioner Glick. I see that Mr.  
7 Dewey's hand is raised.

8           MR. DEWEY: Yeah, thank you Commissioner. Real  
9 quick on your last question. I tried to put my hand up and  
10 I realized I put it down. But when you talk about resource  
11 adequacy, one of the plugs I want to put in is you know, we  
12 tend to fall into the trap sometimes of thinking of resource  
13 adequacy as a capacity market problem and revenue for  
14 renewables is an energy market problem.

15           And really you got to look at all of it in  
16 aggregate. And I think that we need to turn the  
17 conversation in that direction. If we had you know, the  
18 discussion on resource adequacy, carbon pricing is a very  
19 effective means to attract the kind of investment that  
20 renewable developers will be looking for. It also provides  
21 incentives for some of the traditional resources to make  
22 improvements that reduce their emissions, and it also  
23 provides revenue for some of those plants to be able to  
24 provide those essential resources that Gordon van Welie  
25 talked about.

1           So we really have to start expanding the  
2 conversation about resource adequacy to also look at the  
3 energy markets and carbon pricing has really got to be a  
4 part of that discussion. So I think that that is an  
5 important piece, and I just wanted to add that to your last  
6 question.

7           Regarding just and reasonable, you know we look  
8 at this at least in New York, you know, based on the policy  
9 and the investments. These resources are coming. You know,  
10 these renewable resources are coming.

11                   And to the extent that we can  
12 really focus on what we believe to be the most important  
13 element of markets, which is keeping the most cost effective  
14 and efficient market outcomes, incorporating the price into  
15 the energy markets, optimizing the dispatch to include these  
16 resources.

17           Moving the risk that subsidies place on rate  
18 payers and moving that risk into the market and putting it  
19 on developers creates, you know, the most effective  
20 efficient market outcome that we could hope for. Carbon  
21 pricing does that more effectively. The most effectively,  
22 and we think that that results in a just and reasonable  
23 outcome.

24           And that's the basis by which we've been  
25 promoting that within New York, and that would be if we're



1 lucky enough to bring this to the Commission for  
2 consideration that will be the basis of our request.

3 MR. MILLER: Commissioner Glick, I have Gordon  
4 van Welie, forgive me. Devin Hartman next in the queue.

5 MR. HARTMAN: I'll respond to both a note on the  
6 prior question as well as getting into the second one. So  
7 first off, I can't help but note that the carbon pricing  
8 instrument choice conversation and the future resource  
9 adequacy discussion has one big thing in common. And  
10 that's whether we're going to trust price signals to drive  
11 voluntary behavioral change. And that price instrument can  
12 be more efficient.

13 Or do we need to fall back on a quantity  
14 instrument? And as we've seen in the 49 states do a form of  
15 capacity planning largely because it provides a safety net  
16 to know that there are just enough resources. Similarly, a  
17 lot of the discussion, at least federally, and with a lot of  
18 leading climate groups has been a strong preference for  
19 quantity instruments because it provides again, that  
20 emissions reduction guarantee.

21 So a big question we have going forward is if we  
22 do see advantages of price instruments, are we going to be  
23 able to build the type of confidence level with stakeholders  
24 that price signals work and get the job done? And so I'll  
25 leave that one open-ended here.

1           But getting into the second question. I think  
2   you know, in a hypothetical sticky points 205 filing  
3   scenario down the road, what are some key considerations on  
4   the evaluation side to look at. I think one is how do we  
5   define economic efficiency? And divide that into two areas.  
6   Are we just looking sort of myopically at the performance  
7   affects within one region's wholesale electricity market?

8           Are we looking at that same industry but at  
9   across neighboring regions as well? And that may be a legal  
10   question under the tariff. Or do we also factor in how that  
11   type of mechanism affects the broad economic activity, both  
12   within outside just that particular wholesale electric  
13   industry.

14           And that's going to be very tricky going forward  
15   because you're going to see vastly different economic  
16   efficiency outcomes depending on how you even set that  
17   question up. And then secondarily, I think we start to also  
18   get into the question of how do you define the status quo?

19           A good way of looking at this is saying is this  
20   proposal an improvement upon the status quo. And that gets  
21   back to where you have different interactive effects in a  
22   region and state specific. And so how we set up that status  
23   quo, how we define that kind of factual, will have a big  
24   effect on the projected economic efficiencies in the  
25   proposal.

1           Some more food for thought on that one than  
2   specific solutions. Thank you.

3           MR. MILLER: Commissioner Glick, I have three  
4   more panelists in the queue. Would you like me to proceed?

5           COMMISSIONER GLICK: Yes please.

6           MR. MILLER: Okay. Mr. van Welie you're next.

7           MR. VAN WELIE: Commissioner Glick that's a great  
8   question. As I think about this question of how do you make  
9   a judgment on whether this is just and reasonable. I think  
10   the best outcome is for you to be given something that's  
11   pretty clean. So you know, the idea for Senator Whitehouse  
12   to be successful in his efforts in Congress, and to Roy  
13   Shanker's point, you're off the hook because you can  
14   basically declare it as just and reasonable.

15           I think a step down from that in the absence of  
16   federal legislation, I think the cleanest way is for the  
17   states to support putting some form of other pricing into  
18   the market, either through the mechanism they already have,  
19   or directly through our markets and we can create a  
20   governance mechanism around this that makes it clear that  
21   they're in control and not the ISO or the FERC.

22           So I think such a governing arrangement can be  
23   crafted. But I think short of the states supporting this, I  
24   think then you're on the slippery slope of having to make a  
25   judgment, and I'm sure there are many people more skilled

1     than me from a legal point of view, because I'm not a  
2     lawyer, that will be able to make arguments.

3             But my guess is that it all ends up in court. So  
4     I would prefer a clean submission to this and then if we  
5     can't find a clean submission, I think we're going to be  
6     stuck with the work arounds. So we have a set of work  
7     arounds today in the form of CASPR and MOPR. We could  
8     replace it with another set of work arounds, including  
9     perhaps a change in the resource adequacy mechanism.

10            But something has got to give and the clean  
11    energy transition is too important though, not to solve for  
12    both dimensions of the problem.

13            MR. MILLER: Thank you Mr. van Welie. Up next I  
14    have Doctor Bowring, go ahead please.

15            DR. BOWRING: Thanks. So when you think about  
16    the leakage issues, you really have to think about it  
17    globally. And even if we had a single carbon price in the  
18    United States there would still be leakage issues. So we're  
19    simply saying there are different elements here, so we're  
20    going down from the United States to perhaps an RTO wide  
21    carbon price.

22            So if as this Technical Conference contemplates  
23    there were state originated carbon price, then I think  
24    there's no question that it passes a 205 test. A 205 test  
25    is not that hard to pass. I don't think it's the position

1 of the RTO. I don't think it's the position of PJM to tell  
2 the states that they need to have a carbon price. I think  
3 it should come from the states if there's going to be a  
4 carbon price or from the federal government.

5 Again, not being a lawyer, I don't know what the  
6 likelihood of passing it to a 510 simply where PJM  
7 initiated, but that does not seem to me to be PJM's role to  
8 set that policy. That's clearly the state's role or the  
9 federal government's role. And if it came from either  
10 source, I think it would easily pass a 205 test, thanks.

11 MR. MILLER: Thank you Doctor Bowring. I have  
12 two more panelists in the queue, Mr. Olson?

13 MR. OLSON: I wanted to tie a couple of threads  
14 together quickly. We talked about resource adequacy. We've  
15 talked about energy, we talked about flexibility, we talked  
16 about attributes. But to me the energy and flexibility can  
17 be procured, can be addressed through the day ahead and real  
18 time markets that have operated by the RTOs across the  
19 country.

20 The capacity needs to be procured on a forward  
21 basis and we need robust capacity markets in order for that  
22 to happen to make sure that we have the resources available  
23 of when we need them the most. And I think the attributes  
24 today, need to be procured on a forward basis as well.

25 All the clean energy resources are capital

1 intensive. They have no operating costs, so some type of a  
2 forward revenue assurance has been necessary for those  
3 resources to enter the market. The benefit of a carbon  
4 price is that it could replace that long-term forward  
5 attribute with an hourly dispatch signal and if it's stable  
6 enough, then that by itself could be enough of a price  
7 signal to incent investment in wind and solar and other  
8 clean energy resources without this awkward forward  
9 attribute system that we have today.

10           So that to me, is one of the benefits of carbon  
11 pricing. I guess I'll just also note that even if we get  
12 there. Even if we have a carbon price across an entire  
13 market, that still won't get us out of the box of having to  
14 address voluntary actions by states or companies, Googles,  
15 Facebooks, that might place a higher price on carbon than  
16 how the market values it. You might still be in a place  
17 where you have resources that are supported through forward  
18 contracts that need to be forward in the market operations  
19 in a way that doesn't create distortions.

20           MR. MILLER: Thank you Mr. Olson. I also have  
21 Professor Wolak in the queue. Go ahead please.

22           MR. WOLAK: Yeah. I just wanted to get on to the  
23 issue of how do you make the determination that the carbon  
24 price is just and reasonable? And there I think that the  
25 simple principle that I think was consistent with the

1 previous panel, I think is very important, which is to the  
2 extent that this is a state-wide policy and the broader that  
3 it applies to the various sectors of the economy, I think  
4 the stronger the ground that you are in terms of declaring  
5 that this price is a price of carbon that is just and  
6 reasonable, because it is being subject to as many sectors  
7 of the economy as it is.

8           And the only other issue I think is the question  
9 of then you know, making how do you deal with imported  
10 electricity? And there I think, is where the rubber hits  
11 the road in terms of the legal side. But I also think that  
12 how widespread the carbon price is will also help in  
13 settling that dispute or assessing a carbon cost to  
14 electricity imports into your whole area.

15           MR. MILLER: Thank you Professor Wolak.  
16 Commissioner Glick we have no other panelists in the queue  
17 at this time.

18           COMMISSIONER GLICK: Thank you. I just want to  
19 thank everyone. I thought this was a really interesting  
20 panel and I appreciate everyone's participation and I'll  
21 turn it back to the Chairman.

22           CHAIRMAN CHATTERJEE: Thank you Commissioner  
23 Glick for the great questions. Thank you to all of our  
24 panelists for the outstanding dialogue. And with that I'll  
25 turn it back over to John.

1                   MR. MILLER: Thank you Mr. Chairman. We've  
2 reached the end of our time for the second panel, so I'd  
3 like to wrap up by again thanking our panelists. We  
4 appreciate your participation. We will now take an  
5 approximately one hour lunch break. We will begin the  
6 panel in a little over one hour. We will begin Panel 3 at  
7 1:30 p.m. Panel 2 panelists, please sign out of this WebEx  
8 meeting. If you would like to continue watching the  
9 Conference, you may use the public webcast link on our  
10 Conference event page at FERC.gov.

11                   For the Chairman, Commissioners and panelists for  
12 Panel 3 and the closing roundtable discussion that are  
13 listening, they should be online at 1:00 p.m. We will run  
14 through the technical logistics at that time to make sure  
15 that everyone has been able to connect. So with that we  
16 will begin our lunchbreak. Thank you.

17                   (Break)

18 Panel 3: Consideration for Market Design

19                   MR. MONCAYO: My name is Jorge Moncayo and I am  
20 from the Commission's Office of Energy Market Regulation. I  
21 will be moderating this afternoon's panels. For those of  
22 you tuning in for the first time today, I want to cover some  
23 logistics for the Conference.

24                   We will have two panels this afternoon. We will  
25 also have breaks in between and during panels as



1 appropriate. Only the Commissioners, panelists and a small  
2 group of Commission staff will have speaking roles this  
3 afternoon. This Conference is being webcast and  
4 transcribed. However, the Conference is not being recorded  
5 for future viewing.

6 And with those reminders out of the way, we will  
7 begin the first panel from this afternoon. This panel is  
8 entitled Consideration for Market Design. The panel is  
9 divided into two groups, each group will have approximately  
10 one hour and 15 minutes of discussion time.

11 I will call a 15 minute break between group one  
12 and group two. And as we begin group one, each panelist  
13 will have three minutes to give any opening remarks. After  
14 those remarks we will begin a question and answer session.  
15 And we remind all participants to refrain from any  
16 discussion of pending contested proceedings. If anyone  
17 engages in these kinds of discussions, a FERC staff member  
18 will interrupt the discussion to ask the speaker to go to  
19 another topic.

20 I will now call each panelist in turn to give  
21 their opening remarks. First up we have Anthony Giacomoni,  
22 Senior Market Strategist, Advanced Analytics at PJM  
23 Interconnection. Please go ahead Doctor Giacomoni.

24 DR. GIACOMONI: Thank you. I'd just like to  
25 thank the Commission's invitation to participate on this

1 panel. And I just have three brief comments that I'd like  
2 to share today. The first is that PJM fully supports the  
3 market based programs to achieve emissions reduction. These  
4 market based programs are the most efficient and cost  
5 effective means for achieving this reduction.

6           The second is just to reiterate a point that was  
7 mentioned already several times this morning that carbon  
8 pricing has already been impacting both the market outcomes  
9 in PJM for well over a decade now through the regional  
10 greenhouse gas initiative.

11           Since 2009, generators in states that participate  
12 in the RGGI program have been able to include the cost of  
13 emission allowances in their offers. And the third point is  
14 just in July of 2019, PJM started a task force as part of  
15 our stakeholder process to further explore this issue of  
16 leakage to all states that participate in carbon pricing  
17 programs and those that don't.

18           And as part of the task force, PJM conducted a  
19 study where we simulated several different carbon pricing  
20 scenarios. We also looked at some potential options for how  
21 we could mitigate leakage again between the two groups of  
22 states. All the results are publicly available on our  
23 website. And we are aware that all the results and analysis  
24 that we have performed to date is just a small set of a much  
25 larger set of analogies and decision points that should be

1 considered if policy makers want to move forward with  
2 individual or multi-state carbon pricing programs that want  
3 to mitigate leakage.

4           So again thank you for the invitation to  
5 participate on this panel and I'll turn it back over to  
6 Jorge.

7           MR. MONCAYO: Thank you Doctor Giacomoni. Next  
8 up we have Professor William Hogan, Raymond Plank Professor  
9 of Global Energy Policy at the John F. Kennedy School of  
10 Government at Harvard University. Please go ahead Professor  
11 Hogan.

12           MR. HOGAN: Thank you for the opportunity to  
13 participate. I filed comments previously which I would  
14 refer you to. I'm going to try to summarize some of the  
15 leading points without repeating everything that you've  
16 heard this morning in particular.

17           So first is that I agree with the almost  
18 unanimous opinion this morning that if we had efficient  
19 carbon pricing with the common price of carbon everywhere,  
20 then it would not require the RTOs or FERC to do anything.  
21 Just as we have already heard. That means that the reason  
22 we're here today to deal with this conversation is because  
23 of the problem of inconsistent, and therefore inefficient  
24 carbon pricing policies that differ across states or  
25 particular regions within a particular RTO.

1           And this can create collateral damage that would  
2   require help from the RTO if we were going to try to correct  
3   it or deal with it, or we could decide just to leave well  
4   enough alone. The Chairman this morning made an important  
5   distinction between emission leakage and economic leakage,  
6   and I think that was helpful. And the point that I would  
7   emphasize is to ask the Commission and everyone else to  
8   answer a few questions such as what are we trying to  
9   accomplish?

10           So if we have an inefficient pricing policy in  
11   the states, what do we want to fix? What goal are we  
12   seeking? An important part of that question is what's the  
13   counterfactual? So are we going to try to restore imports  
14   and exports to where they would be if we did not have carbon  
15   pricing? Or are we going to try and replicate what they  
16   would be if we had carbon pricing everywhere?

17           This matters a lot and the choice of those  
18   objectives on the design will be affected. This is  
19   illustrated in the PJM studies that Anthony mentioned  
20   earlier. I would cite the case, as I did in my pre-filed  
21   remarks, of California and its cap and trade program and  
22   the energy imbalance market, and I would say there that  
23   emission leakage turns out to be a problem that you want to  
24   try to fix. But if your objective is to replicate efficient  
25   carbon pricing, then resource shuffling, perfectly efficient

1 resource shuffling is actually a solution and not a problem,  
2 and not something that you have to fix.

3 I think there is a problem with the energy  
4 imbalance market is that in trying to moderate resource  
5 shuffling, it's actually creating discriminatory pricing  
6 schemes, but perhaps that's a topic we could pick up later  
7 in our discussion. Thank you.

8 MR. MONCAYO: Thank you Professor Hogan. Our  
9 next panelist is Rana Mukerji, Senior Vice President of  
10 Market Structures at New York Independent System Operator.  
11 Go ahead please Mr. Mukerji.

12 MR. MUKERJI: Thank you for the opportunity to  
13 participate in this Technical Conference. The New York ISO  
14 we have been working on carbon pricing since 2016. In 2019  
15 after nearly two years of deliberations with stakeholders,  
16 we presented a complete proposal on carbon pricing. The  
17 NYISO carbon pricing proposal has four key elements.

18 It incorporates a social cost of carbon into the  
19 wholesale energy markets and reflects the cost of carbon in  
20 the locational marginal prices. We then minimize the  
21 leakage by removing the carbon price effect from external  
22 transactions and reduce the carbon related charges to load  
23 serving entities in an equitable manner.

24 The objective of the NYISO carbon pricing  
25 proposal is to maintain the integrity of the wholesale

1 electric markets. Subsidies distort market signals.  
2 Incorporating a carbon price will preserve market signals  
3 and allow investment decisions to happen through the  
4 wholesale markets, rather than out of market action by  
5 states.

6 Carbon pricing has some additional features. It  
7 allows all resources whether they are conventional or  
8 renewable, to work collectively to reduce the carbon  
9 footprint of the entire generation fleet. A carbon price is  
10 better locational signals for renewable resources to site at  
11 the most beneficial spots in the system.

12 Most importantly, carbon pricing promotes  
13 innovation and provides incentives for development of low  
14 carbon technologies that may not yet exist. Carbon pricing  
15 enhances system reliability by improving price formation in  
16 the energy markets. This incents better resource  
17 performance in the real time.

18 Energy market prices enhanced by carbon pricing  
19 will provide greater incentives for flexible units such as  
20 fast start gas turbines, or energy units, energy storage  
21 units to provide ramping capability to meet the needs of a  
22 system with a high component of intermittent renewable  
23 generation.

24 Carbon price will also improve long-term market  
25 signals and system reliability by providing more energy

1 market revenues, carbon pricing helps to attract and redeem  
2 flexible market resources. At the same token, carbon  
3 pricing facilitates the exit of inflexible conventional  
4 resources which are ill suited to provide the ramping and  
5 other needed good services.

6           This helps to keep the system in balance and  
7 creates room for entry of flexible resources as well as  
8 additional renewable generation. By incorporating a carbon  
9 pricing, the transition of the grid to a small sustainable  
10 future, will be facilitated through markets rather than  
11 subsidies or other regulatory mechanisms.

12           This concludes my opening comments, thank you.

13           MR. MONCAYO: Thank you Mr. Mukerji. Our next  
14 panelist is Mark Rothleder, Vice President of Market Policy  
15 and Performance at California Independent System Operator.  
16 The floor is yours Mr. Rothleder.

17           MR. ROTHLEDER: Thank you, good afternoon  
18 Commissioners, FERC staff, other panelists as well as  
19 everyone attending the Technical Conference. My name is  
20 Mark Rothleder. Commissioners, thank you for hosting this  
21 type of a Conference and considering how to integrate carbon  
22 pricing into the ISO/RTO markets.

23           The California ISO has implemented market rules  
24 to recognize the cost of carbon in the dispatch of resources  
25 serving demand within the State of California. We are also

1 exploring means of incorporating an additional states carbon  
2 reduction programs into the wholesale markets. That effort  
3 depends in part on how states design their programs, and  
4 whether they can coordinate their programs across the  
5 region.

6 I think it is helpful to assess the issues we are  
7 going to discuss by considering two sets of objectives. The  
8 first objective is the objective of the ISO/RTO to reliably,  
9 efficiently, operate the grid. The second set of objectives  
10 are those objectives of the carbon reduction programs --  
11 emission reductions and accurate emissions accounting.

12 These two sets of objectives may not conflict.  
13 However, we may need to find a balance between them so that  
14 both can be achieved. In 2013 when the ISO implemented  
15 market rules to reflect price of carbon into its dispatch of  
16 internal generation and imports, we were able to align these  
17 objectives. Locational price was increased and reflected  
18 the cost of production -- cost of carbon in the dispatch.

19 In 2014, in the context of the western energy  
20 imbalance market, we operate a real time market across the  
21 region. And include states that have carbon reduction  
22 programs and states that do not. This paradigm makes it  
23 more difficult to achieve these sets of objectives. The  
24 market cannot impose a carbon price in areas where no carbon  
25 reduction program exists. But also allow for voluntary,



1 economic transfers of power between participating balancing  
2 areas.

3           Our market rules have done that in order to  
4 achieve an efficient dispatch in resources across the EIM  
5 regional footprint. An additional state carbon reduction  
6 program developed as -- I'm sorry, as additional state  
7 carbon reduction programs develop in the west, the balance  
8 between this efficient and reliable dispatch and accurate  
9 tracking of emissions may become even more challenging,  
10 especially if states insist on matching the environment  
11 attribute or resource to demand within its state.

12           This approach could constrain a market's ability  
13 to dispatch their resources, thereby undermining the  
14 economic opportunity or value of the dispatch across the  
15 geographical footprint. As we explore market design  
16 options, the carbon pricing we need to be cognizant of the  
17 challenges of how to balance the policy objectives in the  
18 wholesale market and carbon reduction programs.

19           I look forward to the discussion and the  
20 questions in this panel thank you.

21           MR. MONCAYO: Thank you Mr. Rothleder. Our final  
22 panelist is Matthew White, Chief Economist at ISO New  
23 England. Please go ahead Doctor White.

24           DR. WHITE: Good afternoon Mr. Chairman,  
25 Commissioners, Commission staff. Thank you for the

1 opportunity to participate today. I'm sure to be honest,  
2 the Commission will find it no surprise at all to hear yet  
3 another economist observe if we're going to de-carbonize the  
4 power sector, pricing carbon emissions can be simple, could  
5 be transparent and could be cost effective.

6           And I'd highlight equally importantly, given this  
7 morning's discussion, it can work quite harmoniously with  
8 the wholesale power markets. To see this you don't need to  
9 rely on economic theory, you can look no further than our  
10 nation's experience with the sulfur dioxide market and how  
11 that priced emissions over the last three decades.

12           That program has effectively curbed our regions  
13 acid rain problem as it did throughout much of the United  
14 States. It has done so at far lower cost than policy makers  
15 anticipated, and it presented no impediments to the nation's  
16 electricity markets, nor to my knowledge, to the system's  
17 reliability.

18           The second point I'd like to highlight today is  
19 that from a practical standpoint, ISO New England can  
20 certainly implement in the sense of that administrator,  
21 excuse me, of carbon pricing across our footprint. While  
22 you will hear much discussion today about the complexities  
23 of issues of leakage, at the end of the day carbon pricing  
24 really comes down to doing two simple things well --  
25 measuring what power plants put out and settling payments

1 based on that output.

2 Those are two data intensive activities that have  
3 to get done in real time, which ISOs are very well suited to  
4 executing on a routine basis. After all we do stuff that is  
5 extremely similar to that in the energy markets every five  
6 minutes and have done so for more than two decades.

7 My final point, and perhaps most importantly  
8 today, is that ultimately we can have electricity that as  
9 policy makers tell us they want it to be clean, they want it  
10 to be reliable, and they want it to be cost effective. But  
11 in my thinking, we have to be smart about how we do this.

12 The recent experience in California this summer  
13 has highlighted the importance of making sure that we attend  
14 to the system's reliability and its resource adequacy as we  
15 transition to a system that's much more low carbon  
16 intensity.

17 And in New England, the path we're  
18 presently on where the states are increasingly sponsoring  
19 the development of renewable resources throughout our market  
20 contracts, while the minimum offer price rules in our  
21 capacity market are often precluding their market  
22 participation, is leading us to a situation that I think  
23 everyone agrees does not well align and certainly does not  
24 harmoniously align state policies with the wholesale  
25 markets.

1           In short, the current state of affairs in the  
2 path we're on without carbon pricing is not simple. It is  
3 not transparent. And it will ultimately cost New England  
4 consumers far more than necessary. Fortunately, I want to  
5 conclude on the positive note that there is a better path,  
6 and I applaud the Commission for this Conference today for  
7 initially exploring it.

8           As I noted, we can have energy that is clean,  
9 reliable and cost effective if we're smart about how we do  
10 it. And as I'm sure this panel will explore from the  
11 standpoint of reducing carbon in a manner consistent with  
12 sound market design, the smartest path is to implement  
13 carbon pricing. I look forward to the Commission's  
14 questions and thank you for your time today.

15           MR. MONCAYO: Thank you Doctor White and thanks  
16 again to all panelists. We will now begin the question and  
17 answer session. If a panelist would like to answer a  
18 question, please use the WebEx raise hand function.  
19 Alternatively, if you are having issues with the raise hand  
20 function, please turn on your microphone and indicate that  
21 you would like to respond.

22           I will call on panelists that indicate that they  
23 would like to respond in turn. Once I do so, please turn on  
24 your microphone and respond to the question. When you have  
25 completed your answer, please turn off your microphone and

1 lower your virtual hand. We will now turn it over to the  
2 Commission for their questions. Please go ahead Mr.  
3 Chairman.

4 CHAIRMAN CHATTERJEE: Thank you and thank you to  
5 all the panelists for being here today and for your written  
6 and oral testimony. I want to start by asking a question  
7 that I'll open up to all the panelists, so please just raise  
8 your hand so the moderator can turn to you.

9 What are the common design  
10 features necessary to accommodate or integrate state set  
11 carbon pricing in the RTO or ISO markets? For instance will  
12 all possible market designs require the applicable carbon  
13 price to be reflected in a default energy bids or cost based  
14 offer under existing power mitigation frameworks, or will  
15 all possible market designs need to account for leakage?  
16 Open that up to any of the panelists who wish to weigh in.

17 MR. MONCAYO: If you would like to respond, just  
18 please raise your virtual hand and I'll call on you in  
19 order. Okay I see Mr. Rana Mukerji, you were first, go  
20 ahead please.

21 MR. RANA MUKERJI: Chairman Chatterjee, yes there  
22 are some common elements. You have to put the social cost  
23 of carbon into the wholesale markets. And doing that  
24 reflects the cost of carbon in the locational marginal  
25 prices which underpin the energy market functions in the

1 ISO.

2           Now doing that, you have to account for leakage  
3 and there's for many of the single state ISO, the leakage  
4 problem is how do you value the carbon component of external  
5 transactions. So it's relatively simple for a single state  
6 ISO. It's more complex for a multi-state ISO, but my  
7 colleagues are working on it. It's not an intractable  
8 problem.

9           But you have to manage leakage. There's not  
10 perfect way of managing leakage, but you can minimize the  
11 effect of leakage at your borders. And the fourth component  
12 is that you have to -- since you are adding a carbon  
13 component, the location and marginal prices increase. So  
14 you have -- and what you're charging the generators as a  
15 carbon component, you have to take it and reduce the load  
16 serving entities portion of the carbon charge by equitable  
17 amount.

18           So there are different ways of doing that and we  
19 in New York have investigated four different approaches and  
20 we came to an approach which essentially puts the same  
21 percent of the carbon component from at different load  
22 serving entities, so that upstate New York, which is clean,  
23 gets a relatively smaller component than down state which  
24 has a higher carbon component, which has a higher  
25 emissions, so they get a higher component of the reduction.

1           We looked at four other -- three other  
2 mechanisms, but that was ascertained by the stakeholders to  
3 be the most equitable. So there is really there's some  
4 principles on allocating the carbon charge back to load  
5 serving entities, but the real question is what's equitable  
6 among different regions.

7           MR. MONCAYO:   We have three more panelists  
8 in the queue that would like to respond. Would you like me  
9 to proceed Chairman?

10          CHAIRMAN CHATTERJEE: Yes sir, thank you.

11          MR. MONCAYO:   Okay. Up next Mark Rothleder,  
12 please go ahead. You're still on mute. I'll unmute you.  
13 There you go, you're unmuted.

14          MR. ROTHLEDER: Great thank you. So I think some  
15 of the common areas as was mentioned earlier, having the  
16 price of the carbon reflect into the dispatch and the  
17 ultimate locational prices. And that is kind of fundamental  
18 because it allows, at least in the case of California, those  
19 resources that have compliance costs -- they will recover  
20 those costs through the efficient dispatch and pricing.

21          The pricing also allows the cost of the carbon to  
22 be reflected in the price that ultimately load ultimately  
23 pays. In terms of the leakage, I think we have to cognizant  
24 and try to account for the leakage, and as discussed  
25 earlier, try to minimize the leak it affects. And I think

1 in the California ISO experience with before the energy  
2 imbalance market, we basically import transactions were  
3 handled where the imports could incorporate their costs of  
4 carbon into their energy bid price, and they would have a  
5 compliance obligation to the California Resources Board for  
6 serving load in California.

7 Under the energy imbalance market, we did it  
8 under resource specific basis, but the complexity there then  
9 becomes those resources could be serving load in California  
10 or outside of California in the footprint and so we needed  
11 to account for that and so it provided a mechanism for it as  
12 an adder to be accounted for that carbon.

13 The fact that you have different mechanisms, or  
14 different programs which are accounting for, some are not,  
15 can then provide the potential for leakage. And what we've  
16 tried to do was minimize the potential, but not eliminate  
17 that potential for leakage, and try to account for that  
18 leakage amount. And so that's I think, probably a mechanism  
19 or a fundamental item that would be necessary as trying to  
20 account for that leakage. Thank you.

21 MR. MONCAYO: Thank you. Up next we have  
22 Professor Hogan.

23 MR. HOGAN: I think I endorsed the comments you  
24 just heard. I would add one more issue that the Commission  
25 should be alert to which again goes back to what are you



1   trying to accomplish. So suppose what you're trying to  
2   accomplish is to accommodate carbon pricing with an eye  
3   towards eventually everybody moving to a common price and  
4   you don't have to worry about the leakage anymore.

5               And this suggested the form of the policies that  
6   we're dealing with leakage should be focused on these price  
7   issues and not for example, on quantities of imports or  
8   where the imports are coming from and all that kind of  
9   stuff. So if you have one state within an RTO that doesn't  
10   have a carbon price, there's a border between them and the  
11   others, and then they join. And now that border  
12   disappears, and the border becomes between the newly formed  
13   organization and they're going to have a different price  
14   story.

15              And you want to have that dynamic capability so  
16   that you don't end up actually working across purposes of  
17   efficient carbon pricing in the long run.

18              MR. MONCAYO: Thank you Professor Hogan. Up next  
19   is Doctor White.

20              DR. WHITE: Good afternoon Mr. Chairman. I would  
21   highlight a few brief points on your question. In terms of  
22   essential design features that I would expect would be  
23   common everywhere, one is a carbon emissions price that is  
24   high enough to reflect its cost to society, and ideally to  
25   drive emission reductions consistent with the government's

1 policy objectives.

2           Second is a uniform carbon price. I think a  
3 theme that came across very clearly in the morning panel.  
4 Certainly for New England we would think it would be  
5 essential for it to be common across all six states. We  
6 have that presently with RGGI with the basic renewable  
7 energy certificate system, although that serves a slightly  
8 different purpose.

9           The uniformity of the carbon price across the  
10 full ISO/RTO footprint is critical to prevent internal  
11 leakage, which could otherwise be a very significant concern  
12 and really undermine the entire objectives of the carbon  
13 pricing.

14           To your specific question, you asked would it  
15 require incorporating essentially the cost of the fees of  
16 carbon emissions into sellers offers? I would suggest that  
17 is by far the simplest and most practical way to do this.  
18 There may be other ways to do it, but I think they would be  
19 complex. And they have not been pursued to my knowledge yet  
20 anywhere to date.

21           You also asked is it necessary to account for  
22 leakage? And I'm glad you asked that because that is a  
23 particularly important question. The short answer is no, it  
24 isn't strictly necessary everywhere. It depends ultimately  
25 on the resource mix. And the simplest way to see that is to

1 consider two regions where a region imposes a carbon price  
2 that its neighbor doesn't.

3 But the region that has the carbon price has all  
4 of the higher emitting resources. In that case there may be  
5 a little leakage that's of no concern, because the leakage  
6 would go to the region that's already cleaner anyway. This  
7 is a point that I must readily acknowledge was elaborated in  
8 more detail in Doctor Hogan's comments for this panel, and  
9 so I would certainly honor his observations on this point as  
10 well. Thank you.

11 MR. MONCAYO: Mr. Chairman there are no other  
12 panelists in the queue.

13 CHAIRMAN CHATTERMAN: Yeah thank you. Moving on  
14 to my next question. And again I will open this up to any  
15 panelist that wishes to weigh in. Are there fundamental  
16 differences in market design that arise from a state  
17 administered carbon price versus an RTO/ISO administered  
18 one?

19 For example, RGGI and the California cap and  
20 trade program, those are state administered carbon pricing  
21 mechanisms. How do they compare to New York ISO's proposed  
22 carbon pricing mechanism representing an RTO/ISO  
23 administered one? And again I open that up to any of the  
24 panelists.

25 MR. MONCAYO: Up first we have Rana Mukerji if

1     you would like to respond please go ahead.

2                 MR. MUKERJI:   Just a clarification.   The New York  
3     carbon price that we intend to use will be set by the state.  
4     So again, so it's not an ISO/RTO driven carbon price.   It is  
5     going to be a price that is established by the state.  
6     However, as I think some of my colleagues referred to, is  
7     that the price has to be high enough to facilitate the  
8     actual -- to achieve the carbon reductions that one aspires  
9     to with carbon pricing.

10                MR. MONCAYO:   Doctor White, I believe you're  
11     second if you would like to go ahead please.

12                DR. WHITE:   Thank you.   Mr. Chairman, I think the  
13     short high level answer to your question is no.   There are  
14     not fundamental differences between the two.   Both can be  
15     made to work.   Like all economists however, I will offer my  
16     other hand, which is if you get into the details, there are  
17     some differences and it can be more complex if you have the  
18     state administrating it rather than the whole thing done by  
19     an RTO with respect to measurement issues.

20                This can get wacky fast, so I'll give you just a  
21     simple high level example to illustrate the issue.   In New  
22     England, the renewable energy certificate system operates  
23     under the auspices of the states.   Renewable generators in  
24     New York can produce renewable energy and meet the  
25     requirements for example, of Massachusetts.

1           There is a private company who actually  
2 administers that on behalf of the states, but that private  
3 company doesn't directly have access to the information at  
4 the seams they need to track certificates and power flows  
5 across the boundaries across a footprint. They rely upon us  
6 for certain information sharing provisions to affect that  
7 state administered provision.

8           We've been doing this for many, many years,  
9 essentially as an information service, because we as the ISO  
10 see what's at the boundary and what's flowing I the tags and  
11 everything that goes with it which is necessary to make sure  
12 that the money that REC's is designed to direct to different  
13 resources, goes to the right place.

14           And my high level point is in the details, if  
15 it's done by a state and state administered, there's likely  
16 to be needs for some information sharing between an RTO and  
17 the administrator to make sure everything gets measured  
18 correctly. But beyond that, that is more a matter of  
19 measurement and tracking and not so much a matter of market  
20 design. So at a high level, I don't see the designs as  
21 being fundamentally different.

22           I would also note as my comments are designed to  
23 convey, these are really not new issues. These are issues  
24 that we have worked through in other contexts for more than  
25 a decade as part of the other programs that exist, so I

1 don't see any of these posing a fundamental challenge,  
2 meaning that if states chose to administer carbon pricing  
3 through an administrator of their selection that was not an  
4 RTO, I'm sure it could be made to work.

5 If they felt they wanted the RTO to do it, we're  
6 confident we could make it work. Thank you.

7 MR. MONCAYO: Thank you Doctor Giacomoni is up  
8 next if you would like to go ahead.

9 DR. GIACOMONI: Sure. Thank you. Yes I agree  
10 with everything Doctor White said. And I'd just like to  
11 point out some distinctions between inter ISO leakage and  
12 sort of intra ISO leakage. New York in their proposal, have  
13 dealt with sort of the inter ISO leakage because they are a  
14 single state and the price applied across the entire region.  
15 They don't have the same issues to deal with the sort of  
16 intra ISO leakage that would be a big issue for PJM if a  
17 carbon price, or border adjustments are applied, just  
18 between the states in PJM that have a concise and those that  
19 don't.

20 So you have this added complexity between this  
21 intra ISO leakage versus the inter ISO leakage. And both  
22 have to be handled differently because of the fundamental  
23 nature of the economic dispatch. We dispatch across the  
24 entire ISO in one integrated dispatch. We do not handle  
25 external transactions in the same manner and so a different

1 sort of mechanism is needed for leakage between ISOs.

2 And so I think that's an important distinction  
3 that needs to be considered.

4 MR. MONCAYO: Thank you, Professor Hogan if you  
5 would like to go ahead.

6 MR. HOGAN: The existence of RGGI is prima facie  
7 evidence that this is not an electricity market design  
8 problem as several people have said that can be  
9 accommodated. But I would endorse the comments this morning  
10 from Frank Wolak about the choice between cap and trade  
11 versus setting carbon prices and all of the uncertainty  
12 problems associated with it and much better in my view to do  
13 as he said, to focus on the carbon price, not to have a cap  
14 and trade program, you have a choice.

15 MR. MONCAYO: We have one more hand raised by  
16 Mark Rothleder if you would like to respond.

17 MR. ROTHLEDER: I don't think -- well I think it  
18 goes to the statements earlier that if you're going to have  
19 a carbon price, one is having a common carbon price over the  
20 wider footprint of the dispatch would be better. To the  
21 extent you have different carbon prices, I think it's not a  
22 fundamental problem having different state carbon prices, I  
23 think the challenges there is if you have different  
24 compliance programs, and they are not linkable, such that  
25 an allowance is equal or can be traded between the areas.

1           And if we have to start getting into matters of  
2   determining where does energy go and where does it -- what  
3   load is being served by what resources, that's where I think  
4   the complexity and the potential complications start to  
5   arise with regards to different programs. But having a  
6   state price, even different state prices, is not  
7   fundamentally a problem. It's having different programs  
8   that are not coordinated and linkable across the market  
9   region.

10           MR. MONCAYO: Thank you. Mr. Chairman there are  
11   no panelists in the queue.

12           CHAIRMAN CHATTERJEE: Thank you all. I've been  
13   pretty vocal, and I mentioned in my remarks this morning  
14   that I very much view this conversation in line with my  
15   belief in the importance of competition and competitiveness  
16   in our markets. And so I have to ask could carbon pricing  
17   have an impact on the competitiveness of the RTO/ISO markets  
18   and are there additional factors that need to be considered  
19   to ensure a competitive market? And I open that up to all  
20   of you.

21           MR. MONCAYO: Professor Hogan I think you were  
22   the first one.

23           MR. HOGAN: Well my pre-filed comments, I gave  
24   you my top three categories of things that should be  
25   attended to by the Commission in order to improve efficiency



1 in competitive electricity markets. And I would turn you to  
2 that. The list is not unusual, and it's something the  
3 Commission already knows about and is working on. So we're  
4 going in the right direction.

5 Scarcity pricing, in intertemporal melting period  
6 and so on. So those are critical and important issues. And  
7 frankly, I think if you get carbon pricing as opposed to the  
8 extent that it replaces some of these out of market mandates  
9 and all the other kinds of things that are going on, or  
10 making them less important, that improves competition, it  
11 improves efficiency across the board and that would be  
12 helpful, but that's a much bigger problem. A problem that  
13 requires another technical conference.

14 MR. MONCAYO: Thank you Professor. Mr. Mukerji  
15 if you would like to go ahead.

16 MR. MUKERJI: So the two main areas of revenues  
17 in our markets are the energy and ancillary service markets  
18 and the capacity markets. As a system moves to a  
19 sustainable grid with more intermittency, the New York ISO  
20 view the energy market is the more important market  
21 component to enhance. Because when you value flexibility in  
22 the market, and Doctor Hogan has expounded that widely that  
23 you know, having more scarcity and shortage pricing  
24 throughout ORDC, operating reserve demand curve, enhances  
25 the market signals.

1           And if you add carbon to that, it adds as another  
2 dimension to the energy market which gets better price  
3 formation in the energy market, so it allows resources to  
4 respond to the real time needs of the system, so that  
5 resources can provide the ramping and the load following  
6 services that is needed to balance the intermittency of the  
7 renewable resources.

8           Even longer term the inefficient inflexible units  
9 also are less competitive and the carbon pricing provides an  
10 efficient mechanism for them to exit. So it keeps the  
11 system in balance by attracting the kind of resources that  
12 the system needs going into more of a renewable grid, and it  
13 certainly enhanced price formation. So I think carbon  
14 pricing is a very important part of the tool kit as we  
15 transition to a more renewable grid.

16           MR. MONCAYO: Thank you. I believe Doctor  
17 Giacomoni is up next. Okay. Sorry to hear you lowered your  
18 hand. Yet I believe Doctor White did you want to respond  
19 there?

20           DR. WHITE: Yeah thank you Jorge. Thank you Mr.  
21 Chairman. I think the answer to your question is an  
22 unequivocal yes, it can enhance competition. But here I  
23 think fundamentally the more important dimension is not the  
24 day to day or hour to hour competition, but it's competition  
25 of a longer timeframe by spurring better investment. It's

1    been highlighted this morning that stable transparent prices  
2    facilitate investment in competitive markets.

3               I suspect you will hear from panelists late  
4    today, later today, or at least some of them will certainly  
5    agree that that would certainly help their decisions when  
6    they are making the billion dollar decision on what to  
7    invest in. Our transparent carbon price not only facilitates  
8    investment from non-emitting resources, obviously they would  
9    stand to gain financially from it, but also from emitting  
10   resources.

11             The problem is if you don't have a substantial  
12   and stable carbon price, investors in new generation  
13   facilities face tremendous risk right now over their future  
14   costs of carbon compliance, and the highly uncertain impact  
15   of ever more renewables when most of those renewables are  
16   coming from state policies that could change from year to  
17   year as state budgets move around.

18             Figuring out how to manage the financial risk of  
19   future carbon compliance for developers and new flexible  
20   generation for modern combined cycles is a significant  
21   financial challenge. In contrast, if we have a carbon  
22   price, and particularly done the way Doctor Hogan and Doctor  
23   Wolak mentioned, where it is done as a carbon price, not as  
24   a cap and trade system, that will give everyone a stable  
25   signal. Hopefully, a stable signal for many years on

1 exactly what will be their cost of regulatory compliance  
2 with carbon.

3           And in the investment banking world, that  
4 facilitates finance. It reduces investors' uncertainty and  
5 both of those ultimately lower the cost to consumers of  
6 procuring the resources that we'll need to have a reliable  
7 power system for the future. So I would highlight to you  
8 Mr. Chairman, the central role of stable pricing in reducing  
9 risk of future regulatory compliance, facilitating it with  
10 this as the fundamental vehicles that will help ensure  
11 competition in our jurisdictional markets for the long term.

12           MR. MONCAYO: I believe I see a hand raised from  
13 Mr. Rothleder if you would like to respond.

14           MR. ROTHLEDER: I largely agree with what was  
15 just said. I think the having carbon pricing does provide a  
16 competitive signal to resources. It provides a longer term  
17 signal to the types of the resources that you want to  
18 transition to. And it allows you to efficiently dispatch  
19 and invest in those resources that have the capabilities  
20 that you need.

21           I think the challenge there where it can be  
22 challenging to competition, is to the extent you do not have  
23 coordinated or different programs across a regional  
24 footprint and there it could get in the way or become a  
25 barrier to competition across the region. But not the

1 carbon pricing itself -- that's a bit different mechanism  
2 than the interaction between other mechanisms. Thanks.

3 MR. MONCAYO: I don't see any other hands raised  
4 Mr. Chairman.

5 CHAIRMAN CHATTERJEE: Thank you. Moving on I  
6 just wanted to get you all's opinion as to what role carbon  
7 pricing will play in investment decisions, including an  
8 entry and exit of resources. Maybe Mr. White if you have an  
9 opinion there. If not, open it up to the panel.

10 DR. WHITE: Thank you for the question Mr.  
11 Chairman. I think there are a number of factors we can  
12 highlight. One that I think is important is that carbon  
13 pricing ultimately as I noted will benefit not the  
14 non-emitting units, but it will also tend to benefit our  
15 region's more efficient flexible and our low emitting  
16 resources, they're not presented renumerated, such as  
17 nuclear.

18 I highlight those in particular because as Gordon  
19 noted in this morning's panel, one of the challenges that we  
20 face going forward is as we get ever more renewables on our  
21 system, we need to make sure there are enough balancing  
22 resources in our system that we can meet consumer demand  
23 when the weather is uncooperative in New England, and the  
24 renewable resources can't provide energy.

25 We do not have the benefits of the sunshine of

1 southern California. We live in a place where it is cold and  
2 dark for much of the year. And while I love to ski here, it  
3 does mainly face a difficult challenge ensuring that the  
4 balancing resources can be utilized as much as we need them.  
5 They expect that the carbon pricing for all the reasons I  
6 noted earlier will help facilitate investment in those types  
7 of balancing resources as we move forward.

8           The other piece I would highlight on this issue  
9 is it gets to the tension that we face because today the  
10 increasing renewables are depressing the energy prices and  
11 putting greater financial pressure on the resources that we  
12 rely on for that purpose. Yet if we bring into this  
13 discussion carbon pricing, that will tend to increase the  
14 revenues for all resources in the energy market, even the  
15 ones -- the more efficient combined cycles that do have to  
16 pay an emissions fee, but nonetheless, will benefit from the  
17 higher prices overall because they are efficient resources.

18           That means they will require less revenue in the  
19 capacity market. As they require less revenue in the  
20 capacity market, the tensions of the MOPR fall because the  
21 total amount of missing money in our markets will fall. And  
22 as that happens, the price signals become clearer and the  
23 regulatory uncertainty over the rule that remain some of the  
24 most controversial aspects of our market design, ultimately  
25 the tappers should fall and that will help facilitate.

1 Thank you.

2 MR. MONCAYO: Mr. Rothleder I see that your hand  
3 is raise. Would you like to respond? I'll take you off  
4 mute. Thank you, I unmuted you.

5 MR. ROTHLEDER: Sorry. I would just agree with  
6 the notion that the carbon prices starts to shape the type  
7 of resources that you want. If you need flexible resources,  
8 I think it tries to paint a signal for innovation. And  
9 provides a mechanism for measuring if you're successful in  
10 trying to reduce the amount of carbon in the dispatch.

11 So we need to have resources obviously that are  
12 emitting to balance the system when the sun doesn't shine,  
13 or the wind doesn't blow. That's an obvious understanding.  
14 Going forward though, we need to see how we can get those  
15 capabilities from resources that may not be emitting or be  
16 emitting less. And I think as least having a carbon price  
17 and something that is trying to reduce the amount of carbon  
18 in the system and measure it, provides a signal for  
19 innovation to drive to flexible resources that are lower  
20 emitting, thank you.

21 MR. MONCAYO: Thank you Mr. Rothleder. I  
22 believe up next we have Professor Hogan.

23 MR. HOGAN: I think the term in question is very  
24 important and it actually connects to Order 2222 and  
25 distributed energy resources. So if you don't have prices

1 to send the signals out there, you have to have some other  
2 mechanism to deal with the things which substitute for  
3 carbon. And there are going to be thousands and thousands  
4 of different things with different characteristics and  
5 impacts on carbon that you and I have no idea what they all  
6 are.

7 And so but we do know that they all should face  
8 the same price as carbon. So the simplest way to do it is  
9 to have them face the same price as carbon and then you get  
10 all the advantage of markets and competition working for you  
11 without having to have the central knowledge about which  
12 resources are going to be supported and which ones are not.

13 MR. MONCAYO: That's all of the hands that I saw  
14 raised.

15 CHAIRMAN CHATTERJEE: Perfect. Well thank you  
16 all for tackling that. I just have one final question  
17 before I turn --

18 MR. MONCAYO: Sorry to interrupt, but I see Mr.  
19 Mukerji would like to respond.

20 CHAIRMAN CHATTERJEE: Absolutely.

21 MR. MUKERJI: I'm sorry I agree completely with  
22 Matt White and Professor Hogan and Mark. This you know,  
23 carbon pricing really promotes innovation. But New York  
24 State wants to be 100 percent carbon free by 2040. We don't  
25 know what technology you need to get to get to that state.



1     So carbon pricing gives you a uniform signal to all the  
2     carbon free fleet and also for new resources which do not  
3     yet exist.

4             It could be to get to 100 percent carbon free by  
5     2040, we need something like hydrogen powered gas turbines,  
6     or renewable natural gas or more efficient carbon  
7     sequestration. So having a uniform carbon price really  
8     helps to guide the market through innovation and new  
9     technologies. The other thing that happens is that without  
10    that, you get a steep directive of segments of technologies  
11    which are coming into the market without full market signals  
12    which subsidies destroyed the wholesale market signals to  
13    have the innovation to get to the system that the renewable  
14    system we need in the future, is a very valuable thing.

15            And this I would say that Professor Hogan's  
16    emphasis on energy markets through shortage pricing, coupled  
17    with carbon pricing, is a very, very powerful mechanism to  
18    get to the new world grids, to the wholesale markets rather  
19    than tying it to subsidies by states. Thank you.

20            CHAIRMAN CHATTERJEE: Thank you for that. Thank  
21    you to all the panelists. I just have one final question  
22    and it's a significant one. I want to bring the consumer  
23    into this conversation and ensure that we are cognizant of  
24    the impact to consumers. I know my friend Tyson Slocum, is  
25    likely watching and would appreciate some insight as to what

1    you all view are the key elements of RTO/ISO market design  
2    that have a consumer impact.

3               For example, can carbon pricing be implemented in  
4    the market design in a manner that protects consumers from  
5    double payments for environmental benefits. I will open  
6    that up to all of the panelists.

7               MR. MONCAYO: Mr. Mukerji I believe you were  
8    first this time. Please go ahead.

9               MR. MUKERJI: So we did some analysis. We did  
10   two major studies on our carbon pricing proposal. One is by  
11   Brattle Group, the other one through Analysis Group. And  
12   the question is what benefits, what's more efficient and  
13   what gets you more customer savings versus programs which  
14   are administered by the state?

15              We've seen that in both studies. It showed that  
16   carbon pricing is a much more efficient mechanism to get to  
17   the same objective. So the fact is that it costs money to  
18   transition the grid to a more renewable state. But doing it  
19   through carbon pricing makes it more efficient for a number  
20   of reasons.

21              One is that as Gordon mentioned, the state  
22   subsidies in New York we have RECS and ZECS which go down.  
23   And sometimes are not even necessary. And by the way they  
24   can coexist with carbon pricing. There are some directly --  
25   states have some directed objectives. For example, so many

1 megawatts of offshore wind. You may not get to that  
2 objective through a uniform carbon price.

3           So there is a place for RECS and ZECS to coexist  
4 with carbon price, but largely carbon price allows you to  
5 get the system in a much more efficient manner and we've  
6 seen there is especially the analyst group studies showed  
7 that there is significant consumer benefits compared to  
8 achieving the same goals than through the state subsidies.

9           We have two studies to back up what this very  
10 question -- what costs consumers less to get the same end  
11 state.

12           MR. MONCAYO: Thank you. Doctor Giacomoni if you  
13 would like to go ahead.

14           MR. HOGAN: Well in response to the Chairman's  
15 question. I'd be less worried about double payments for  
16 environmental benefits. It would be about payments and no  
17 environmental benefits. So subsidized renewables that are  
18 new, competing with subsidized renewables that are old and  
19 that aren't needed in order to deal with Department  
20 problems.

21           And at the margin we're currently seeing that  
22 happen already in places like California where many times  
23 during the day when the prices go down to zero, it's because  
24 the renewables are competing with each other, and that's not  
25 giving us any environmental benefits, but it is adding to

1 the bills in California. And that's a big problem that  
2 doesn't arise when you have carbon pricing.

3 MR. MONCAYO: Thank you Professor Hogan. Doctor  
4 Giacomoni would you like to go ahead.

5 DR. GIACOMONI: Yes. There's just one point that  
6 I wanted to bring up that we sort of found in our study that  
7 we performed in PJM and that's regarding sort of the costs  
8 or prices when you have a system wide carbon price versus a  
9 few states trying to take a lead to set an example, even  
10 with a very high carbon price.

11 And what we found that even if you apply a \$6.00  
12 for short-term carbon price across the entire PJM region,  
13 you get lower emissions and lower average pricing for all  
14 regions, even those that don't have the carbon price  
15 applied. And if you apply a \$25.00 carbon price to just the  
16 eastern half of the PJM region. And so even under that  
17 case, the consumers in the non-carbon region had higher  
18 average prices and again, a system-wide carbon price, which  
19 is far more efficient and cost-effective all consumers, not  
20 just those located in the carbon pricing region.

21 We saw similar results comparing a \$14.00 system  
22 wide price versus a \$50.00 for short-term carbon price in  
23 just the eastern half of the PJM region. So again,  
24 individual states can take the lead on this, but if you were  
25 looking at what's more sufficient for consumers, RTO wide

1 programs are by far the most cost-effective in effectively  
2 reducing emissions.

3 MR. MONCAYO: Thank you. I believe Doctor White  
4 I see a hand raised. Would you like to respond?

5 DR. WHITE: Certainly. Mr. Chairman, I would  
6 highlight several observations to inform your question.  
7 Carbon pricing can create a lot of direct benefits to  
8 consumers payments through several specific channels. One  
9 as noted, there ultimately will be carbon fees on generators  
10 that emit and that can directly offset the impact on  
11 consumers, reducing the cost of this fee, this policy  
12 substantially.

13 Second, in regions with renewable energy  
14 certificates, the cost of those certificates will plummet  
15 likely, with a substantial carbon price maybe to zero. That  
16 is a direct savings that flows through to consumers. Third,  
17 there's likely to be a substantial reduction, at least with  
18 a significant carbon price in both the cost of and the need  
19 for state directed renewables power purchase agreements  
20 priced in some sense above the market price, and those  
21 particularly when it gets to new technologies like offshore  
22 wind, can be quite expensive.

23 I'd highlight that third mechanism because it  
24 ties back to your question about the double payment. In New  
25 England, the statement about consumers double paying really

1 gets closer to the controversial issues surrounding the  
2 MOPR. It's viewed as consumers are currently paying for the  
3 costs of all the state directed resource procurements out of  
4 the market.

5           Then they pay again through the capacity market  
6 for all the resources that we need to ensure the system's  
7 reliability. And not many of the renewables necessarily  
8 count towards the reliability requirements because the MOPR  
9 precludes them. If carbon pricing allows those renewables  
10 to have enough revenue because of the value of the carbon  
11 free emissions they have, will now be compensated in the  
12 energy markets, there is no longer a need for above market  
13 contracts from the states.

14           Those prices would fall to a level where there's  
15 essentially no subsidy in them. There would then be no  
16 minimum offer applied to them. They would have a offer  
17 floor of zero. This isn't just hypothetical in New England  
18 for certain onshore wind facilities, they already, subject  
19 to the MOPR rule, get an offer floor of zero, because they  
20 are economic today. The technology has advanced that much.

21           If that happens to all of the types of  
22 technologies the states seek to pursue, there is no longer a  
23 need for the MOPR. The energy market with carbon pricing  
24 has solved that problem and the double payment that we hear  
25 much about in New England has been nicely solved in the

1 course by virtue of the carbon pricing. I would highlight  
2 those three elements -- carbon fees in generators,  
3 reduction of the cost of RECs, reduction in the cost of out  
4 of market contracts as all mechanisms that can ultimately  
5 generate considerable savings to consumers relative to the  
6 default path that we are presently on, thank you.

7 MR. MONCAYO: I don't see any raised anymore Mr.  
8 Chairman.

9 CHAIRMAN CHATTERJEE: I just want to thank all of  
10 you. Really truly outstanding content. You guys have given  
11 me a lot to think about there. And with that I will turn it  
12 over to my colleague, Commissioner Glick.

13 COMMISSIONER GLICK: Thank you Mr. Chairman. And  
14 I agree with everything you said about the panel, very  
15 interesting. I have a couple questions. I'm not talking  
16 about too many. I haven't many of mine Mr. Chairman. But  
17 I'm going to start with Professor Hogan. You had mentioned  
18 in your opening statement that I think you suggested that  
19 the EIM in California has discriminatory pricing  
20 structures. I was wondering if you could elaborate on that.

21 MR. HOGAN: Well this has been -- there's a lot  
22 that has gone back and forth on various designs and the  
23 basic focus on resource shuffling is to make sure that some  
24 renewable energy resources are that are otherwise similarly  
25 situated, are eligible to be exporters to California and

1     some are not.

2                   And it sounds discriminatory to me and it makes a  
3     big difference in terms of the money that flows to the  
4     renewable generators.  If you had as your counterfactual  
5     that you'd like the payments that everybody is getting to  
6     reflect what would happen if we had a common price -- carbon  
7     price everywhere, then those renewables with the zero cost  
8     resources would be getting all of the benefits and that  
9     would be a different outcome than the one you're actually  
10    observing.

11                   So the interventions to deal with resource  
12    shuffling are in order to impose discrimination.

13                   COMMISSIONER GLICK:  That's helpful.  So are you  
14    talking about the tier 1, tier 2, the different buckets?  I  
15    don't know where that came from.

16                   MR. HOGAN:  I don't remember the -- I'd have to  
17    go look and check the terminology again, but it's the basic  
18    fundamental problem of resource shuffling.

19                   COMMISSIONER GLICK:  Okay, thanks.  I think just  
20    to pick up where I think Mr. White left off a little bit in  
21    terms of -- and I know there's a lot of things we can't talk  
22    about related to the MOPR because there's a pending  
23    proceeding, so I don't want to get too far involved in that.  
24    But I'm a little confused because the discussion was that if  
25    we had a carbon price rather than these other state



1 policies, we'd reduced consumer costs.

2 And first of all I want to say I'm a big believer  
3 in carbon pricing, I think it's the best way to go. It's  
4 certainly the most efficient way to go if it's structured  
5 properly. But I'm a little confused because you know, one  
6 of the theories that the Commission and RTOs sometimes use  
7 in terms of pursuing MOPR type strategy the same when we're  
8 having these state policies are having price suppressive  
9 effects.

10 So how are we going to be -- how is it that these  
11 subsidies are causing consumers to pay too much when we're  
12 arguing that they actually cause consumers to pay too  
13 little? Mr. White?

14 DR. WHITE: Yes. I'm pausing on your last  
15 phrasing. Perhaps I can start with the beginning part of  
16 your question if I may. The core issue is one could thing  
17 of the capacity market as ultimately being the missing money  
18 market, right? That's sort of why it's there. And I would  
19 fully agree with the comment that both my colleague from New  
20 York, Rana and Bill Hogan said which is a combination  
21 implied, of carbon pricing plus improvements to energy  
22 scarcity pricing could substantially eliminate the need for  
23 missing money.

24 For most resources -- maybe for all. We don't  
25 know. That's an empirical question. But assuming that that

1 is the direction that we had, particularly through the  
2 carbon pricing, then the issue -- then there is no real  
3 reason to worry about price suppression in the capacity  
4 market because there's no missing money in the capacity  
5 market. And that's simply the logic I was pointing out.

6 COMMISSIONER GLICK: Does anyone else want to  
7 comment? Jorge, I guess is there anybody else?

8 MR. MONCAYO: Yeah, I don't see any raised  
9 hands.

10 MR. ROTHLEDER: Could I go back to the previous  
11 question about the discriminatory nature of I think the  
12 perspective that someone EIM is discriminatory? Because I  
13 have a different view of that because I think that we've  
14 tried to make the energy imbalance market to be  
15 non-discriminatory. In other words, resources that are  
16 serving load inside the carbon program footprint in  
17 California, they have been treated under the same rules in  
18 terms of carbon pricing regardless of whether you're a  
19 resource internal or external serving that load.

20 So we've attempted to make it as  
21 non-discriminatory as possible. I think what Doctor Hogan  
22 is referring to is that if you tried to maybe referring to  
23 maybe some designs that we were looking at, of looking at  
24 counterfactuals, or imposing some kind of generic default  
25 emissions rate across the interface, those potentially in

1 my view could be discriminatory because now you've got  
2 resources that are clean resources that are being exposed to  
3 a carbon price that they're not really emitting.

4 So this notion of somehow the EIM is somehow  
5 discriminatory in its nature, I guess I disagree with it and  
6 take exception to. That said, we do have to be careful  
7 about how we design and evolve things to avoid  
8 discriminatory outcomes.

9 And lastly, we have to recognize -- and as I've  
10 said in my opening comments, we have to recognize that we're  
11 operating over a footprint where a portion of the region has  
12 a carbon program and then other parts that are not. They  
13 were trying to be respectful as a carbon program, and then  
14 other parts that are not and we're trying to be respectful  
15 to that and know that the resources could be serving load in  
16 or outside that area, so I wanted to add to that, thank you  
17 Commissioner Glick.

18 COMMISSIONER GLICK: Jorge is there anybody else?

19 MR. MONCAYO: No. Nobody else in the queue.

20 COMMISSIONER GLICK: All right. Okay. Two other  
21 questions. First of all again, I want to point out that I  
22 am a big believe in carbon pricing. But there are some  
23 folks that argue some of the environmental community, some  
24 on the you know, concerned about climate change, that argue  
25 that carbon pricing may not be the right way to go.

1           Some of them are for cap and trade, some of the  
2 advocates and other policies. And one of the concerns I  
3 think they have is that if the government, whether it be at  
4 the state level, or at the federal level, were to pursue  
5 carbon pricing strategies that you know, due to political  
6 compromises and so on, carbon prices would be lower than  
7 what might be needed to reduce emissions significantly  
8 enough to impact climate change.

9           So my question is if in fact, there was some sort  
10 of uniform carbon price across a particular ISO or RTO, and  
11 that price was relatively low, what would the implications  
12 be for the market.

13           MR. MUNCAYO: I can see a hand from Mr. Mukerji  
14 if you would like to go ahead and respond.

15           MR. MUKERJI: So as I said that carbon pricing  
16 exists with other state programs. So if you -- carbon  
17 pricing is not achieving the outcomes that you need, you  
18 will need to do something else. This is just like we talked  
19 about the cap and trade programs such as RGGI, if the carbon  
20 price from RGGI is too low, then you have to have certain  
21 programs for wind, onshore wind, offshore wind storage. So  
22 the carbon pricing is not sufficient for the states to  
23 achieve the objectives they have to have other programs.

24           And carbon pricing can coexist with these  
25 programs because it's kind of a balance mechanism and brings

1 most of the investment decisions into the ISO markets rather  
2 than through the state directed programs.

3 MR. MUNCAYO: Professor Hogan would you like to  
4 go ahead.

5 MR. HOGAN: I think this is the elephant in the  
6 room and I think it's a very important question. And if the  
7 carbon price is too low then it doesn't meet the efficiency  
8 objectives, and doesn't internalize the impact on the  
9 climate. So that's why the social cost of carbon estimate  
10 is so important, and it's not easy to estimate that number,  
11 but it's not impossible.

12 And we've had government task forces in the past  
13 that have done them as well as you could do, and they have  
14 these various proposals and we've heard about them earlier  
15 today. But if you have the social cost of carbon and you've  
16 got your best estimate of it, then it defines what is  
17 enough. That's what you should do.

18 And if you're doing something which is materially  
19 more expensive than could be justified with the social cost  
20 of carbon, you can't justify it from the climate argument.  
21 Now you might have some other argument for trying to do it.  
22 And we could explore what those would be, but I don't think  
23 there's a fundamental disconnect from between the social  
24 cost of carbon estimates and they get to zero by Day X  
25 strategy. They're not consistent with each other, and

1     that's been a problem in the conversation for the last three  
2     decades and it continues.

3                 MR. MONCAYO:   Doctor White would you like to go  
4     ahead.

5                 DR. WHITE:   Yeah Commissioner I would simply  
6     note, sorry, you asked the impact of a relatively low carbon  
7     price, and I would simply know as a factual matter that's  
8     the status quo, at least in our region all six New England  
9     states are in RGGI.   RGGI most recently cleared medium  
10    single digits per ton, which is maybe an order of magnitude  
11    in the estimated social cost of carbon and by all studies  
12    far too little to drive the states longer term  
13    de-carbonization objectives.

14                I would summarize and answer the question as  
15    nothing changes if the carbon price stays too low, and it  
16    would be a lost opportunity in the sense of all of the  
17    controversies and the reasons we're here to debate this,  
18    would not really lend themselves to any new resolution if we  
19    don't take actions to have a higher carbon price.

20                That noted, I think there is often an aversion  
21    not so much to carbon pricing in the future, but to carbon  
22    pricing now.   And carbon pricing is a political reality, it  
23    doesn't have to be a big bang.   One can certainly have a  
24    graduated system of carbon pricing that escalates over time  
25    so that in a transparent way, to facilitate investment so

1     that people can see the higher price of carbon going forward  
2     can make adjustments in time to account for it.

3             And knowing that that's coming, we will help to  
4     solve a lot of the tensions that I highlight in my comments  
5     here today.

6             MR. MONCAYO: Thank you. I still see hands from  
7     Mr. Mukerji. I'm not sure if you would like to respond?  
8     No? Okay. I think that's all. No other panelists in the  
9     queue Commissioner.

10            COMMISSIONER GLICK: Okay great. Well one last  
11     question, a different direction. But I was just curious if  
12     -- this is for all the panelists, if any of you had any  
13     thoughts on the best approach for dealing with the revenue,  
14     or allocating the revenue generated from region-wide carbon  
15     pricing through the RTOs.

16            MR. MONCAYO: Okay. I see Mr. Mukerji would you  
17     like to respond.

18            MR. MUKERJI: So in our New York the stakeholder  
19     deliberations, we looked at four different mechanisms.  
20     Essentially, it's a settlement question. So generators have  
21     a carbon component in -- first of all you put a carbon  
22     component location of marginal prices goes up and reflects a  
23     carbon component. So if you did nothing, the loads see a  
24     higher location of marginal price.

25            But the generators also -- everything generators

1 can contribute to the load to the location of the marginal  
2 prices, but the generators don't get to keep the money. In  
3 the settlement we adjust the generators for the component,  
4 for limiting generators from the carbon component, and then  
5 we adjust the settlement for the load serving entities to  
6 give them relief for some of the increases in the locational  
7 marginal prices.

8           So now if you did the most simple, simple way to  
9 do it is to do it through a load ratio share. So if you  
10 have -- when you are doing the settlement for a month,  
11 whatever is the carbon charges which were given up by the  
12 generators, are then allocated by the loads, based on the  
13 load ratio shares of the load serving entities. We looked  
14 at maybe a uniform dollars per megawatt hours for the  
15 different load serving entities, or tried to equalize the  
16 person increase in their person increase in their locational  
17 marginal prices.

18           What we settled on is trying to level the carbon  
19 for each load serving entities, we would give them the same  
20 percent of their carbon component. For example, for upstate  
21 New York, which is relatively clean, and downstate New York,  
22 which has more of a carbon component, they have different  
23 carbon components, but they get the same percent of  
24 reduction.

25           So that essentially downstate will get a bigger



1 reduction on their -- on the load serving entities than the  
2 cleaner regions which already was lower cost because they  
3 have a lot of clean resources. So at the end of the day you  
4 have to do it on an equitable basis. There are different  
5 mechanisms we looked at it. And we had a lot of stakeholder  
6 discussions on the effects of the carbon adjustments in the  
7 settlements.

8           And this is where most of the stakeholders were  
9 -- it came down to this particular version. But I would say  
10 that other regions might come up with something different,  
11 but it has to be equitable for the load serving entities.

12           MR. MONCAYO: Thank you. Doctor White go ahead.  
13 Doctor White I think you're on mute. I'll unmute you. Yeah  
14 you're on mute.

15           DR. WHITE: Thank you so much I appreciate that.  
16 Commissioner, I would highlight two broad approaches, but  
17 note there are pros and cons to each, and I think in detail,  
18 that would benefit from a much more fulsome stakeholder  
19 discussion before anything was brought to your desk.

20           I would highlight one approach is simply to  
21 rebate all of the carbon feed revenue from generators to  
22 loads, to the wholesale buyers in our markets. We call that  
23 net carbon pricing. The benefits of that is it's very  
24 simple to do. And it's very clear to people and it would  
25 probably go the most towards addressing states concerns

1 about the net impact on consumer's bills.

2 I would also highlight that that is very similar  
3 to the disbursement of certain other revenue surpluses that  
4 the Commission has already approved in our tariff,  
5 particularly the distribution of marginal lost revenue is  
6 done essentially exactly that way, and that has been deemed  
7 just and reasonable.

8 It has a cost. It will tend to mute the price  
9 signals to the demand side of the market because consumers  
10 will not face the full cost of the carbon emissions to meet  
11 their loads at the margin during for example, peak hours of  
12 the day when emitting generator margin.

13 The other approach generally could be a lot more  
14 like what's used for the regional greenhouse gas initiatives  
15 where the carbon fee revenue is essentially -- doesn't go  
16 directly to wholesale buyers, but it goes to state directing  
17 carbon reducing activities, such as for example, energy  
18 efficiency investments. The benefit of that is that  
19 wholesale buyers and ultimately consumers, would face the  
20 full marginal price signal in real time associated with the  
21 carbon emissions to meet their loads.

22 The cost is it would probably be less effective  
23 in addressing the direct state concern about minimizing bill  
24 impacts on consumers in the first instance, especially with  
25 carbon pricing. And the other caveat to there is the

1 mechanics can become much more complicated because  
2 ultimately there has to be a chain of logic and a chain of  
3 cash, and a chain of tariff rules that allow the ISO to  
4 remit all those revenues to, for example, a state directed  
5 LSE, or to an energy efficiency provider, or to what other  
6 entity is ultimately affecting the state directed use of  
7 those funds.

8 I would highlight in closing, that I think  
9 there's enough pros and cons to these issues that as I noted  
10 it would benefit from a more fulsome discussion in our  
11 region, so everyone fully understands these tradeoffs. And  
12 in that we would very much look to the state for our  
13 guidance ultimately, on how they see the cost and benefits,  
14 as ultimately this is a cost allocation problem, and the ISO  
15 could administer any number of these things from a process  
16 standpoint. Thank you.

17 MR. MONCAYO: And finally we have Professor  
18 Hogan. Would you like to respond.

19 MR. HOGAN: Well this issue makes me nervous and  
20 I'm now more nervous than I was before having listened to  
21 not just hook on to, there's a cost which is muting the  
22 signal which would be really bad I think in the long run,  
23 particularly with distributed energy resources and  
24 everything else out there. And so the principal that you  
25 should be applying is to give the money back in a way that

1 is not affected -- the amount being paid to any individual  
2 decision maker is not being affected by their carbon  
3 decisions so that it's independent.

4 And so you could imagine, you know, in a simple  
5 way you could say we'll give every customer a check and the  
6 checks will be different in different regions, but they  
7 won't be affected by their energy consumption and their  
8 carbon emissions. That would be completely disconnected,  
9 but it would still have similar distributional affects.

10 But if you make the payments proportional to the  
11 carbon emissions then you've undone the whole point of the  
12 program for demand side participation, for distributed  
13 energy resources level, and that kind of stuff. And so you  
14 have to make sure you don't mute those signals. That's our  
15 problem. High marginal prices are part of the solution.  
16 Average prices I don't care about. It's the high marginal  
17 prices, that's what you want to focus on and give the money  
18 back as average price reductions, but don't change the  
19 marginal signal.

20 MR. MONCAYO: Thank you Professor. I see one  
21 more hand raised by Mr. Rothleder.

22 MR. ROTHLEDER: In California there's no  
23 allocation at the ISO level of any surplus revenues. The  
24 load pays effectively, the price that reflects the marginal  
25 price. And the resources are compensated inclusive of their

1 carbon price. Now, to the cap and trade program, they have  
2 to then by allowances and then allowances are -- do come  
3 back and are allocated to load serving entities, but from  
4 the ISO's perspective there is no allocation of revenues or  
5 surplus revenues if you want to call it.

6 And I think along with that it also helps send  
7 the right signal as Professor Hogan indicated. We also  
8 augment that with providing information transparency. If  
9 you go on our website you can see what the emissions rate is  
10 of the system, or the average emissions rate at any given  
11 time reflected above the resources that are actually being  
12 dispatched at that time.

13 And it contains a pattern where the highest load  
14 levels, you see higher emissions, average emissions rate  
15 and then when we're in low load, or excessive or surplus  
16 clean energy, we see a very low emissions rate. And so that  
17 also provides some signal or some information that can be  
18 used by the consumers or load serving entities to know when  
19 is a better time from a carbon perspective to consume or  
20 not. Thanks.

21 MR. MONCAYO: There are no other panelists  
22 Commissioner.

23 COMMISSIONER GLICK: Okay thanks Jorge. Thank  
24 you very much. Those are all my questions. I really  
25 appreciate the responses. Back to you Mr. Chairman, thank

1     you.

2                   CHAIRMAN CHATTERJEE:  Thank you Commissioner  
3     Glick.  What do you guys think, break or staff questions?  I  
4     leave that up to staff and the panelists.

5                   MR. MONCAYO:  I don't see any hands raised from  
6     staff.

7                   CHAIRMAN CHATTERJEE:  Maybe give them 30 seconds  
8     or so since I just sprung that on them.

9                   MR. MONCAYO:  Yeah right, we're considering.  
10    Yeah I don't believe staff has any questions, we can just go  
11    ahead and break.

12                  CHAIRMAN CHATTERJEE:  Okay.  Next panel, the next  
13    group is at 3:00 is that right?

14                  MR. MONCAYO:  Yeah that's right.  So we've  
15    reached the end of our time for Group 1 of this panel.  So  
16    we would like to conclude by thanking our panelists again,  
17    we appreciate your participation this afternoon.  So we'll  
18    take approximately a 10 minute break, reconvene at 3:00 p.m.  
19    Group 1 panelists please sign out of the WebEx meeting.  If  
20    you'd like to continue watching the Conference, you may use  
21    the public web display on the Conference, the page at  
22    FERC.gov.

23                  Commissioners and panelists from Group 2 and the  
24    closing roundtable please sign into WebEx on their break.  
25    Please mute your microphones and turn off your cameras until

1 we resume. Thank you.

2 (Break).

3 MR. MONCAYO: Before we start I would just like  
4 to make a quick announcement. If public users of the  
5 webcast are having issues watching the Technical Conference,  
6 please try refreshing the webcast on your browsers and see  
7 if that fixes the issue. But as we begin Group 2, each  
8 panelist will have three minutes to give any opening  
9 remarks. After those remarks, we will begin a question and  
10 answer session.

11 Let me just remind all participants to refrain  
12 from any discussion of pending contested proceedings. If  
13 anyone engages in these kinds of discussions a FERC staff  
14 member will interrupt the discussion to ask that the speaker  
15 avoid that topic. I will now call each panelist in turn to  
16 give their opening remarks. First up we have Clare  
17 Breidenich of the Carbon and Clean Energy Committee  
18 Director at Western Power Trading Forum. Please go ahead  
19 Miss Breidenich.

20 MS. BREIDENICH: Good afternoon. Thank you  
21 Chairman Chatterjee, Commissioners Danly and Glick, and  
22 staff for hosting this Conference and inviting me to  
23 participate.

24 The Western Power Trading Forum is pleased to  
25 provide our views on carbon pricing in organized wholesale

1 electricity markets and on the appropriate role of FERC in  
2 overseeing efforts of RTOs and ISOs in facilitating state  
3 carbon pricing programs.

4           WPTF considers a federal or regionally  
5 coordinated multi-sector carbon pricing program, such as cap  
6 and trade, to be the most cost-effective and efficient means  
7 of achieving greenhouse gas reduction. For the electric  
8 sector, carbon pricing aligns well with the operation of  
9 competitive electricity markets because it enables the cost  
10 of carbon to be factored into generator dispatch.

11           In the absence of federal regulation, carbon  
12 policies are appropriately the purview of state legislatures  
13 and environmental regulators -- not RTOs or ISOs. However,  
14 depending on the design of state programs, these entities  
15 may play an important role in facilitating implementation.

16           In particular, where carbon  
17 pricing programs impose border adjustments on electricity  
18 imported to the state or region to address emissions  
19 leakage, involvement of the market operator would be  
20 necessary to ensure appropriate inclusion of carbon prices  
21 in energy offers, to attribute electricity imports to state  
22 or regional load, and to support accounting of carbon  
23 emissions associated with these imports.

24           Where RTOs or ISOs facilitate carbon pricing in  
25 their markets, FERC's role should be to ensure that these



1 efforts maintain the competitiveness and efficiency of the  
2 markets. To this end, WPTF considers the following  
3 principles to be critical.

4           First, carbon pricing should be transparent.  
5 Market operators must ensure transparency in how the overall  
6 price per ton is derived, and how it is applied for  
7 individual resources. Additionally, market design should  
8 consider how carbon pricing impacts locational marginal  
9 prices both inside and outside of the carbon control area,  
10 and how these prices would differ from a counter-factual  
11 scenario without carbon pricing.

12           Second, market design should ensure that  
13 similarly situated resources within and outside the carbon  
14 control area are treated equivalently. Resources should not  
15 be competitively disadvantaged on the basis of their  
16 location.

17           Third, market design should ensure a nexus  
18 between carbon responsibility and resource control. The  
19 entity that bids the resource should bear responsibility for  
20 carbon emissions or receive the carbon premium for zero or  
21 low emitting resources.

22           Fourth, market design should support the  
23 environmental effectiveness of the carbon pricing program.  
24 While some shifting of generation and associated emissions  
25 may be an unavoidable consequence where carbon pricing is

1 undertaken in a limited geographic area within a broader  
2 energy market, to the extent possible, market design should  
3 avoid causing dispatch distortions that increase emissions  
4 within the market foot print relative to a scenario without  
5 carbon pricing.

6           Lastly, market design should not impose costs on  
7 market participants outside the carbon control area.  
8 Resource bidders must be able to avoid being deemed to serve  
9 load within the carbon control area and carbon costs should  
10 not increase LMPs outside the carbon control area, thank  
11 you.

12           MR. MONCAYO: Thank you Miss Breidenich. Next up  
13 is Travis Kavulla, Vice President of Regulatory Affairs at  
14 NRG. Please go ahead Mr. Kavulla.

15           MR. KAVULLA: Thank you Jorge. Thank you Mr.  
16 Chairman and Commissioners. I appreciate the invitation to  
17 be here today. Like many of the companies you're going to  
18 hear from for the balance of the day, NRG believes that a  
19 nationwide economy-wide carbon price should exist. That of  
20 course, is not necessarily what we're talking about today,  
21 just instead of patchwork of state policies, and we describe  
22 like many others in our pre-filing comments, the leakage  
23 difficulties that that can implicate.

24           And in a market without a uniform carbon price,  
25 FERC's actions would be required to effectuate the leakage

1 controls that many state carbon price and laws include.  
2 These leakage controls can end up looking like one state's  
3 extra territorial regulation of another, even if they're  
4 well intentioned, they require the kind of fact specific  
5 analysis to determine that they're just, reasonable and not  
6 unduly discriminatory.

7 But in any case, adopting those controls in a  
8 multi-state market certainly would put FERC, or the RTOs  
9 into the role of referring between the states rather than  
10 simply holding up a mirror to reflect state policies. We  
11 think the Commission could actually manage to walk this fine  
12 line, but of concern to us, even if the Commission got this  
13 right, it might still not succeed in bringing state policies  
14 into harmony with the FERC jurisdictional markets.

15 That's because of something both Professor Rossi  
16 on the first panel, Doctor Bowring on the second panel, and  
17 the third panel amply described that the main undertakings  
18 of state carbon policy today in the power sector, our  
19 renewable portfolio standards, clean electricity standards,  
20 zero emission standards and the like, and they're not  
21 coordinated with one another and they're often not  
22 transparent and they're of a scale much more significant  
23 than existing carbon price policies.

24 Give but one example from 2014 to 2018 there were  
25 4.4 billion dollars in RPS costs in PJM, compared with only

1 1.4 billion dollars in RGGI costs. Once you include more  
2 recent enactments like CES in that particular market  
3 footprint, that gap has grown only wider with time, even as  
4 RGGI prices continue to remain low.

5           So this is what Professor Hogan has really called  
6 the elephant in the room and if what FERC does on carbon  
7 pricing does not speak RPS, CES and like policies, it's  
8 really missing the whole ballgame. There seems to be a  
9 passive assumption in some of the conversation that carbon  
10 pricing will lead states to clear out some of these less  
11 efficient subsidy policies.

12                   I don't necessarily think that's  
13 realistic except in limited situations such as the New York  
14 zero emission credit program where credit prices, all  
15 reserved prices are tied directly to an imputed cost of  
16 carbon and net energy revenues. So a more profound task for  
17 the Commission in our opinion is to find a way to  
18 rationalize and make efficient the style of carbon pricing  
19 that for the moment was meshed in the patchwork of state RPS  
20 and CES.

21           In our view that could be accomplished in an  
22 efficient and competitive regional trade in clean energy  
23 attributes. This will both avoid the double payment more  
24 directly than was described in the previous panel and  
25 preserve competition, goals that Chairman Chatterjee has

1 announced.

2           This approach also would avoid the leakage  
3 considerations that have dominated most of the day allowing  
4 states to simply specific quantity and price searing of  
5 clean energy that they want to purchase through competitive  
6 means. We're very glad to hear Mr. van Welie, considering  
7 this option for ISO New England alongside more robust  
8 problem pricing.

9           Finally, a note on RTO governance, obviously if  
10 the RTO is to be the vessel to true up state policies to  
11 regional market operations. It makes sense that states  
12 would want and should have more of a seat at the table in  
13 those government's regimes. There is RTO who have  
14 experimented with stakeholder models that gives states a  
15 special role when the market is being designed around  
16 prerogatives that are traditionally within the state  
17 regulations.

18           As well, the Commission is probably overdue to  
19 consider creative approaches on cooperative federalism,  
20 which is uniquely implicated in this particular discussion.  
21 This could include relying on joint hearing procedures of  
22 affected states imbedded in Section 209 of the Federal Power  
23 Act. The FCC makes use of such joint boards already for its  
24 decision making, or it could include a federal advisory  
25 committee, which other federal agencies routinely rely on

1           For example, a report from the CFDC that you  
2   heard Senator Whitehouse mention earlier today emanated from  
3   such a body. In any case state policies are increasingly  
4   directly affecting the markets you regulate, and it is  
5   important for you to establish a structure for some of the  
6   thinking and decision making and problem solving on how  
7   those policies coexist, can be put back on the states within  
8   the traditional standards of just, reasonable and not unduly  
9   discriminatory that the Federal Power Act provides. Thank  
10  you.

11           MR. MONCAYO: Thank you Mr. Kavulla. Our next  
12  panelist is Sherman Knight, President and Chief Commercial  
13  Officer at Competitive Power Ventures. Go ahead please Mr.  
14  Knight.

15           MR. KNIGHT: Good afternoon. Thank you for the  
16  opportunity to participate in this Technical Conference.  
17  I'm here.

18           CHAIRMAN CHATTERJEE: I can't hear anything. Can  
19  others hear him?

20           MR. MONCAYO: Yeah, I can't hear Mr. Knight. Can  
21  you adjust your audio if possible, we can't hear you at all.  
22  We heard the first few words and then you just cut out.

23           MR. KNIGHT: Is that any better?

24           MR. MONCAYO: Yeah. That works.

25           MR. KNIGHT: Well thank you for the opportunity

1 to participate in this important Technical Conference. I'm  
2 here on behalf of Competitive Power Ventures.

3 MR. MONCAYO: Yeah, it keeps cutting out. We can  
4 maybe skip and then come back to you. Let's go next to  
5 Michael B. Mager, partner at Couch White, Counsel for  
6 Multiple Intervenors, Mr. Mager.

7 MR. MAGER: Thank you can hear me?

8 MR. MONCAYO: Yes we hear you.

9 MR. MAGER: Super. Thank you very much for the  
10 opportunity to participate. I am counsel to Multiple  
11 Intervenors, which is an association of approximately 60 of  
12 New York's largest industrial commercial institutional  
13 energy consumers. Multiple Intervenors participates in the  
14 NYISO stakeholder process and has been very active in the  
15 examination of carbon pricing issues.

16 Initially, large energy consumers generally are  
17 very supportive of efforts to reduce carbon emissions. Many  
18 of Multiple Intervenors members for instance, are expending  
19 substantial resources to reduce their own carbon footprints.  
20 Multiple Intervenors recognizes some of the potential  
21 advantages of carbon pricing.

22 At a high level, it is preferable to have the  
23 cost of carbon reflected in competitive market outcomes, as  
24 compared to through a series of policies dependent upon  
25 out-of-market payments of differing magnitudes. That noted,

1 the development of a draft carbon pricing proposal within  
2 the NYISO stakeholder process revealed a number of areas of  
3 concern for large energy consumers that warrant  
4 consideration.

5           The first set relates to the appropriate scope of  
6 a carbon pricing program. The NYISO is a single-state ISO.  
7 Multiple Intervenor members have concerns that the possible  
8 implementation of carbon pricing would raise wholesale  
9 energy prices in New York, possibly materially. If New York  
10 is the only state, or one of only a few states to implement  
11 carbon pricing, the resulting higher prices could place  
12 energy intensive consumers operating in New York at a  
13 competitive disadvantage.

14           Relatedly there are concerns about singling out  
15 the electric power sector for carbon pricing. In New York,  
16 for example, the transportation, residential building, and  
17 commercial building sectors each are responsible for greater  
18 carbon emissions than the electric power sector, but are not  
19 addressed by the NYISO's proposal.

20           The second set of concerns relates to how the  
21 social cost of carbon would be calculated and updated from  
22 time to time. Should the setting the social cost of carbon,  
23 which would be a major input into wholesale energy prices,  
24 be delegated to individual states? If so, what are the  
25 standards, if any, for ensuring that the social cost of



1 carbon utilized results in just and reasonable prices?

2           Why should carbon cost more in one state than  
3 another and how would carbon pricing impact imports and  
4 exports of electricity? Once set, would the social cost of  
5 carbon be adjusted periodically in a manner transparent to  
6 the market, or could states imply increase or decrease the  
7 social cost of carbon whenever they want, and to whatever  
8 value they want.

9           The third set of concerns relates to the  
10 treatment of carbon revenues. The draft proposal developed  
11 in the NYISO stakeholder process relies on assessing a  
12 carbon charge to emitting resources. Such charge would  
13 product certain carbon revenues. Pursuant to the draft  
14 proposal, carbon revenues would be returned to load-serving  
15 entities via the settlement process.

16           There are concerns, however, about whether carbon  
17 revenues would be used solely to mitigate the price impacts  
18 of carbon pricing, or if, alternatively, the state or other  
19 entities would seek to usurp those funds for other purposes.  
20 From the perspective of large energy consumers, if carbon  
21 pricing is implemented and results in higher prices on a per  
22 megawatt hour basis, all of the offsetting carbon revenues  
23 should be used to moderate those impacts on the same per  
24 megawatt hour basis.

25           There also are a myriad of issues related to how

1 carbon revenues should be allocated within an ISO. The  
2 NYISO has 11 different load zones, and regions within New  
3 York have markedly different wholesale energy price levels  
4 and carbon intensities. The approach utilized to allocate  
5 carbon revenues can have material and potentially disparate  
6 impacts on consumers within particular regions.

7           The fourth set of concerns and the last one I'll  
8 mention now, relates to whether carbon pricing can be  
9 implemented in a manner that protects consumers from double  
10 payments. In New York, consumers already are obligated to  
11 fund a large number of existing, fixed price REC contracts.  
12 These out of market payments to renewable generation owners  
13 are intended to incentivize emission free generation.

14           If carbon pricing were to be implemented in New  
15 York, holders of those contracts, most of which are in the  
16 early stages of 20 year terms, would receive double payments  
17 for the same emission free attributes -- once via fixed  
18 price REC payments and the second time via higher wholesale  
19 energy prices due to carbon pricing.

20           In conclusion, the debate about the pros and cons  
21 of carbon pricing cannot be divorced from the numerous  
22 underlying, implementation-type issues, the resolution of  
23 which may have significant impacts on consumers. As the  
24 saying goes, "the devil is in the details." Thank you.

25           MR. MONCAYO: Thank you Mr. Mager. Next up we

1 have Arnie Quinn, Senior Director at Vistra, FERC  
2 Jurisdictional Markets. Please go ahead Mr. Quinn.

3 DR. QUINN: Good afternoon. A diverse group of  
4 petitioners who asked the Commission to hold this Conference  
5 appreciates the Commission's willingness to engage in this  
6 discussion. My written pre-conference comments provided  
7 details about Vistra as an integrated company. I'd like to  
8 highlight that Vistra has established a set of carbon  
9 emission reduction goals accelerated in an announcement just  
10 yesterday with aspirations of reaching net zero carbon  
11 emissions by 2050, assuming necessary advancements in  
12 technology, and support of market constructs and public  
13 policy.

14 We believe carbon pricing specifically a national  
15 economy-wide carbon price, is one component of the needed  
16 market and public policy changes to reach that aspirational  
17 goal. Vistra views this Conference as a national follow on  
18 to the Commission's May 2017 Conference. We believe the  
19 experience over the last three and a half years suggests  
20 that truly sustainable market design requires a means to  
21 achieve state environmental goals within the wholesale  
22 markets.

23 There are really only two within market options  
24 -- carbon pricing or clean energy goals. Either program  
25 would ideally be national, but should at least be regional.

1    Vistra believes carbon pricing is clearly the superior  
2    option among the two, but believes the discussion likely  
3    needs to include both given the support that clean energy  
4    standards enjoy.

5                As many have already noted today, if the federal  
6    government were to adopt a national carbon price, the  
7    Commission would have very little to do to implement it. I  
8    the absence of a national economy wide carbon price, Vistra  
9    supports regional carbon pricing regimes as a step in the  
10   right direction. Again, as has been discussed already,  
11   leakage is the biggest challenge to implementing a regional  
12   carbon price.

13               Where the regional carbon price does not apply  
14   uniformly across an ISO/RTO footprint, the concerns about  
15   leakage occur because internal ISO/RTO dispatch is very good  
16   about optimizing to find the lowest costs that a resource to  
17   meet demand and reflecting those costs and prices with costs  
18   now reflecting uneven application of carbon pricing.

19               Most efforts to address internal leakage are  
20   likely to be only partially successful because they rely on  
21   peaking of the ISO/RTO footprint as subdivided into a carbon  
22   pricing region and a non-carbon pricing region. And then  
23   trying to determine when a resource in one of those regions  
24   should be needed to serve load in the other region. That  
25   determination is inherently a fiction because the ISO

1 dispatches all generation to serve all load.

2           Vistra's preferred approach and what's kind of  
3 foreshadowed by Joe Bowring, is to address leakage by  
4 applying a carbon price across the entire ISO and RTO  
5 footprint, and then using transfer payments between carbon  
6 pricing states and non-carbon pricing states to make the  
7 non-carbon states indifferent and still reflect each state's  
8 choice about whether to price carbon.

9           We view this proposal as an ideal, and we're  
10 continuing to work through it as a proof of concept. This  
11 approach raises a number of important threshold questions  
12 and design questions which we highlight in my pre-conference  
13 comments. Regardless of how leakage is addressed, the  
14 Commission will likely need to play a role approving a  
15 design. This is not a new issue for the Commission.

16           It approved the border adjustment pricing between  
17 the western energy and balance market, and CAISO. Future  
18 leakage proposals like the one that Vistra favors, simply  
19 extend the logic the Commission used to approve the CAISO  
20 EIM border adjustment. Whether it extends that logic too  
21 far is left to the Commission.

22           In that spirit, we encourage the Commission to  
23 pay attention to these issues, be flexible when presented  
24 with a proposal and to keep efficiency top of mind. This  
25 concludes my remarks, I look forward to the rest of the

1     comments.

2                   MR. MONCAYO:  Thank you very much Doctor Quinn.

3     We now have Harry Singh, Vice President at J. Aron &

4     Company.  Go ahead please Mr. Singh.

5                   MR. SINGH:  Good afternoon Mr. Chairman,

6     Commissioners, and Commission staff.  Thank you for

7     organizing this Conference and the opportunity to

8     participate.  Organized wholesale power markets operated by

9     RTOs have provided a critical platform to the enable new

10    offtake structures for financing the construction of new

11    renewable assets.

12                   These structures include fixed volume bank

13    hedges, corporate PPAs for meeting voluntary sustainability

14    goals, offtakes that hedge weather risk as alternatives to

15    and in addition to traditional utility PPAs.  The new clean

16    energy resources enabled by these offtakes are helping

17    address the same climate change concerns that carbon pricing

18    is intended to address.

19                   To the extent carbon pricing can help reflect

20    environmental costs within power prices in RTO markets, such

21    offtakes can play an even greater role in promoting new

22    investment in clean energy resources.  The Commission has

23    played an important role in helping establish organized

24    power markets, starting way back with transmission open

25    access to Order 888, subsequent Order 2000 and other actions

1     that have produced significant benefits over time in  
2     enabling new investment.

3             At the same time, the Commission has had to  
4     address complex market design and policy issues to ensure  
5     that these markets continue to function well. The  
6     Commission's consideration of reflecting the cost of carbon  
7     emissions within RTO markets, whether it's driven by state  
8     policy actions, or directly in the RTO tariffs, is going to  
9     be equally significant going forward.

10            The efforts to reduce carbon emissions in the  
11     electricity grid are likely to continue to be a  
12     multi-pronged effort influenced by voluntary corporate  
13     actions, state policy directives, products offered through  
14     commodity markets and actions taken by the Commission.

15            My written comments discuss the different  
16     approaches to carbon pricing that are either in place or  
17     under consideration across the country, as well as the  
18     questions posed for this panel. I'd like to close by saying  
19     that the further expansion of organized markets can be a big  
20     positive, expanding the range of offtakes available for  
21     facilitating the construction of new clean energy resources.

22            To the extent policies adopted by the FERC can  
23     give confidence that RTO markets can accommodate the  
24     objectives of state environmental policies, this will help  
25     promote the expansion of such markets. Thank you.

1                   MR. MONCAYO: Thank you Mr. Singh. I see that  
2 Mr. Knight has returned. I'm wondering if your audio is  
3 fixed.

4                   MR. KNIGHT: Yes. Does that work?

5                   MR. MONCAYO: Yeah I hear you better thank you.

6                   MR. KNIGHT: Great. I apologize. I think that  
7 the Technical Conference went longer than the batteries in  
8 my headset, so I apologize.

9                   MR. MONCAYO: Okay.

10                  MR. KNIGHT: Good afternoon. Thank you for the  
11 opportunity to participate in this important Technical  
12 Conference. I'm here on behalf of Competitive Power  
13 Ventures, a privately held power development company founded  
14 over 20 years ago to site permanent and construct new power  
15 plants. Our company was founded on the heels of FERC Order  
16 888, opening competitive markets. Since founding, our  
17 company alone has developed nearly 15 gigawatts of renewable  
18 and natural gas fired generation, creating over 7 billion  
19 dollars of private investment, thousands of jobs while  
20 reducing over 15 million tons of greenhouse gases, primarily  
21 through displacement of older, less efficient, more carbon  
22 intensive generation technologies.

23                  Although I'm proud of the work that we've done, I  
24 mention this here for two specific reasons. One -- I want  
25 to highlight the impact that a FERC order on wholesale



1 prices can have on investment in new infrastructure and  
2 reducing emissions without direct government or ratepayer  
3 financial support.

4           It is a powerful tool that should not be  
5 forgotten. And two -- we're here to attest to the practical  
6 implications on the development of new generation in  
7 competitive markets, due to FERC's actions or inactions on  
8 carbon pricing. Over the past decade, market fundamentals  
9 and public policy generally align to transition for  
10 predominantly coal and older fossil fuel generation, through  
11 a system of renewables, demand response and highly efficient  
12 natural gas fired generation.

13           However, public policy goals have become  
14 significantly more disjointed. Where some states are taking  
15 very aggressive actions, and other states are not.  
16 Currently, 38 states plus the District of Columbia have  
17 identified the reduction of carbon emissions from the  
18 electric sector as a goal. This has led to 39 different  
19 policies, which are often developed without consideration to  
20 reliability standards, or the ability to affect carbon  
21 leakage from generating and demand resources outside of  
22 their state.

23           Unfortunately, the practical implication of that  
24 has led to investment strategies that are becoming more and  
25 more focused on arbitraging the misalignment between states,

1     rather than making efficient investments for the sustainable  
2     and reliable production of power.

3                 So we stand ready to help FERC create a framework  
4     that it would accept to guide stakeholders in regional  
5     competitive markets to develop rules and incorporate a  
6     carbon price, justly and reasonably, to promote a more  
7     efficient energy market. I would like to thank you for your  
8     time.

9                 MR. MONCAYO: Thank you Mr. Knight. Our final  
10    panelist is Joseph Wadsworth, Regulatory Affairs and Market  
11    Policy at Vitol on behalf of Energy Trading Institute. The  
12    floor is yours Mr. Wadsworth.

13                MR. WADSWORTH: Okay. Thank you, can you hear  
14    me?

15                MR. MONCAYO: Yes we can hear you.

16                MR. WADSWORTH: Okay great. My name is Joseph  
17    Wadsworth. I'm speaking on behalf of the Energy Trading  
18    Institute. Our members are active in nearly all facets of  
19    the wholesale markets, including development of and risk  
20    hedging for clean energy resources. We rely on healthy  
21    market design and transparent price signals to compete. The  
22    LMP construct in energy markets is a two decade success  
23    story of providing transparent price signals, driving  
24    efficient dispatch of resources, and creating competition  
25    that has benefitted customers.

1           Integrating carbon pricing into this powerful  
2 market mechanism will lead to the same success story for  
3 meeting state jurisdictional clean energy goals, while  
4 preserving the integrity of the FERC jurisdictional energy  
5 markets and providing competitive benefits to consumers.

6           If the sustainable robust carbon price is  
7 implemented in the energy markets, the spot market will  
8 reflect this value in LMP, prioritize clean energy resources  
9 for dispatch and reward those resources for their clean  
10 output. The transparent locational price signal will alert  
11 market participants of a clean energy opportunity by  
12 producing the most carbon intensive price and nodes with  
13 high emitting resources, exactly the reason for utilizing  
14 LMP.

15           Similarly, bilateral markets will incorporate the  
16 carbon price into forward energy prices, sending a signal to  
17 market participants to deploy capital into clean energy  
18 resources which aligns with state policy goals. The carbon  
19 price signal bolsters revenue opportunities in the forward  
20 bilateral markets, creating an in the market incentive for  
21 resource entry.

22           By moving more revenue to the energy market,  
23 these resources need less revenue from other sources such as  
24 capacity markets, renewable energy certificate markets,  
25 subsidies and outside the market contracts. In addition,

1 investors and developers have an established set of trading  
2 partners, providing healthy, dynamic competition for project  
3 financing, hedging forward revenue and operational risk, and  
4 boosting project viability.

5           This combined with a clear carbon price signal  
6 enables the market to work to develop clean energy resources  
7 where they're needed and in the long run, drive down prices  
8 with low cost clean power. Incorporating a carbon price in  
9 the energy market to meet policy goals largely shields  
10 consumers from bearing cost risks associated with subsidies  
11 and outside the market contracts.

12           Whether market participants will bear the  
13 resource performance and transaction risk, and will be  
14 subject to competitive pressure as it should be.  
15 Furthermore, while it likely depends upon policy at the  
16 state level to determine the allocation, ETI strongly  
17 believes the net revenues collected through a carbon price  
18 must flow back to consumers in some manner. Consumers must  
19 be the alternate beneficiaries.

20           Incorporating carbon pricing in the energy  
21 markets requires a supporting suite of well-functioning  
22 market products and attributes, including financial  
23 transmission rights, both short and long-term to provide  
24 nodal hedging instruments and forward nodal price  
25 transparency to facilitate resource entry, linkage pricing,

1 ancillary services and reliability products to accommodate  
2 distributed resources and intermittency, scarcity pricing  
3 and virtual transactions at the nodal level for day ahead  
4 and real time market convergence.

5           Finally, we encourage the Commission to pursue a  
6 notice of inquiry following this Technical Conference, to  
7 further advance the record on this topic. I look forward to  
8 our panel's discussion. Thank you.

9           MR. MONCAYO: Thank you Mr. Wadsworth, and thanks  
10 again to all the panelists. We will now begin the question  
11 and answer session. If a panelist would like to answer a  
12 question, please use the WebEx raise hand function.  
13 Alternatively, if you are having issues with the raise hand  
14 function, please turn on your microphone and indicate that  
15 you would like to answer. I will call on panelists to  
16 indicate that they would like to answer in turn.

17           Once I do so, please turn on your microphone and  
18 respond to the question. When you have completed your  
19 answer, we ask that you please turn off your microphone and  
20 lower your virtual hand in WebEx. I will now turn it over  
21 to the Commission for their questions. Chairman.

22           CHAIRMAN CHATTERJEE: Thank you all and thank you  
23 to all the panelists for your actual presentations. To  
24 start my first question to what degree should carbon pricing  
25 be transparent in the LMP? Is it sufficient to have the

1 carbon price be an allowable cost input into a resource's  
2 energy bid as is the case with existing carbon pricing  
3 mechanisms? Is it sufficiently transparent or would  
4 additional transparency of some kind contribute to market  
5 efficiency?

6 I'd like to hear from Mr. Quinn, Mr. Kavulla and  
7 Mr. Knight for sure on this. But also welcome comments from  
8 other panelists. Thank you.

9 MR. MONCAYO: I see Arnie Quinn's hand raised  
10 first, so please go ahead Doctor Quinn.

11 DR. QUINN: Thank you. Yeah I think certainly  
12 knowing what the price input into a generator's offer is is  
13 helpful. I mean the more transparent, the underlying carbon  
14 price is the better able to market overall is to plan. You  
15 know that said, there -- while we generally expect generator  
16 offers to be reflective of the generator's marginal costs,  
17 you know, we don't always know exactly what those costs are.

18 We have a sense of what the fuel costs are. We  
19 have a sense of what the heat rate of that unit is. And the  
20 fact that we have transparent LMP's is really the key to the  
21 market kind of functioning well and having an ability for  
22 say the market monitor or FERC staff to understand the  
23 degree to which offers are reflective of cost is also an  
24 important element.

25 And so you know, I think the only other element

1 of your question that I think you could approach is whether  
2 you'd want to break the LMP into a carbon component so that  
3 in addition to understanding the value of the commodity --  
4 understanding the value of location, or a congestion or and  
5 the value of losses, whether you'd want to also incorporate  
6 the value of carbon. I could imagine wanting to do that if  
7 it got to the point of how you would return carbon fees back  
8 to load.

9 And so I could see some benefit of that level of  
10 transparency as well.

11 MR. MONCAYO: Mr. Knight I believe your hand was  
12 raised next.

13 MR. KNIGHT: Sure. I think that transparency is  
14 helpful, although I think it's of secondary importance. I  
15 think of primary importance to us is really the notion that  
16 you could have one gas fired generator for example, in a  
17 state that's subject to you know, for example, RGGI, and the  
18 exact same gas, exact same technology gas generator sitting  
19 two miles away but in a different state that would not be  
20 dispatched simply because of the location across the you  
21 know, state bounds.

22 And whether or not you know to us it's leveling  
23 that playing field so that the exact same emission profile  
24 and exact same technologies can be dispatched efficiently  
25 across the marketplace is what helps us to better determine

1    where we should be investing our future dollars in so we can  
2    focus more on what's the fundamental need of the electric  
3    sector, and less so on which state policies are going to  
4    change in different legislative sessions.

5                So from a standpoint of is it helpful to have a  
6    very specific transparent price in the LMP, sure that  
7    certainly helps. But more importantly, it's to not have the  
8    risk associated with being slightly off with regards to you  
9    know, yeah the location and being mis-dispatched.

10               MR. MONCAYO: Thank you Mr. Knight. Mr. Kavulla  
11    if you'd like to go ahead please.

12               MR. KAVULLA: Sure. Thanks for the question.  
13    I'll echo Mr. Knight in terms of emphasizing the certainty  
14    and consistency across multiple jurisdictions and making  
15    sure that there are some divergencies which impact the  
16    invest-ability of certain projects.

17               I'll also harken back to something that Professor  
18    Wolak and others pointed out -- that the transparency of  
19    this exercise is influenced depending on whether you have a  
20    regulatory set price on carbon, or an emissions allowance  
21    trading scheme. The latter, especially if it includes  
22    banking provisions, opens it up to different bidding  
23    strategies, different perceptions on opportunity costs  
24    between different market participants.

25               It might be hard in such a situation to really



1 identify the value of carbon within the LMP, even if you can  
2 try -- even if ultimately it resulted in a certain cooling  
3 price for allowances on the carbon trading market. Whereas,  
4 a government set price on carbon net's uniform across all  
5 jurisdictions and for all market participants does promote  
6 at least more of that transparency, even if it may trade off  
7 certain other things, like not knowing exactly how many  
8 emissions reductions you're going to get.

9 But if transparency is an important  
10 consideration, and I think everyone would agree that it is,  
11 a direct carbon price that's known together with the  
12 certainty and consistency are all important considerations.

13 MR. MONCAYO: Thank you. I think Miss Breidenich  
14 would also like to respond.

15 MS. BREIDENICH: Thank you. I wanted to address  
16 a component that was in your question Chairman, about the  
17 carbon in the energy bid. I'm speaking from the perspective  
18 of California and what we've seen in your energy imbalance  
19 market. I suspect you're going to get to some of these  
20 issues in more depth a bit later, but in my view the problem  
21 that we've seen historically in the EIM with secondary  
22 dispatch is derived in large part to the fact that  
23 California gas resources are less economic from the  
24 algorithms perspective compared to resources located out of  
25 state which may actually be higher heat rate resources.

1           Due to the fact that the California resources  
2   have the carbon price baked into their energy bid, and  
3   resources outside the state have a separate greenhouse gas  
4   adder and a separate component. And one thing that I have  
5   thought about is as we look to the day ahead possible  
6   expansion of the EIM to the day ahead market, having the  
7   resources within the California carbon control footprint  
8   separately breakout their energy bids from the carbon  
9   component for the purposes of the market operator and the  
10   algorithm might actually be a useful tool in thinking about  
11   how we address this secondary dispatch problem going  
12   forward, thank you.

13           MR. MONCAYO: And I believe Mr. Mager would like  
14   to respond next.

15           MR. MAGER: Yes. Very briefly, I would just say  
16   from the perspective of large energy consumers, the more  
17   transparency the better. If New York, for instance, was to  
18   adopt carbon pricing, we would want to know what the impacts  
19   of that policy are on wholesale energy prices.  
20   Additionally, I would say the level of transparency needed,  
21   also will depend to a large extent on how the program is  
22   designed.

23           For instance, under the New York ISO's draft  
24   proposal, carbon revenues would be returned through the  
25   settlement process to the load serving entities. As large

1 energy consumers, we would want to know how much money is  
2 going back to our marketers for instance, because that will  
3 help us verify that the prices that we're ultimately  
4 charged, which would reflect carbon pricing, would be  
5 accurate.

6           So I think in response to your question, to some  
7 extent it depends on how the program is designed. And from  
8 the perspective of large consumers, the more transparency  
9 the better. Thank you.

10           MR. MONCAYO: Thank you Mr. Mager. I see a hand  
11 raised from Doctor Quinn. I'm not sure if you would like to  
12 respond some more or?

13           DR. QUINN: Yeah. I just had one thing I wanted  
14 to circle back on. And I think it's simply to note that  
15 carbon pricing itself is inherently more transparent than  
16 many of the other kinds of policies we're talking about  
17 because you know, even if it's a cap and trade system,  
18 there's typically a traded price that everyone can see.

19           That traded price might be uncertain, but it's  
20 usually transparent. And you compare that to the embedded  
21 implied cost of carbon and various technology specific  
22 mandates, and recognize that that place is -- that carbon  
23 price is completely untransparent. So in terms of comparing  
24 the success of different public policy options, just  
25 starting from carbon pricing gets you a long way towards

1 enhancing transparency.

2 MR. MONCAYO: Thank you Doctor Quinn. Mr.  
3 Chairman, I don't see any other panelists in the queue.

4 CHAIRMAN CHATTERJEE: Great. Well thank you all  
5 for that. I want to circle back to Miss Breidenich to  
6 follow-up on your previous comments which I found very  
7 interesting regarding some of the challenges related to  
8 state carbon pricing policies facing CAISO's western EIM as  
9 it moves to a day ahead market.

10 I was just wondering if you could elaborate on  
11 how might arrangements in the EIM need to adapt if other  
12 states adopt carbon pricing mechanisms that differ from the  
13 California cap and trade program and if you could just build  
14 on your previous answer a little bit, and then if you could  
15 elaborate if there are lessons that can be shared among RTOs  
16 and ISOs in this regard.

17 MS. BREIDENICH: Thanks. I'm just scribbling  
18 notes. I hope I have all your questions down, but please  
19 come back if I didn't. Well I guess on the first question  
20 as you're probably aware, Oregon, Washington, are two states  
21 I'm actively involved in both those states as well.

22 And they are looking at carbon pricing programs.  
23 Oregon and Washington are both likely to come back in terms  
24 of looking at legislation to do multi-sector cap and trade.  
25 Right now neither one of them has it. Washington is doing a

1 more traditional clean energy program based on an RPS but  
2 including zero emission resources.

3           This morning I think Mark Rothleder did a very  
4 good job laying out what some of the challenges would be if  
5 those or other states in the west go forward. And I think  
6 there's a couple potential problems that might arise. One  
7 -- and this is something Mr. Rothleder addressed directly,  
8 there's a possibility that those states could do carbon  
9 pricing and do it in a way that's either not compatible  
10 with, or they just choose simply not to link with  
11 California, in which case you do get different carbon prices  
12 in both those states.

13           I will defer to Mr. Rothleder and he said that  
14 the carbon pricing itself is not necessarily a problem for  
15 the algorithm, but it would mean that the algorithm has to  
16 deal with potentially different matters. So if Oregon has a  
17 cap and trade program that's not linked to California, and  
18 allowance prices in Oregon are \$10.00 a ton and they're  
19 \$20.00 a ton in California, then any resource operator,  
20 scheduling coordinator, needs to be able to put in two  
21 separate energy bids -- greenhouse gas that is.

22           One in case that resource is deemed delivered to  
23 California and another one in case that resource is deemed  
24 delivered to Oregon, so that's challenge one under carbon  
25 pricing. The second thing that Mr. Rothleder also alluded

1 to is the need -- and I actually think this need will likely  
2 continue even if Oregon and California -- Oregon adopted a  
3 program that was linked to California.

4           Because of the fact that the compliance programs  
5 will be administered by different regulators in the state,  
6 our suspicion is that the regulators are always going to  
7 want to have control over the allowance, the allocation of  
8 allowances and enforcing compliance on their entities, which  
9 gets to the point that the market operator needs to be able  
10 to delineate and allocate the output of specific resources  
11 to specific load in the different carbon control areas --  
12 Oregon and California respectively in this case.

13           And per Mr. Rothleder, that's a bigger challenge  
14 for the market operator, but I'll defer to him since I'm not  
15 a market operator. The second case that I think is  
16 potentially problematic that we need to be thinking about  
17 gets to this issue of the interface between clean energy  
18 programs and carbon pricing programs. Washington, this  
19 issue is coming up very centrally. Washington is having a  
20 lot of discussions right now about what it's new clean air  
21 rule implies for delivery of renewable electricity to the  
22 state, whether that -- weather renewable resources that on  
23 the one hand are considered allocated to California, and  
24 claimed under the California cap and trade program, are also  
25 eligible.

1           The REC's associated with those resources would  
2 also be eligible under the Washington program. There is a  
3 risk that Washington State or other states in implementing  
4 their clean energy programs, can say that this energy -- the  
5 REC's associated with this energy, are only eligible if you  
6 can prove that energy has already been delivered to the  
7 state, or in the counter case that it hasn't been delivered  
8 to California or some state that has a carbon program.

9           And that I think is potentially very problematic,  
10 because it would -- if the states then -- I think that the  
11 market participants in that scenario are going to be  
12 pressing hard for the market operators to give them more  
13 control over where electricity is either deemed delivered or  
14 not.

15           And that strikes me as potentially problematic as  
16 well for the ability of the market to operate efficiently  
17 and effectively for the algorithm to solve.

18           CHAIRMAN CHATTERJEE: Thank you for answering the  
19 question and your expertise in this area. I want to turn  
20 back to Mr. Quinn. Arnie there's been a lot of conversation  
21 to day about leakage and I just want to ask you directly.  
22 In your view, how critical is it to address leakage and are  
23 emissions leakage an economic pricing leakage both of  
24 concern in your view, or is one of them more important than  
25 the other?

1                   DR. QUINN: Thanks for the question. Yeah I want  
2 to echo some thoughts from earlier in the day that you know,  
3 at really low carbon prices, this is something I think Roy  
4 Shanker was talking about during the first panel. In really  
5 low carbon prices you might not have a level of materiality.

6                   The kinds of things you worry about with leakage  
7 might be present, but the degree might be not so material  
8 because the carbon price itself might be too low to really  
9 see those problems manifest to the point that you want to do  
10 something about them.

11                  But you could get to the point where the carbon  
12 price is high enough that those problems then become  
13 material to the point that you want to address them. And  
14 Mr. Chairman, I really liked the distinction you made  
15 between emission's leakage or cost leakage, or economic  
16 leakage. Because it's really easy to slip into the thought  
17 that when you're talking about leakage, what you're worried  
18 about is making sure the environmental policies that states  
19 have adopted are as effective as possible.

20                  And it's easy to do that because those are  
21 admirable goals. And Vistra shares those goals. And so  
22 it's easy to adopt that as the only perspective. But it's  
23 also important and this is something that also came up in  
24 the first panel, about the political economy of carbon  
25 pricing that we attend to the perspective of those states



1 who have not chosen to adopt a carbon price, and who are  
2 experiencing price increases for their consumers because  
3 they're part of a wholesale market, and within that  
4 wholesale market costs have gone up because other states  
5 have taken action.

6           And if you're not attentive to that, then I think  
7 you start to lose some of the political economy of when  
8 carbon pricing -- regional carbon pricing can be successful,  
9 and really where ISOs can be successful. And that is really  
10 part of how Vistra got to their idea for addressing leakage  
11 through applying the regional carbon pricing regionally, and  
12 then trying to use transfer payments between states to see  
13 if you can get states back to where they were based on the  
14 original decision they made on whether to address carbon  
15 pricing or not.

16           CHAIRMAN CHATTERJEE: Thank you for that Arnie.  
17 I think to build on that, I may turn my next question to Mr.  
18 Singh and Mr. Wadsworth, but I would appreciate hearing from  
19 others as well on your view on what are market rules to  
20 mitigate leakage that incent behavior in a manner that is  
21 consistent with efficient markets? Are there specific  
22 market designs that should be avoided?

23           And again I want to start with Mr. Singh and Mr.  
24 Wadsworth, but I welcome input from all of the panelists on  
25 this.

1           MR. SINGH: Thank you Mr. Chairman. So leakage I  
2 would agree is an important matter and it's when carbon  
3 prices are material that it becomes a bigger issue. Back  
4 when California started its program in 2013, it was really  
5 the first example of any jurisdiction regulating imports,  
6 whether in electricity or in any other sphere of the  
7 economy.

8           And the approach California took was to basically  
9 say that imports are going to be subject to carbon charges.  
10 They can be either resource specific, or they can be based  
11 on default charges. And this was done in a way to basically  
12 give incentives for carbon abatement in external areas.

13           But if you have this differentiation between  
14 different emitting resources outside the carbon region, then  
15 you create the problem of resource shuffling. So California  
16 came up with these rules. There was prohibition on resource  
17 shuffling. You know one of the FERC Commissioners wrote a  
18 letter, the program was delayed. We got safe harbors. The  
19 EIM made that whole problem much more complex.

20           And within the EIM you know, there are important  
21 lessons that are going to be learned which will I think be  
22 useful for other RTOs like PJM that are trying to address  
23 leakage intra RTO. At the other end of the spectrum I give  
24 the example of the work that's been done in New York. And  
25 the approach that has been taken in New York is very

1 different. It's a single state. And leakage is addressed  
2 there by insulating imports and exports from internal  
3 carbon charges. So that's very elegant, it's very clean.

4 But it comes with another problem. It's just  
5 that it doesn't give signals for carbon abatement outside,  
6 so there is no differentiation between higher emitting  
7 resources and lower emitting resources outside of New York.  
8 And maybe that's not an issue for New York, but it would be  
9 for other jurisdictions. There's also the question of  
10 treatment of internal clean energy resources, external clean  
11 energy resources and whether they're playing on the same  
12 level playing field.

13 So it's really a tradeoff. It's a complex  
14 problem and I think that the lessons that are going to be  
15 drawn from the work that's been done in New York, the EIM,  
16 are going to be useful for other RTOs.

17 CHAIRMAN CHATTERJEE: Thank you.

18 MR. WADSWORTH: And I would just, you know,  
19 largely agree with what Harry said. You know certainly you  
20 know the best situation is not to have the problem at all.  
21 We have a uniform carbon price for policy that applies to  
22 the country or to a very broad region that leakage is not an  
23 issue. But to the extent that that doesn't occur, that's  
24 the state that we're in now as everybody know.

25 You know, we have to determine if leakage is a

1 problem and there were some examples that were brought up  
2 earlier today that I think give merit to the discussion of  
3 does it make sense to address leakage? Is it really a  
4 problem? But to the extent that it is you know we have to  
5 find the right balance of not undermining the clean energy  
6 policy that was implemented in the jurisdiction and with  
7 competition as well.

8           So with New York for example, I think what  
9 they've proposed is a very good starting point. And I think  
10 it's a really good balance with trying to preserve the  
11 policy that the State of New York has set out and that the  
12 New York ISOs proposal would help to achieve. But it also  
13 provides the right balance in terms of allowing imports and  
14 exports to compete with neighboring markets.

15           So I think that there's certainly a challenge  
16 there, and I think that starts to strike the right balance,  
17 but I think we do have to be mindful of those two elements.

18           MR. MONCAYO: Mr. Chairman, we have two panelists  
19 in the queue if you would like me to proceed with them?

20           CHAIRMAN CHATTERJEE: I would and actually if  
21 folks could just build on my initial question. I want to  
22 add if market rules aimed at leakage -- how could they  
23 affect the behavior of market participants and other  
24 stakeholders? If you could work that into your original  
25 response I would be greatly appreciative, thank you.

1           MR. MONCAYO: Mr. Kavulla I believe you're up  
2 first.

3           MR. KAVULLA: Yeah. Let me take a crack at both  
4 of those things. But first to draw a distinction between  
5 what's been done in CAISO in the western energy imbalance  
6 market versus what's possible elsewhere and while the  
7 rulings on CAISO has been held up by some participants today  
8 as sort of a jurisdictional validation of the Commission's  
9 precedent about being able to do something about leakage,  
10 which I think is correct. It is not a practical example in  
11 terms of being able to implement in seamlessly operated  
12 multi-state RTOs.

13           And that's because the EIM still relies on  
14 multiple balancing authorities individually setting base  
15 schedules off which the real time energy market that EIM  
16 operates. And the leakage control that's in place -- and  
17 this was the subject of discussion between Doctor Hogan and  
18 Mr. Rothleder earlier today, is one where the renewable  
19 resources for example, are base scheduled in at a certain  
20 level for an external BA to California and then they're  
21 operating range above that.

22           The same applies for a fossil resource, is the  
23 range that's available to be deemed dispatched into  
24 California, subject to either a GHT price adder or not. And  
25 that -- it's hard to find translation in that model to a

1 model which as Mr. Quinn said, the RTOs dispatching all  
2 generations to serve all load. That really is not in a  
3 sense what EIM is doing for any interval before real time.

4 And so there's a limited applicability of that  
5 type of leakage control to other conversations, and there's  
6 a little bit of applicability if CAISO is going to go to a  
7 day ahead regional market of energy as well.

8 So I think there's more merit in pursuing some of  
9 the paths that Mr. Quinn has identified where you try to  
10 have a uniform carbon price across a region and then settle  
11 equities in the bank end through transfer payments. I think  
12 that is politically fraught because I don't know how willing  
13 sort of the carbon price in blue states will be to pay a  
14 transfer payment to red states that have not enacted a  
15 carbon price.

16 And it may stand for the political proposition  
17 that there are certain rents to be obtained through actively  
18 not regulating carbon emissions on the part of red states.  
19 So, but nevertheless, it's a more workable operational  
20 framework that's being proposed than what exists in the  
21 California example, and to your sort of augmentation of your  
22 question Mr. Chairman, it would have, I think, positive  
23 effects on investment decisions made in the region because  
24 you wouldn't get the situation that Mr. Knight describes  
25 where the same exact technology two miles away across state

1 lines has a fundamentally different investment thesis and  
2 has a reason to worry about the certainty and durability of  
3 carbon pricing in the market.

4           So it becomes a different kind of political  
5 question and one that is a little more alienated from the  
6 potential effects on dispatch where the market can easily be  
7 the subject of you know, perverse consequences that I think  
8 Professor Hogan is worried about and has identified in the  
9 California situation.

10           MR. MONCAYO: Thank you Mr. Kavulla. I think up  
11 next we have Miss Breidenich.

12           MS. BREIDENICH: Thank you. I'd like to make a  
13 distinction between in my view, two different types of  
14 leakage. There's the one hand there's the shifting of  
15 emissions because generation within a carbon patrolled area,  
16 possible generation moves outside. And it's just a shift in  
17 where emissions occur. That's more what's traditionally  
18 called resource shuffling.

19           I think it is to a certain extent unavoidable  
20 because it is effectively a rational economic response to a  
21 carbon price signal. And I also don't think it's a bad  
22 thing. Because if you have carbon pricing in one region and  
23 not in others, the carbon pricing region is going to have  
24 the effect of pulling clean resources into its footprint.

25           So I don't think that's necessarily a bad thing.

1   What is a bad thing is if the market design in accommodating  
2   carbon pricing actually leads to an increase in emissions  
3   relative to a scenario where we don't have carbon pricing.  
4   And that's I think the fundamental problem with a secondary  
5   dispatch problem.

6               We were seeing in the early days is the EIM  
7   implementation of the algorithm, we mitigated a certain  
8   amount with the solution we've got, but will be something we  
9   have to effectively step back to square one in thinking  
10   about in the day ahead market.

11              With respect to the Chairman's original question  
12   about market design -- and I'm not going to say how we  
13   design it going forward because we've not figured that out  
14   yet. And California has thought long and hard and we're  
15   going to start that discussion. But I would observe that  
16   there are blunt market design instruments that have been  
17   proposed to address emission leakage. And reporting this  
18   around things like a minimum greenhouse gas bid adder or a  
19   greenhouse gas hurdle rate, which has been considered in the  
20   California EIM context.

21              I think those are problematic. They on the one  
22   hand help address the emission leakage problem as well as  
23   the secondary dispatch because they would mean that all  
24   imported electricity to a carbon control area is created  
25   equivalently and effectively on a more level playing field



1 with the instant generation.

2 But what it would also mean is you are doing that  
3 at the cost of lowering the carbon price signal between high  
4 and low emission generation located outside the targeted  
5 control area. So that zero emission resources would  
6 effectively have a carbon adder that they wouldn't have had  
7 if you had a more nuanced approach to addressing the  
8 emission's leakage.

9 So I just want to highlight those two differences  
10 and the types of leakage, and the fact that how we address  
11 leakage could actually alter the competitiveness of  
12 resources and alter the ability of low emission resources to  
13 effectively capture the carbon premium.

14 MR. MONCAYO: Thank you. And I believe Mr.  
15 Knight would like to respond.

16 MR. KNIGHT: Two brief points. First, we already  
17 have leakage right now in the marketplace because we have a  
18 disjointed policy. So going back to your original comments,  
19 Mr. Chairman. I think we have to be careful about letting  
20 the perfect be the enemy of the good. I think what we would  
21 be looking for is to reduce -- I don't think we can  
22 eliminate, but certainly reduce the amount of leakage  
23 because we currently have it now.

24 We have a very disjointed you know, marketplace  
25 with regards to carbon policy. And the second point with

1    regards to materiality which seems to come up, from my  
2    perspective it takes in to site, permit, construct a new  
3    power plant, it takes anywhere between three to eight years  
4    upwards of sometimes 10 to 15 years, and we're talking about  
5    we're in 2020 now, so we're talking about 2030 is what we're  
6    looking for in terms of when we're making an investment  
7    into the development.

8                    So even though RGGI pricing may be low right now,  
9    as we're looking at those investment decisions and actions  
10   that we're taking today to affect the future, those costs in  
11   the future are really material, especially as we're, you  
12   know, projecting them and looking at some of the state  
13   policies.

14                   So I want to be careful and mindful of saying  
15   looking at today's pricing, thinking that it may not be  
16   material. I think we need to be looking forward on what  
17   those prices people are projecting, and at least from our  
18   perspective they are very material.

19                   MR. MONCAYO: Thank you Mr. Knight. Mr. Kavulla  
20   I think your hand is raised. I'm not sure if you want to  
21   make further points, no? Okay. I don't see any other  
22   panelists in the queue Mr. Chairman.

23                   CHAIRMAN CHATTERJEE: Excellent. I just have one  
24   final question for Mr. Mager and then I want to leave time  
25   for -- plenty of time on the clock for Commissioner Glick.

1 Do governance arrangements, i.e. how a carbon price is set,  
2 updated and reflected in the market affect consumers and can  
3 you elaborate how that might come to pass?

4 MR. MAGER: Certainly, Mr. Chairman. Under the  
5 NYISO's proposal for instance, the entire responsibility for  
6 saying the social cost of carbon would be delegated to the  
7 state, and it's not clear at least at this point in time,  
8 how that responsibility would be addressed.

9 You know questions that we have as consumers is  
10 how would the social cost of carbon be set? How would it be  
11 updated from time to time? When would it be updated? Would  
12 it be updated annually, or could it be updated at any time?  
13 Would potential changes in administration lead to large  
14 changes in the social cost of carbon?

15 None of that is really clear at this point in  
16 time. So it's a concern for consumers. I mean it's again  
17 the concept of carbon pricing is one thing. The  
18 implementation details is another. And unless there's some  
19 market confidence in the transparency of how and when the  
20 price would be set and updated from time to time, I'm not  
21 sure it's going to serve the intended purpose.

22 CHAIRMAN CHATTERJEE: Thank you for that  
23 response. I don't have any follow-ups. I appreciate all of  
24 the panelists, and again, I appreciate the patience of my  
25 colleague, Commissioner Glick. I turn it over to you.

1                   COMMISSONER GLICK: Thank you very much Mr.  
2 Chairman. I'll be quick. I know we don't have a lot of  
3 time. A couple questions. First I want to start with  
4 Commissioner Kavulla, and I was interested in both your  
5 written statement and your oral statement this afternoon, in  
6 your mentioning of the Commission's authority to form joint  
7 states or boards.

8                   And as you noted, and has been discussed  
9 throughout this Conference today, cooperative federalism is  
10 a big issue. And how we go about implanting or approving  
11 through RTO tariffs, state implemented, or state supported  
12 carbon pricing, there are significant implications both for  
13 the states that are impacted but others as well.

14                  So I was wondering if you could elaborate a  
15 little bit on how you might see the Commission utilizing  
16 this authority under the Federal Power Act to essentially  
17 improve the dialogue between the states and for could also  
18 work -- so that we can develop a workable solution.

19                  MR. KAVULLA: Yeah. Happy to Commissioner Glick.  
20 I think it's a real interesting legal authority that's  
21 present in the Federal Power Act in Section 209 in the  
22 implementing regulations that are associated with it that  
23 has infrequently been utilized by the Commission. And I  
24 compare it in my written comments to the Federal  
25 Communications Commission, which during a period of tumult

1 in the jurisdictional divide between the states and federal  
2 regulation, more extensively made use of these kind of joint  
3 board arrangements.

4 As a very similar statutory language construct to  
5 the Federal Power Act, in their authorizing statute,  
6 Congress did in the '96 Telecom Act, go in and specify  
7 particular joint boards that should be seated, so that's not  
8 something that Congress has seen fit to do with one  
9 exception for joint dispatch markets coming out of one of  
10 the EP acts.

11 But in any case, they have been used by that  
12 regulator and you have the authority to use them as well.  
13 The way that your administrative rules contemplate them  
14 being used is either sort of I believe it's called joint or  
15 concurrent hearings. And basically the difference is  
16 whether you in essence, delegate the purview of federal  
17 decision making within a scope of authority and tailored  
18 identified remedies to a particular body of state regulators  
19 that are kind of causing perhaps, the wholesale issue that  
20 you might want to give them a bit at resolving.

21 Or, alternatively -- and the rules identify this  
22 as probably the more productive path, that the federal and  
23 state regulators sort of jointly take you know, read  
24 evidence, talk about the issues in common and then try to  
25 come up with a productive path forward. But where the

1 ultimate rule or order is issued by your Commission and the  
2 Commissioners at FERC, rather than delegating that  
3 authority pursuant to the FPA.

4           That is what the FCC's' administration of a very  
5 similar provision looks like and it's something that's worth  
6 considering. Again, I draw on my own experience having sat  
7 on one of those FCC joint boards. It didn't always work  
8 perfectly. There was still you know complaints frankly, by  
9 states about not being adequately listened to by the FCC  
10 Administration.

11           But you know, once the ball was got rolling, no  
12 one could complaint, I think, about not at least having a  
13 bite at the apple and some kind of process that they were  
14 channeled within. So I think the Commission here, you know,  
15 has found itself trying to grapple with, you know, genuine  
16 problems as I see it at least, in the wholesale market that  
17 are created by state policies.

18           But I think it's reasonable to try to rope in  
19 states to try to help solve those problems. And that's  
20 really fundamentally the proposition that I'm trying to  
21 make. Now one key difference between the FCC's regulation  
22 and the Commission's is that you do, at least in certain  
23 markets, have ready built RTO stakeholder processes that  
24 could ideally do some of the lifting that is left to the  
25 joint boards in the FCC arrangement, which lack sort of the

1 similar type of stakeholder corporate governance  
2 arrangements like electricity RTOs.

3 But nevertheless, if the Commission does want to  
4 engage in a more direct dialogue with their state  
5 counterparts, that is fully contemplated, and it has been  
6 since the inception of the Federal Power Act in the  
7 statute. And I think it's something people forget when we  
8 try to draw very bright lines between the two jurisdictions  
9 that are clearly interacting with one another all the time.

10 COMMISSIONER GLICK: Well it's a very interesting  
11 concept. I'm sure that the states don't feel like they do  
12 with the FCC that they're not listened to by FERC. I'm sure  
13 they think we're always listening to them right. But --

14 MR. MONCAYO: Commissioner Glick, sorry to  
15 interrupt, but it looks like Doctor Quinn would like to make  
16 a comment.

17 COMMISSIONER GLICK: Okay.

18 DR. QUINN: And I'll make this really brief. And  
19 Commissioner, just you know, I know you know this. But you  
20 know, on top of this kind of formal statutory authority, the  
21 Commission has in the past gone out to the regions -- either  
22 the Commission itself, or staff and on a number of occasions  
23 where there is an overlapping interest between the FERC and  
24 a state agency.

25 I know several years ago there was a staff -- a

1 joint staff in California PUC meeting about array in  
2 California during the gas electric coordination work. There  
3 were regional conferences. I believe we also did those as  
4 part of the theme power plant and preparing for that. And  
5 so even if the Commission didn't want to take the formal  
6 step, there are informal ways to do that that the  
7 Commission has had success with in the past.

8 COMMISSIONER GLICK: That's an excellent point.  
9 I think this is again something we should take a look at,  
10 whether we do it formally or informally, I think we need to  
11 have greater outreach to the states in this very important  
12 issue. And if I could stay with you, I had a thought when  
13 you were discussing the notion that was provided by PJM  
14 earlier, excuse me, of having some sort of region-wide,  
15 RTO-wide carbon price.

16 And then those states that didn't adopt carbon  
17 pricing you'd make it up on the back end to them. And it  
18 strikes me as an interesting proposal and probably  
19 efficient. But I was just thinking about from the state's  
20 perspective, let's say without naming states. Let's say you  
21 have state A and state B. State B has a carbon price and  
22 state A doesn't. State A actually prefers to have more coal  
23 generation.

24 If you had a region-wide carbon price, the coal  
25 generator in state A would lose out essentially, probably,



1 or at least it would be less economic than they were without  
2 a carbon price. And so, even though you might compensate  
3 the state later on, I think you'd be adversely impacting  
4 that at your coal generator. Not that I'm advocating for  
5 that particular state, but I'm just saying I'm just  
6 wondering how you would address that particular concern?

7 DR. QUINN: Yeah. Thanks for the question  
8 Commissioner. And I don't want to pretend like we're at an  
9 advanced stage on this idea. I think you raised one of the  
10 issues that we highlight in our written comments, which is  
11 when you think about the non-carbon pricing states and  
12 making them indifferent, you have to think about what  
13 indifferent means.

14 Is it just indifferent from the perspective of  
15 their consumers in the increased cost that consumers might  
16 pay? Or is it also indifferent to the change in how their  
17 generation is treated? I think that's a really good point  
18 and I think something we're still thinking about. And it  
19 feels like a valid question.

20 But I say that, and you're right. But you know,  
21 it's complicated by the fact that in state A who may prefer,  
22 you know, coal resources, they might well have more carbon  
23 efficient resources that also benefit, and you could imagine  
24 that there might be a renewable generator in that state as  
25 well.

1           And so when you think about, you know, making  
2   that state whole on a generation side, you'd have to think  
3   kind of like a portfolio of resources in that region and how  
4   the collective set of resources in that region or that state  
5   were affected. But it's a perfectly good question and I  
6   don't pretend that we have an answer yet.

7           COMMISSIONER GLICK: Jorge is there any other  
8   hands on that question?

9           MR. MONCAYO: No. I don't see anybody yet in the  
10   queue.

11          COMMISSIONER GLICK: Okay. I'll move on to my  
12   final question then. And this is for everybody.  
13   Presumably, and I asked a version of this earlier today.  
14   Presumably, we're going to get additional Section 205  
15   filings from RTOs with additional proposals relating to  
16   carbon pricing.

17          I'm just curious what each of you think we should  
18   take a look at in determining whether the proposal is just  
19   and reasonable.

20          MR. MONCAYO: I don't see anybody in the queue  
21   just yet, but if you would like to make a response. Okay,  
22   Doctor Quinn please go ahead.

23          DR. QUINN: I'm happy to go first and let other  
24   people think, however you did a good job of telegraphing it  
25   earlier in the day. You know Commissioner, I think it's a

1 great question. And I thought on the first panel Ari Peskoe  
2 kind of ran through a set of things the Commission has said  
3 and I recognize them from a lot of the price formation rule  
4 makings.

5                   You know, the kinds of things that  
6 you hope market design does -- encourage better dispatch,  
7 provide incentives for people to follow that dispatch,  
8 provide incentives and compensation for attributes that we  
9 value, provide an entry entrance decision.

10                So I think for the most part, the things that you  
11 should consider are all of the things that you consider when  
12 you address any other market design. The thing that feels  
13 special about carbon pricing -- when you're talking about  
14 sub-regional carbon pricing and leakage. I think all the  
15 issues we talked about here I think are valid and relevant  
16 and you'll have to address kind of what the baseline is, and  
17 how you -- and what perspective you want to attach to  
18 considerations of change.

19                How sub-regional pricing, sub-regional carbon  
20 pricing affects different states that have made different  
21 decisions. When you're talking about regional carbon  
22 pricing across the entire ISO footprint, it seems like the  
23 biggest question is whether that carbon price has been  
24 approved through a state law or administrative action, so  
25 it's very well understood.

1           It's identified and determined outside of the  
2   FERC tariff. The FERC tariff really only has to have rules  
3   that address all the things that FERC normally cares about  
4   when they care about market design. Or, if the ISO is  
5   establishing that carbon price and whether that carbon price  
6   should go in the FERC tariff. And that I think -- and this  
7   kind of follows up on I think a question you asked in one of  
8   the earlier panels.

9           That does feel special. The regulatory questions  
10   about whether the carbon price is in the FERC tariff or not,  
11   and if it is in the FERC tariff, you know, how to think  
12   through who has Section 205 rights to change that price and  
13   maybe accepting that under Section 206 that price can be  
14   changed and what the Commission's posture would be as it  
15   approaches those questions under Section 206. But that  
16   really feels like the only special element of carbon  
17   pricing in all of the other market design things that need  
18   to be passed.

19           MR. MONCAYO: Mr. Mager would like to make some  
20   comments.

21           MR. MAGER: Sure. Arnie covered some of the  
22   things I was going to mention. I think the key to remember  
23   is that you know, having to decide the question of whether  
24   people support, or the Commission may be supportive or not  
25   of carbon pricing in general. I think as you get various

1 proposals and assuming they come in from different regions  
2 is to really examine the specific details, the  
3 implementation details because that's really where the  
4 rubber hits the road.

5           And I think without question, the social cost of  
6 carbon is going to be a major input into the ultimate  
7 wholesale energy price, and so I think the Commission has to  
8 be satisfied that if that authority is delegated to the  
9 state that it is implemented in a manner that will at least  
10 be satisfactory to the Commission in terms of ensuring that  
11 rates are just and reasonable, that the social cost of  
12 carbon is set in accordance with some type of knowing the  
13 process.

14           It is an open process? Is it transparent? How  
15 frequently can it be updated? How can it be updated? Is it  
16 going to be updated based on you know, various changes to  
17 inflation or other known indices, or will the state have  
18 completely unlimited power to change the value however it  
19 wants to whatever extent it wants?

20           Additionally, I think how it's implemented in  
21 terms of the treatment of carbon revenues is very important.  
22 The Commission has to be assured that rates are going to be  
23 just and reasonable throughout a region. So the manner in  
24 which carbon revenues are allocated back to load-serving  
25 entities or end use consumers becomes very important to make

1     sure that there is equity between regions.

2                 Then finally, dealing with the leakage issues and  
3     make sure that the rules and the implementation plan do not  
4     discriminate against imports or exports, or adversely impact  
5     a region based on how those rules are set up.

6                 And so, I guess the one message I would leave you  
7     with Commissioner, is that in this case I think the details  
8     in the rules are really important and need to be examined on  
9     an individual and wholesale basis. Thank you.

10                MR. MONCAYO: Thank you. Mr. Wadsworth?

11                MR. WADSWORTH: Yeah thank you. To me it's not  
12     much different than how the Commission evaluated price  
13     formation improvements to the markets. You know, in going  
14     back to I think it was 2012, the Commission has set a  
15     Technical Conference on capacity markets. And one of the  
16     key messages that came out of that was why are we talking  
17     about capacity markets?

18                The energy market is the most important market.  
19     That's where most of the revenues are transacted. And so  
20     that was the kickoff to the price formation changes that  
21     were made. Over time we've seen that erode in terms of the  
22     revenues.

23                                 And I think that to the extent  
24     that ISOs and RTOs come to the Commission with a program for  
25     implementing a carbon price, regardless of how that carbon

1 price is set, I would assume that it's set outside of the  
2 RTO and ISO process.

3           You know I think we need to consider the same  
4 principles that we considered when we were evaluating energy  
5 price formation improvements. So we want to ensure that the  
6 market sends the right signal to incent the most competition  
7 through markets. We want to eliminate as much as we  
8 possibly can -- price suppression.

9           And so I think that when you look at those types  
10 of things in terms of just and reasonable, are the markets  
11 performing the way that they should, you know, the you can  
12 start making a decision around is the program that's being  
13 submitted to you, does it meet the just and reasonable  
14 standard?

15           And I think too, in addition you know, that maybe  
16 sort of outside of the scope, and something that was  
17 recognized in the price formation discussions which is very  
18 relevant for this discussion, is what are the impacts to the  
19 bilateral markets that trade based upon what happens in the  
20 ISO/RTO energy markets?

21           And I think you know, if we see that the real  
22 time energy markets are producing the right price signals  
23 that incorporate the costs of producing power in the market  
24 that the bilateral markets should be incorporating into  
25 those prices as well. And that's equally as important.

1           I know that's outside of the Commission's  
2   purview, but when you see that happening, I think that's a  
3   good indicator of what's presented before you is a good  
4   program.

5           MR. MONCAYO: And we have Mr. Kavulla up next.

6           MR. KAVULLA: Yeah I would say going back to some  
7   of my initial comments and agreeing with a lot of what's  
8   been said. You know, having consideration of whether there  
9   are going to be fruitful interactions with existing state  
10  clean energy policies that make their ultimate result more  
11  or I should say less discriminatory, in their effectuation  
12  in wholesale markets is important.

13           So you know, you can take New York as an example  
14  -- a jurisdiction that has as particular public policy for  
15  zero emission credits that one set of resources is entitled  
16  to. If you're able to introduce a carbon price there that  
17  simultaneously mitigates, causes the price of those to go to  
18  zero, because they are in fact benchmarked to the energy  
19  revenues that those nuclear units use.

20           And at the same time, grows the pool of market  
21  participants who are in a position to act in relation to  
22  that carbon price, then you've achieved an outcome I think,  
23  where there's more competition in the market, more  
24  opportunity for innovation, and you've essentially  
25  transformed a policy that's sort of just the purpose of



1 non-carbon emitting encumbrance to something that actually  
2 might have vitality and momentum in terms of leveraging for  
3 de-carbonization.

4           You know there are risks on the other end.

5 Consider a hypothetical example where a market passes a  
6 clean energy standard and locks up you know, thousands upon  
7 thousands of megawatts of particular resources on fixed  
8 price contracts. The introduction of a carbon price there  
9 might not have that same kind of fruitful interaction that  
10 say the New York example would.

11           And then I agree with some of the things Michael  
12 has raised about needing real sensitivity to the  
13 transparency of revenue distribution on the back end. I  
14 think that the consumer you know, my comments should be  
15 taken to be about promoting competition that leads to  
16 innovation, but also really making sure that we don't have  
17 customers, you know, paying twice as has been mentioned  
18 before.

19           MR. MONCAYO: Thank you. I think we also have  
20 Mr. Singh up next.

21           MR. SINGH: Thank you. So if it's a state driven  
22 program such as California or RGGI, we have a long  
23 precedent. So that's not really you know, that's not  
24 breaking new ground. And there will be complex issues that  
25 come before you on EIM and so on and so forth, but you have

1 long worked on those issues. I think the question really  
2 becomes interesting if you have a 205 filing in a state like  
3 New York that proposed to put sort of a carbon charge within  
4 the RTO tariff.

5 And I think there all the questions that have  
6 been listed in this panel, how is leakage addressed, how the  
7 revenues are distributed, who sets the carbon price? I  
8 think all of those are going to be very important. You  
9 know, you could also ask a question. I mean that's a big  
10 step, and that was really the focus of the other panelists  
11 in the morning, could FERC even do this?

12 And I mean I would only highlight that you know,  
13 FERC has done in the past things like transmission open  
14 access which at the time people may not have thought of  
15 being easy things, and they were big things that went on to  
16 change the future. So I think that's going to be an  
17 interesting question for you.

18 And finally, while carbon pricing may be  
19 considered a good thing by almost everyone participating in  
20 this Conference, one thing to watch out is that if there is  
21 prolonged uncertainty on whether you are going to have  
22 carbon pricing, or not have carbon pricing, that's not a  
23 good thing because people rely on making long-term  
24 investment decisions, relying on 10-12 year hedge  
25 contracts.

1           And if the forward markets have like 50 percent  
2   probability of carbon being there, well that's obviously  
3   wrong. It's going to be 100 percent or zero percent. So  
4   any guidance the Commission could give on what it would look  
5   for in filings from states, from ISOs making that type of a  
6   filing would be a good thing. Thank you.

7           MR. MONCAYO: Thank you Mr. Singh. Commissioner  
8   Glick I don't see anybody else in the queue.

9           COMMISSIONER GLICK: Okay. I just want to thank  
10   everyone again. This is a very helpful panel and Mr.  
11   Chairman turn it back to you, thank you.

12          CHAIRMAN CHATTERJEE: Thank you and again I just  
13   want to thank all of the panelists for the engaging  
14   conversation and appreciate your contributions today. Thank  
15   you.

16          MR. MONCAYO: So we've reached the end of our  
17   time for this panel, so I would like to conclude by thanking  
18   the panelists again. We appreciate your participation this  
19   afternoon. We will take approximately a 10 minute break.  
20   We will reconvene at 4:35.

21          Group 2 panelists, please sign out of the WebEx  
22   meeting. If you would like to continue watching the  
23   Conference, you may use a public webcast link on the  
24   Conference event page at FERC.gov. Commissioners and  
25   panelists from the closing roundtable, please stay signed in

1 to WebEx over the break, but please mute your microphones  
2 and turn off your cameras until we resume. So we'll see you  
3 in approximately 10 minutes.

4 (Break)

5 Closing Roundtable Discussion

6 MR. MILLER: Chairman Chatterjee, Commissioner  
7 Glick are you ready for us to begin?

8 COMMISSIONER GLICK: This is Commissioner Glick I  
9 am.

10 MR. MILLER: Thank you. And Chairman Chatterjee,  
11 I will simply wait for you to let me know when you're ready  
12 for us to begin.

13 UNKNOWN SPEAKER: This is Chairman Chatterjee's  
14 Office. We're ready to begin.

15 MR. MILLER: Okay, thank you very much. All  
16 right. Welcome back to everyone for our fourth and final  
17 panel of this Technical Conference. This panel is our  
18 closing roundtable discussion. Each panelist has three  
19 minutes to give any opening remarks. We will then begin a  
20 question and answer session, followed by any concluding  
21 remarks for this Conference from the Chairman and  
22 Commissioners.

23 As we begin with opening remarks, we remind all  
24 participants to refrain from any discussion of pending,  
25 contested proceedings. If anyone engages in these kinds of

1 discussions, a FERC staff member will interrupt the  
2 discussion to ask the speaker to avoid that topic. I will  
3 call each panelist in turn to give their opening remarks.

4 First we have Laura Beane, Chief Renewables  
5 Officer at ENGIE North America, also on behalf of the  
6 American Wind Energy Association. Please go ahead Miss  
7 Beane.

8 MS. BEANE: Thank you so much. Good afternoon  
9 Chairman Chatterjee, Commissioner Glick and staff of the  
10 Commission. My name is Laura Beane. I'm the Chief  
11 Renewables Officer of ENGIE North America. And as John  
12 mentioned, I am also here today on behalf of the American  
13 Wind Energy Association.

14 Just briefly, in the event you are not familiar,  
15 ENGIE North America is a subsidiary of ENGIES SA, which is  
16 the world's largest independent power producer with  
17 operations throughout 70 countries. Like so many other  
18 companies, we recognize climate change as one of the major  
19 challenges that is facing us today. And we believe energy  
20 companies should be at the forefront of working with you to  
21 address this challenge.

22 I am so encouraged by the organization of this  
23 Technical Conference and the incredible level of engagement  
24 that we have seen today across the industry. From a pure  
25 business perspective, clarity and certainty are so

1 important. And for those of us that are involved in making  
2 these long-term capital intensive investments in energy  
3 infrastructure, having this mechanism that can provide  
4 long-term price signals for investment would be hugely  
5 valuable.

6           We've heard today about the importance of a  
7 solution that is efficient, effective and transparent.  
8 We've heard a lot. Those words a lot today. And I think  
9 those characteristics are really difficult to argue against.  
10 Given we're also focused on representing the lens of the  
11 customer, it's important that these same attributes are  
12 attractive and helpful to consumers as well. Many panelists  
13 today have noted their agreement that carbon pricing indeed  
14 does have these attributes -- efficiency.

15           Markets are just better vehicles for directing  
16 resource investment, allocating clean dispatch. We've seen  
17 that. They're effective. They're more likely to actually  
18 reduce emissions, particularly, as has been discussed, if  
19 the price signal is adequate. And they're transparent. The  
20 cost of carbon reduction is explicit, it's not hidden.

21           We've also seen and heard today states can and  
22 will do what they deem appropriate with regard to clean  
23 energy policy. And so given that it's probably unrealistic  
24 that a single streamlined solution can be quickly  
25 implemented here. However, it seems to me that implementing

1 a carbon price in wholesale markets would create a important  
2 baseline level of consistence, which may -- and I've heard  
3 many panelists today agree with this view, result in a  
4 reduced need for numerous incremental state proposals over  
5 time.

6 And finally, we have heard today a fair amount of  
7 sentiment that FERC really cannot avoid addressing these  
8 issues. These out of market alternatives that have emerged  
9 because there's an absence of a wholesale market solution.  
10 There is no doubt that they are creating inefficiencies and  
11 distortions in the markets.

12 And the practical considerations of resource  
13 adequacy and balancing resources required to maintain  
14 reliability will require FERC to act if we're going to  
15 preserve competitive wholesale market structure. And I was  
16 really encouraged today to hear from the RTOs and ISOs that  
17 although they certainly acknowledge complexity and  
18 challenges associated with leakage, resource shuffling, all  
19 the other elements, there is confidence that these obstacles  
20 are solvable.

21 So I certainly don't envy the job you have. You  
22 must navigate complex, thorny issues, and work to find  
23 workable solutions. But FERC has a history of breaking down  
24 barriers to market competition. Your DER order is just the  
25 most recent example of your ability to do this.

1                   And for purposes of integrating carbon into  
2   organized wholesale markets, I believe FERC can do this  
3   again. And I think the job ahead is for all of us to work  
4   collaborative on an appropriate mechanism that can reduce  
5   carbon, assist states in meeting their de-carbonization  
6   goals, while preserving grid reliability and competitive  
7   wholesale markets. Thank you again so much for the  
8   opportunity to participate in this Conference today and I  
9   really look forward to the discussion.

10                  MR. MILLER: Thank you Miss Beane. Up next is  
11   Christopher Crane, President and CEO at Exelon Corporation.  
12   Please proceed Mr. Crane.

13                  MR. CRANE: Yeah I could just ditto what Laura  
14   Beane just said, but our staff put so much work into making  
15   our comments, so I'll deliver them anyways. I want to thank  
16   you for the opportunity Chairman and Commissioner and staff  
17   for being able to be online with you today. And Exelon for  
18   decades has worked diligently to try to come up with a  
19   market solution that's technology neutral which is key.

20                  But also that allows us to have a market-based  
21   de-carbonization of the grid. Given the comprehensive lack  
22   of federal -- the total lack of federal comprehensive  
23   action, states, as Laura said, have had to take on different  
24   programs. 21 states which represent 47 percent of the U.S.  
25   consumers have taken actions. They're different actions.



1 The jurisdictions have, using different policies, and it  
2 makes the markets skewed, especially for some of the points  
3 that have been brought up all day long.

4 Wholesale markets are not aligned with the goals  
5 of what our states want, and you know, we have talked for  
6 years about state's rights and states being able to do what  
7 they want, but RTO's in the markets are not supporting it.  
8 They ignore the cost of pollution. Totally ignore it. You  
9 heard earlier from Senator Whitehouse and some others on the  
10 cost of pollution and what's it doing to our economy.

11 In fact all the eastern RTOs now have rules that  
12 are actively undermining state policies. So if a state  
13 wants to do something, but a state is stuck into an RTO,  
14 they're required to go by the RTO rules and that's an issue  
15 between FERC and the RTOs that needs to be addressed.

16 The obvious remedy to this market failure is to  
17 put a meaningful price on carbon at the wholesale level  
18 reflected that the cost of the regional dispatch of  
19 generation. That has not occurred. And my point of current  
20 market designs has consequences -- significant, not only  
21 environmental consequences, but economic consequences.

22 Our country emission free, nuclear free is being  
23 forced to compete against fossil generators that do not show  
24 their cost of pollution, or other generators that are being  
25 subsidized for their low carbon or zero carbon generation.

1 This subsidy and its subsidy that is allowing fossil  
2 generation to push a number of our country's nuclear plants  
3 out of the market.

4 Most recent market casualties of the failure of  
5 the markets for reactors in the State of Illinois have  
6 announced retirements, four more are in financial distress.  
7 A total of 8,000 megawatts of zero carbon free emission  
8 plants that can run through a polar vortex. They can run  
9 through anything. They have capacity factors up to 95  
10 percent that support the reliability and the grid.

11 These closures are wrong. They're wrong for our  
12 customers, it's wrong for the environment, but the wholesale  
13 markets are telling us that they should be replaced by  
14 fossil fuels. And that's not what our consumers and what  
15 our states want because it can shift costs of pollution to  
16 the public and not hold the generators accountable.

17 In Illinois alone, the last of these nuclear  
18 reactors will increase the carbon emission by 70 percent in  
19 the electric sector. Forget about electrification or  
20 anything else we're doing, it's just in that sector. And  
21 the latest pattern the nation has lost five nuclear plants  
22 in three years, over 68 terawatts of emission free  
23 electricity. Over 30 million tons of carbon is now being  
24 emitted where it wasn't before.

25 So we're going backwards from what our customers

1 and what our states want and what we want our government and  
2 our RTOs to be supporting. If you combine the Dresden and  
3 Byron announcements that we just made, that's 15 million  
4 tons of carbon each year, roughly equivalent to the  
5 emissions of the entire State of Maryland.

6           So this is a direct result of having -- not  
7 having a meaningful price in carbon. The only option the  
8 states have currently is to have such outcomes to compensate  
9 clean generators because the regional nature of the  
10 generation dispatch in the carbon pricing, just shifts  
11 emissions to other states.

12           Only RTOs and the Commission can fix this  
13 problem. No one, as Laura talked about, is leakage, but  
14 neither has done so. There are solutions to this problem.  
15 The border adjustments we've heard about earlier today --  
16 many panelists talked about them, we are regretful for the  
17 state leadership in trying to deploy energy programs, but  
18 they cannot do it alone.

19           We're actually grateful, not regretful. We're  
20 grateful for it. But it comes with a price on carbon. So  
21 we need to move beyond talking and start action. First we  
22 need clear statements by the Commission that they have the  
23 authority as we heard on the first panel today. The experts  
24 concluded, all but one dissenting, that FERC does have that  
25 authority.

1           Second, the Commission should also require the  
2 RTOs to develop the leakage mitigation rules, accommodating  
3 the pricing of carbon. This will remove the barriers to use  
4 carbon pricing for those states. These actions will ensure  
5 the RTOs are effective partners in facilitating what our  
6 consumers want.

7           This is more than just where a state wants what  
8 our consumers want, so I look forward to the discussion and  
9 I appreciate the opportunity to be here today.

10           MR. MILLER: Thank you Mr. Crane. The next  
11 panelist is Thad Hill, President and CEO at Calpine  
12 Corporation. Please go ahead Mr. Hill.

13           MR. HILL: Thank you. Chairman Chatterjee,  
14 Commissioner Glick, good afternoon. Calpine has long been  
15 engaged in the federal and state levels with climate change  
16 policy and we're very pleased to be with you today. I'm  
17 going to take a little bit of a step back for a minute.

18           The objective function of carbon reduction is not  
19 just to de-carbonize the grid, but actually to de-carbonize  
20 the entire economy. And it has implications. And just to  
21 give a quick example for that and I'll use California. In  
22 state power generation in California only produces 10  
23 percent of the greenhouse gases produced in the State of  
24 California. 40 percent is transportation, 20 percent is  
25 agriculture, et cetera.

1           We've been assigned longer-term goals.  
2   California has a target of a 40 percent reduction by 2030.  
3   You cannot get there unless you actually electrify a whole  
4   lot. Electricity is about to become a much bigger part of  
5   our economy and reliability will certainly be paramount.

6           Many states as have been mentioned, have gone  
7   their own way with carbon policies. In many of those  
8   states, the policies that have actually been out ahead of  
9   the academic work. The academic work is beginning to catch  
10   up. Arne Olson from E3 spoke earlier today. Secretary  
11   Moniz's energy futures initiative has done a lot of work and  
12   others have as well.

13           I think there are three big things that come out  
14   of this academic work. First, as I mentioned before, we  
15   have to electrify everything if we need to decarbonize our  
16   economy. This means a lot of growth. Secondly, there will  
17   be a lot more renewables -- that is for sure.

18           Third, even as these renewables come in, gas  
19   capacity factors for utilization would drop dramatically,  
20   and this is not a bad thing. You know obviously, that will  
21   produce less carbon. But the academic work suggests that we  
22   actually need every megawatt of the gas facilities that are  
23   existing today and some markets even more, in order to  
24   insure reliability for the future.

25           Although storage will play a role, we have things

1    like Nor'easter's in New England or dry hydro years in the  
2    west and many other examples where you're actually going to  
3    have to depend on the current fossil fleet -- gas fleet.  
4    Possibly for years or decades even.

5                So you know, let me, given all of that, two real  
6    takeaways. First, although the economy-wide CO2 market is  
7    preferred, and I recognize this is beyond the purview of  
8    FERC under the discussion today, we do support electric  
9    sector CO2 pricing in the belief that letting a market work  
10   will be much more efficient than government picking winners  
11   and losers.

12               And I think we all agree with many of the  
13   panelists today on that. Assuming it is structured right --  
14   by structured right, I mean RTO-wide markets, addressing  
15   leakages and resource shuffling beyond the borders. It will  
16   be cheaper and more efficient in reducing emissions. It  
17   will also hopefully, by encouraging this new investment,  
18   keep wholesale markets actually investable.

19               If you start having to go around the market to  
20   procure investment, nobody will invest in the market and so  
21   protecting the integrity of the markets are very important.  
22   My second main point gets to be around reliability. In the  
23   world where I have just spoke about, where we have load  
24   growth driven by economy-wide de-carbonization, and dealing  
25   with this is absolutely in FERC's purview.

1           If CO2 pricing does not happen, or is not a part  
2 of stimulating new investment, and out of market procurement  
3 continues, the resulting price distortions could crush  
4 revenues required to keep certain assets around that are  
5 required for reliability. I think this was addressed again  
6 by several panelists, including Gordon van Welie with ISO.

7           This is in fact a part of what has happened and  
8 transpired in California recently with the recent  
9 reliability events. Out of market procurement, as lower  
10 price signals for assets that were actually chased out of  
11 the market were actually required, you know, and may still  
12 be required.

13           So you know, this is a very important lesson that  
14 we actually take as we look towards these eastern markets  
15 and how the rules will play out. So with that, I look  
16 forward to questions, and again thank you for including me.

17           MR. MILLER: Thank you Mr. Hill. Up next is  
18 Brett Mattison, President and Chief Operating Officer at  
19 Kentucky Power. Please proceed Mr. Mattison.

20           MR. MATTISON: Thank you very much. Chairman  
21 Chatterjee and Commissioners, I just want to thank you for  
22 allowing me to be a part of this very important dialogue  
23 today and hosting this Technical Conference. As said, my  
24 name is Brett Mattison. I'm the present and Chief Operating  
25 Officer for Kentucky Power.

1           Kentucky Power is a wholly owned subsidiary of  
2   American Electric Power -- AEP. AEP is one of the largest  
3   electric utility companies in the United States, serving  
4   electricity to approximately five and a half million  
5   customers in the U.S. across 11 states. Kentucky Power has  
6   approximately 166,000 customers in roughly 20 counties in  
7   the eastern footprint of Kentucky, with headquarters located  
8   in Ashland, Kentucky.

9           The environmental impact that we've heard so much  
10   about today and will continue to talk about through this  
11   panel, is a priority for AEP and all of AEP's subsidiaries.  
12   Reducing carbon dioxide emissions is a very important  
13   opportunity for us at American Electric Power.

14           Over the last decade we've reduced emissions by  
15   65 percent from the period of time of the year 2000 through  
16   2019. We plan on reducing 80 percent of emissions through  
17   2050 with an aspirational goal of zero emissions through  
18   2050. AEP will be adding approximately 8,000 megawatts of  
19   wind and solar in the next 10 years through 2030.

20           At the same time however, Kentucky Power and all  
21   of AEP's other regulated electric utility subsidiaries have  
22   an obligation to serve our customers in a safe, reliable and  
23   a very cost-effective manner. The cost of energy is  
24   particularly important in areas that we are experiencing  
25   economic hardships, as we are in the eastern Kentucky



1 footprint currently.

2 In evaluating carbon pricing in the mechanisms  
3 that will be utilized to incentify the build out of new  
4 renewables, it's very important in the organized markets to  
5 realize and pay attention to the impacts that its going to  
6 have on what I call our end use customers. Those that  
7 actually keep us in business and pay the bills.

8 AEP recognizes and is very committed to the  
9 transformation to a greener economy, but we cannot, however,  
10 overlook issues of costs and reliability. Reliability has  
11 been mentioned by previous individuals and it's vitally  
12 important. We must promote a diverse supply mix that can  
13 lower emissions while preserving costs in these reliability  
14 goals.

15 I appreciate the opportunity to be here today and  
16 look forward to the discussion.

17 MR. MILLER: Thank you Mr. Mattison. Forgive me  
18 Mr. Chairman, I believe we are encountering some issues with  
19 the webcast feed. If you can bear with me for one moment  
20 I'm going to confirm whether we will reset the webcast feed  
21 and need to take a brief pause.

22 CHAIRMAN CHATTERJEE: Okay.

23 MR. MILLER: Okay Mr. Chairman. I've been  
24 informed that we should continue, and we may need to pause  
25 again at a later time if we're going to reset the feed.

1 Thank you. So thank you Mr. Mattison again. Next up we  
2 have Chris Parker, Executive Director at the Utah Department  
3 of Commerce. Please go ahead Mr. Parker.

4 MR. PARKER: Thank you John. Thank you Mr.  
5 Chairman and Commissioner Glick. Utah sits at the  
6 crossroads of the west and has a reputation as one of the  
7 nation's consistently best managed states in large part  
8 because we have an energy policy that enables stability,  
9 ensures reasonable energy rates and allows innovation.

10 Energy and self-determination in fact, are two of  
11 the four cornerstones that are governor has described as  
12 keys to our prosperity. Utah will resist direct,  
13 pre-dispatched carbon priced mechanisms in RTO and ISO  
14 markets, because one state's policies should not have such a  
15 direct effect on wholesale markets. Regional wholesale  
16 electricity markets exist to trade electricity for dollars,  
17 and FERC has no authority to attach resources in its  
18 markets.

19 States, likewise, have no authority to set a  
20 carbon price that directly changes dispatch and prices in  
21 wholesale markets. In fact, as states resource decisions  
22 will have some effect in the wholesale markets. It doesn't  
23 license direct intervention and dispatch and pricing  
24 outcomes.

25 This would leave the boundaries of state

1 authority, exporting state policies to the entire market.  
2 Federal market regulation doesn't license extra territorial  
3 state taxation. An underlying premise of the Federal Power  
4 Act is that areas of state authority remain out of the reach  
5 of FERC and vice versa. Commissioner Glick's aspirational  
6 article in the Energy Law Journal last year noted this  
7 distinction and expressed the view that the Commission's  
8 commitment to cooperative federalism should facilitate state  
9 efforts to de-carbonize the electricity sector.

10           Organized markets have done that to a degree  
11 already, but direct carbon pricing mechanisms that might  
12 serve as cooperative federalism for some states, are hostile  
13 federalism to others. State energy policies in the west  
14 differ dramatically and recent reliability issues we've seen  
15 in California have certainly highlighted these differences  
16 in their consequences.

17           For FERC to respect all states policy preferences  
18 in their spheres of authority, they must not allow adoption  
19 of carbon pricing mechanisms that alter the dispatch or  
20 price paid to producers of electricity in its wholesale  
21 markets. If a generator in Utah would run in a given  
22 dispatch period in an organized market, based on its  
23 marginal cost, but it finishes out of the money solely  
24 because of another state's carbon price adder, the other  
25 state's policy has had the legal extra territorial affect.

1           Prohibiting this outcome does no violence to the  
2 other states appropriate carbon policy interests. In recent  
3 years, some states have been clear about their desires to  
4 regulate extra territorial conduct. We've spent a lot of  
5 time today talking about leakage, which is nothing more than  
6 an attempt to ensure that what happens in one state gets  
7 transferred to another state.

8           It's clear some states and market participants  
9 want to influence the broader markets beyond their  
10 boundaries and authority. FERC's allowance for full  
11 cooperative federalism, respecting each state, doesn't leave  
12 a policy gap, even if carbon pricing mechanisms are thus  
13 less efficient. Other mechanisms exist to address these  
14 costs, like we've heard them, less efficient.

15           But FERC shouldn't allow direct alteration of its  
16 market's dispatch by one state's carbon policies in  
17 contravention of another state's, especially in ways that  
18 increase prices. By requiring states to lean on other  
19 mechanisms, FERC can prevent one state's policy choices from  
20 burdening other states. Thank you.

21           MR. MILLER: Thank you Mr. Parker. Mr. Chairman,  
22 I have been informed we will need to reboot the webcast  
23 feed, so we will need to take a five minute break while we  
24 do that. I will let you know when the webcast feed is back,  
25 and we can resume.

1           CHAIRMAN CHATTERJEE: Do panelists need to log  
2 off or do anything or do we just stay?

3           (Break)

4           MR. MILLER: Those technical issues, I've been  
5 informed that the public webcast feed is back up and  
6 running. Before we resume opening remarks, I wanted to  
7 relay for those of you tuning in on the public webcast feed,  
8 I've been informed by our staff that if you're continuing to  
9 have issues using the flash video stream, there is another  
10 option there to use the Windows Media stream. You may have  
11 better success with that feed.

12           But hopefully with the reboot, we won't have any  
13 other issues for the remainder of the Conference. Thank you  
14 again for your patience and we'll resume here with opening  
15 remarks. Up next we have Paul Segal, CEO at LS Power.  
16 Please proceed Mr. Segal.

17           MR. SEGAL: Thanks John. Thank you Commissioner  
18 Chatterjee, Commissioners Glick and Danly as well as the  
19 Commission staff for putting this Conference together on  
20 this critical topic. At LS Power we try to anticipate the  
21 demands of our customers and maintain a nimble business  
22 model. This approach has led us to own EvGo - the largest  
23 electric vehicle fast charging business in the U.S.;

24           Own CPower, one of the largest demand response  
25 providers in the U.S.; Develop and own the largest

1 operational battery storage project in the world; Build a  
2 business around developing transmission which serves a key  
3 function of connecting renewable resources to load; and  
4 Develop and own renewable and fossil fuel plants.

5           We're always looking for durable market trends to  
6 respond to, either through development of infrastructure,  
7 investment in existing assets, or opportunities to grow  
8 businesses. The case for pricing carbon comes down to  
9 putting a durable and transparent price on an important  
10 environmental externality.

11           You've heard all day about the benefits to  
12 customers of efficiency and innovation that a carbon price  
13 can bring. You've also heard about where we are today in  
14 the absence of a national policy that has left many states  
15 to implement varied approaches to transitioning to a cleaner  
16 grid. The politics of this process often shifts from how do  
17 we achieve the largest impact on emissions at the lowest  
18 cost to how can we create jobs or preserve local property  
19 tax revenues as just a few examples.

20           There's nothing wrong with these objectives, but  
21 accomplishing them for deregulated electric markets will  
22 result in higher customer costs and market distortions that  
23 can have an impact on reliability and resilience of our  
24 electric grid. Pricing emission externalities like NOCS and  
25 SOCS has proven to be effective, triggering investments in

1 environmental controls in newer, cleaner technologies which  
2 in turn have replaced older, less sufficient power plants  
3 where it was not economic to invest in such controls.

4 Our combined cycle West Deptford project in New  
5 Jersey is one example of a new resource coming in to replace  
6 the old one, and doing so without any subsidies or out of  
7 market contracts. If we can preserve the efficiency and  
8 transparency of wholesale market signals, the market will  
9 continue to drive such investment decisions.

10 At LS Power, we have been evaluating medium and  
11 long-term opportunities for lower carbon forms of generation  
12 such as hydrogen, renewable natural gas and carbon capture,  
13 among others. Under a carbon price regime, we can clearly  
14 assess and rank the economic merits of these different  
15 technologies and invest accordingly.

16 Under various resource specific subsidies that  
17 vary by geography, this analysis becomes far harder and  
18 therefore risks diminishing our investment in lower carbon,  
19 lower cost solutions. In conclusion, while we recognize  
20 that carbon pricing will not be a major wand that eliminates  
21 the tensions between state and federal policy immediately,  
22 it can go a long way in reducing that tension.

23 We recognize the jurisdictional challenges the  
24 Commission faces in addressing carbon pricing. By  
25 sponsoring this Technical Conference, the Commission has

1 taken an important step to start the dialogue around what  
2 our industry can do to be proactive on this issue. And we  
3 must all work to continue the dialogue. Thanks again for  
4 the opportunity to participate and I look forward to our  
5 discussion.

6 MR. MILLER: Thank you Mr. Segal. Our next  
7 panelist is Susan Tierney, Senior Advisor at Analysis Group.  
8 Please go ahead Dr. Tierney.

9 DR. TIERNEY: Thank you. Mr. Chairman and  
10 Commissioners Glick and Danly. Thank you for holding this  
11 Technical Conference and for including me on this panel.  
12 Let me start by noting the fact that the Commission in  
13 exercising its authority under the Federal Power Act, has  
14 taken great care to allow for regional differences in its  
15 approvals of RTOs.

16 Such differences show up today in the somewhat  
17 varied market designs of the RTOs, as well as the policy  
18 preferences of states within those RTOs. For example, with  
19 regard to their own electric industry structures. It's  
20 worth recalling that FERC carries out this work under the  
21 Federal Power Act with the instruction that "no wholesale  
22 transmission order may be issued that is inconsistent with  
23 any state law governing retail marketing areas of electric  
24 utilities."

25 This was intended to harmonize state's decisions



1 regarding the structure of the electric industry their  
2 states with FERC's role in encouraging wholesale competition  
3 and access to transmission. In the past decade, all but  
4 three states in the regions served by PJM, New York and ISO  
5 New England, have adopted laws or regulations that require  
6 greenhouse gas emission reductions in their economies.

7           Arguably, these state policies are as important,  
8 if not more so, than the positions of these states with  
9 regard to their industry structure. In my written comments  
10 I have touched on three types of state policies relating to  
11 carbon emitting and non-carbon emitting resources that do,  
12 or could, interact with RTO markets. These are one -- the  
13 RGGI program that now operates in 10 states.

14           Two -- the clean energy standard that operates in  
15 New York and Massachusetts right now. And three -- the  
16 incorporation of a carbon pricing mechanism directly into  
17 the wholesale market tariff, such as proposed by NYISO.  
18 Many studies, including ones that I have co-authored, have  
19 concluded that these state policies can. And in the cases  
20 of RGGI and CES, already do, operate seamlessly in  
21 conjunction with wholesale markets. And of course, you've  
22 heard this point repeatedly today.

23           I want to make one final point. As a former  
24 state regulator, environmental policy maker, I was very glad  
25 to hear this morning's panel of legal experts state their

1 opinion that the FPA does not inhibit the Commission from  
2 approving wholesale prices that reflect state's policies  
3 with regard to carbon pricing and other market mechanisms  
4 that reflect a preference for an attribute of generation.

5           That was heartening to me because if FERC were to  
6 conclude that it could not approve a tariff with a carbon  
7 pricing mechanism in it, on the one hand and then conclude  
8 -- continue to take steps as the Commission has done in  
9 various capacity market orders, to inhibit states in PJM,  
10 New York and New England from acting on their resource  
11 preferences, it will create an entirely untenable position  
12 for many states that are under their own statutory  
13 requirements to lower greenhouse gas emissions within their  
14 footprint.

15           The RTO markets today are not delivering those  
16 resources fast enough. So as an economic regulator, FERC  
17 should be supportive of steps by states to improve on the  
18 efficiency of wholesale market designs when current ones  
19 fail to take into account significant and costly  
20 externalities such as greenhouse gas emissions.

21           The presence of externalities is a classic reason  
22 for economic regulation. Today's markets were not designed  
23 at a time when carbon emission reductions were required as a  
24 matter of states law. They are now and I hope that FERC  
25 continues to allow states to follow their own statutory

1 requirements. Thank you very much.

2 MR. MILLER: Thank you Dr. Tierney. Our final  
3 panelist is Dena Wiggins, President and CEO at the Natural  
4 Gas Supply Association. Please go ahead Miss Wiggins.

5 MS. WIGGINS: Thank you. Markets matter has been  
6 our tag line at NGSA for almost a decade. And for us it's  
7 really more than a tag line. It's absolutely fundamental to  
8 what we believe. While markets may never be perfect,  
9 whatever perfect is, we believe that a market based approach  
10 is the best approach to reach the goal of a lower carbon  
11 energy future.

12 Nearly a year ago NGSA publicly announced its  
13 support for a national economy-wide price on carbon, making  
14 us the first national natural gas trade association to take  
15 this position. We believe that effective carbon pricing is  
16 critical to de-carbonizing the world's energy systems.

17 Such an approach would also provide a level  
18 playing field for different fuels and different  
19 technologies. We know that it's going to require a great  
20 deal of hard work to build a lower carbon energy future, and  
21 we know that nothing is easy when it comes to power markets.

22 So why should this be any different? The  
23 details, many of which have been discussed here today are a  
24 few of the complicated issues that each state and region  
25 will have to sort out. But regardless of how it's done, our

1 member companies see natural gas as an essential building  
2 block in reaching important climate goals.

3           A building block and partnership with renewables.  
4 In addition to the important step of hosting this  
5 Conference, we think that the Commission can further support  
6 this process by affirming and a policy statement that FERC  
7 does not intend to impinge on state's rights, that the  
8 Commission is going to consider RTO and ISO tariff  
9 proposals that come before it, and that tradable mechanisms  
10 such as RGGI remain acceptable market approaches.

11           Recognizing all of the obstacles, we think a  
12 price on carbon is the most effective long-term solution in  
13 the power markets. First, pricing carbon in power markets,  
14 if properly implemented, allows states and regions to  
15 effectively achieve carbon reductions without compromising  
16 competitive wholesale power markets.

17           Second, carbon pricing allows all resources to  
18 compete and allows the natural gas renewable partnership to  
19 address intermittency and resource adequacy. Keeping the  
20 lights on is one goal we all share, and it's a goal we  
21 really must reach to keep the public's trust and confidence.

22           Third, carbon pricing incents innovation in new  
23 cleaner technologies such as CCUS. And finally fourth --  
24 allowing the market to select the most economical resources  
25 has never been more important considering the economic

1 hardships states, households and businesses are now  
2 experiencing. In fact, the revenue generated by carbon  
3 pricing can be used to help those that are impacted by  
4 increased cost.

5 Markets matter. And when it comes to pricing  
6 carbon, in addition to FERC, states matter, all of the  
7 stakeholders' matter, and the RTOs and the ISOs matter.  
8 This needs to be a partnership and we're hopeful that  
9 today's discussion will spur many more conversations and  
10 many more discussions in the pursuit of developing carbon  
11 pricing mechanisms.

12 It seems to me that coming out of this Conference  
13 we have quite a bit of momentum, and I think we need to work  
14 together to keep that momentum going. Thank you.

15 MR. MILLER: Thank you very much Miss Wiggins and  
16 thanks to all of our panelists. We will now begin the  
17 question and answer session. A few quick reminders. If a  
18 panelist would like to answer a question, please use the  
19 WebEx raise hand feature. Alternatively, if you are having  
20 issues with that function, you can turn on your microphone  
21 and indicate to me that you would like to respond.

22 I will call on panelists that indicate they would  
23 like to answer in turn. Once I do so, please turn on your  
24 microphone and respond to the question. And once you've  
25 completed your answer, please turn off your microphone and

1 lower your virtual hand in WebEx. With that, I will now  
2 turn it over to the Commission for their questions and  
3 concluding statements after the Q and A session. Please go  
4 ahead Mr. Chairman.

5 CHAIRMAN CHATTERJEE: Thank you. I want to start  
6 by thanking all of the panelists for your participation  
7 today, for your thoughtful remarks as well as your written  
8 submissions. They've been very helpful to us. I'm very  
9 much looking forward to this discussion, in particular, to  
10 sort of sum up and kick the tires, if you will, on the  
11 issues that we've been discussing all day.

12 I want to start with Miss Wiggins. A lot of  
13 onlookers may have been surprised to see your organization,  
14 NGSa, as a signatory to the petition that brought us all  
15 here today. They also may be surprised that you've  
16 expressed a hope that this conversation spurs states,  
17 regions, industries, stakeholders and policy makers to  
18 pursue the development of carbon pricing mechanisms.

19 Do you share your unique perspective on why you  
20 think this conversation is so important? And if you'll bear  
21 with me, what is your ask of FERC here if you have one?

22 MS. WIGGINS: Thank you Mr. Chairman. Yes we did  
23 get quite a bit of feedback that some people were surprised  
24 by our position. But I think it's really pretty simple and  
25 its part of what I said in my opening remarks. We believe

1 in markets. We believe in well-functioning markets. We  
2 believe that there's an opportunity here in this  
3 conversation, and the conversations that come afterward, to  
4 have a well-functioning carbon pricing model.

5 We don't have the details. We are still at what  
6 I call the 60,000 foot level. But there are a lot of smart  
7 people represented at this Conference, at the Commission, in  
8 the states, in the regions, elsewhere that have ideas on how  
9 to solve some of the complicated issues.

10 And we think that if we can take a half a step  
11 back and ask people not to dig in their heels, not to come  
12 to this with a "we have to have this," whatever this may be,  
13 we can work together, and we can get to where we need to be.  
14 We recognize that some states in the absence of an  
15 economy-wide approach, have taken their own individual  
16 approaches.

17 And I understand why they've done that. Again,  
18 since we believe in markets, we are hopeful that over time  
19 those state individual programs will be seen as transitional  
20 mechanisms. We have a long way to go, but we really believe  
21 we can get there working together. Thank you.

22 CHAIRMAN CHATTERJEE: Thank you for those  
23 comments and for your work on this. To my next question,  
24 given that Kentucky was my childhood home, it feels natural  
25 for me to pose a question to you in particular, Mr.

1 Mattison. Kentucky Power is at a crossroads in more ways  
2 than one. You're seeing significant changes in your fleet  
3 and market opportunities in different footprints.

4 So I'd be interested in hearing how you see state  
5 carbon pricing policies as impacting your business and your  
6 thoughts on what policy makers here at FERC, or at the state  
7 level should keep in mind for companies situated like yours.

8 MR. MATTISON: Thank you very much for the  
9 question Chairman Chatterjee. You know at Kentucky Power  
10 our focus is always at AEP as well, on the end use customer.  
11 I mentioned that in our opening comments that I had.

12 And as we go through and we look at the carbon  
13 pricing, we need to bear in mind what is the actual affect  
14 of that going to be at the end of the day on the individuals  
15 that pay the bill -- that actually keep us in business. And  
16 I mentioned earlier as well, that in Kentucky, especially on  
17 the eastern side, it has been devastated from loss of jobs.

18 When you look at manufacturing loss with the  
19 steel industry, what's happened already with the  
20 transformation and the generation fleet. And as you know,  
21 Chairman Chatterjee, that area of the economy was developed  
22 and build on coal-mining. Well of course, that has  
23 transitioned over the last 10 years. There's probably  
24 been, just in eastern Kentucky, been 15,000 jobs lost in the  
25 eastern Kentucky footprint.



1           So as we move through this process I'd be remiss  
2   if I didn't mention again, we are all for reducing carbon  
3   emissions. And to ensure that we have an environmentally  
4   compliant generating fleet going forward with a robust  
5   portfolio of renewables, but we feel that federal regulation  
6   through FERC is the right scale to move the market where it  
7   needs to be done, while taking a keen eye and look at the  
8   states and also think about the pace of which it is done.

9           In other words, if you implemented a new policy,  
10  when is the right time to do that from -- is it a glide  
11  path? How does that need to be implemented? And at the  
12  utility that I was working for before I came to Kentucky  
13  Power, it was owned by the AEP as well and I remember going  
14  through the maps, the mercury air toxins standardization  
15  rule.

16           As I recall, the utilities spent about 750  
17  million dollars to remove mercury from the atmosphere.  
18  There was a parasitic load on the generators that actually  
19  rob from the production of that generator that the customer  
20  didn't get the benefit of those electrons, if you will,  
21  because it was actually running the environmental control  
22  systems.

23           At the end of the day it significantly increased  
24  customer pricing. And I remember going out and talking to  
25  large customers, industrial customers, residential customers

1 and commercial customers about that issue. And they said  
2 what did I get for this? Well we talked about the impacts  
3 to the environment, it's cleaner, we're removing you know,  
4 mercury et cetera.

5           So it's a balancing act I think, and we need to  
6 make sure that we always keep that customer in mind as we're  
7 moving through the process because they may not view it the  
8 same way as policy makers do. They may not view it that  
9 this is just simply my bill going up, what am I getting for  
10 it? And we also have to think about where we have  
11 generating facilities right now. They are a huge, huge,  
12 viable player in the community in which they're situated.  
13 They're a large, large tax base and what do you replace that  
14 with if that goes away?

15           There's got to be something, or we're going to  
16 have more job loss and it just compounds the issue, so we  
17 really need to be diligent with a keen eye to that as we  
18 move through this process.

19           CHAIRMAN CHATTERJEE: Thank you for that and for  
20 obviously, the attention to your customers. Your customers  
21 in many instances are folks that I grew up with and around.  
22 You mentioned in your opening remarks, you know, the  
23 importance of reliability, fuel diversity in your footprint.

24           As we examine these questions and what to do if  
25 states take actions to move towards implementing carbon

1 pricing and how the Commission should address it, what would  
2 be your message to your customers -- to the folks that I  
3 grew up with in terms of how we balance consumer benefits,  
4 costs, reliability, but the economic reality that states are  
5 going to pursue these policies and the Commission has a  
6 responsibility to work with these states.

7 MR. MATTISON: Sure. Well as you know the  
8 footprint of the geographic area reliability is very  
9 difficult just when you look at the topography or the  
10 terrain when you're in the foothills of the Appalachian  
11 Mountains and how heavily forested it is. And we have a  
12 very robust reliability plan at Kentucky Power. So when I  
13 look at it from that perspective, there's only so many  
14 capital dollars that you can expend and technology, we're  
15 getting into that when you talk about distribution  
16 automation, circuit reconfiguration and those things that  
17 can help the reliability of the system.

18 But I think we have to make sure that you asked  
19 what would we tell customers, that we want to balance the  
20 environmental footprint, reduction in carbon emissions, we  
21 want to ensure that -- I mean to a customer they're just  
22 going to say, "I want my lights to stay on." So that's the  
23 reliability equation to them.

24 We need to balance that. And we also have to  
25 factor in cost as well. All of this comes with a price and

1     so for a customer, they want to make sure that if they know  
2     they're getting something for what they're paying for,  
3     they're a lot less intolerant of the action as opposed to  
4     being tolerant when they don't know what's going on and they  
5     can't figure out their lights are going out, et cetera, and  
6     they can't see that value proposition.

7                 So I would say as a state begins to take action  
8     -- I'll go back to my comment about we really need federal  
9     oversight, and we need the scalability of FERC to look at  
10    what it is from a -- I'm going to call it, you know, a  
11    United States global type scenario as opposed to you know, a  
12    one off with one state. One's more aggressive than another.

13                And when you look at AEP's footprint, moving out  
14    of Kentucky a bit, we've got 11 states that we're trying to  
15    manage.

16                CHAIRMAN CHATTERJEE: Well thank you for your  
17    participation today and for your perspective. I greatly  
18    appreciate it. Moving next, I want to turn to Mr. Segal.  
19    Paul, you and I have discussed these issues for some time  
20    now, going back a couple of years. I want to credit some of  
21    those conversations for bringing us to where we are here  
22    today.

23                As you and I have discussed, I was very eager to  
24    embark upon this Technical Conference and to really dig into  
25    these issues. And I really give you a lot of credit for

1 bringing some of these issues to my attention. As you've  
2 had the opportunity to kind of review some of the concepts  
3 we've covered today, what are the most important conclusions  
4 for the Commission to take away from today's panel  
5 discussions based on what you've been able to observe?

6 MR. SEGAL: Mr. Chairman, thank you for those  
7 comments. I appreciate you taking a leadership role in  
8 putting this together. I think like we've all said, I think  
9 it's a critically important discussion at this point in  
10 time. I've learned an incredible amount just by  
11 participating and listening to the commentary here. I think  
12 there is always more to learn.

13 I'm ultimately not a lawyer, not in a great  
14 position to speak to the law. I'm more of a business guy,  
15 and I will tell you that as an investor, somebody who puts  
16 my own money along with my partner's money to work in this  
17 sector, what we really need is visibility. We need -- and  
18 as we look at what's going on right now with the grid in  
19 many respects, we're seeing a construction of a 21st Century  
20 grid that will be layered on top of, in certain ways, of the  
21 existing grid that we have.

22 We'll need those resources for the legacy  
23 resources for a variety of services for likely many years to  
24 come. The new resources are likely to be the grid of the  
25 21st Century. So as we think about the investments that

1 we're making in renewables, and in technologies that will  
2 enable electrification, these are assets, infrastructure,  
3 site locations that we think will be prime locations for the  
4 next hundred years.

5 I think it's very difficult at this moment in  
6 time to invest without that perspective, because it  
7 certainly feels like much of the country is moving in that  
8 direction. And it's very understandable that there will be  
9 regional, local issues, concerns that arise.

10 Ultimately, what we found is that  
11 markets work. If we can get price signals. If we can do  
12 economic analysis rather than political analysis, we can  
13 make great investments. And we can be thoughtful about how  
14 best to accomplish the goal instead of deploying the  
15 capital.

16 Again, that's really been at the heart of what  
17 we've done over time and we look for the opportunity to  
18 repeat that. We want to put our own capital at risk, not  
19 look to put the risk on the customer. There are times when  
20 the markets feel like they're not working when they're  
21 working against the things that we own. But what we found  
22 over and over and over again, is that when you have -- when  
23 you remove barriers to competition, we can make great  
24 investments. We can make good decisions and we can  
25 accomplish the environmental objectives that we have as a

1 country. It's very hard for us to make political decisions.

2 CHAIRMAN CHATTERJEE: Thanks again for your  
3 leadership on this.

4 MR. MILLER: Mr. Chairman?

5 CHAIRMAN CHATTERJEE: Yes sir.

6 MR. MILLER: I apologize for the interruption. I  
7 wanted to flag for you that Mr. Crane had his hand up. I  
8 think he has a comment perhaps, as Mr. Mattison was wrapping  
9 up. I just wanted to let you know that.

10 CHAIRMAN CHATTERJEE: Oh yeah, absolutely. Mr.  
11 Crane?

12 MR. CRANE: Let me try and unmute here. You know  
13 we talk about the consumer and we talk about the investments  
14 and we talk about reliability, and sometimes we confuse the  
15 investment and the distribution system and the transmission  
16 system versus the generation system, and it becomes muddled  
17 together.

18 The one thing that I can tell you that our  
19 customers in all of our service territories, the number one  
20 thing that they want us to prioritize is the environment.  
21 And it's not only carbon. If you look at the Chicago land  
22 area, the third -- are the third largest in respiratory  
23 ailments behind New York and Los Angeles. So, our  
24 consumers want us to do something. We'll be investing 28  
25 billion dollars in our distribution system and our

1 transmission system over the next five years and keeping  
2 rates under the inflation rate.

3           It's very easy for us to step up and say, "Well  
4 we have to make sure the customers are getting something."  
5 One is the responsibilities that we have low cost, reliable  
6 and clean energy that our customers want. And so, I don't  
7 want us as executives, to hide behind something because  
8 there's an excuse of rate increase. We have to drive  
9 efficiency. We have to drive technology. And we have to do  
10 what our customers want.

11           And the states are asking us for this. It's just  
12 the RTOs are not supporting it. The only other thing I'll  
13 say is I talked in my opening statements about the nuclear  
14 issues and what's happening in the markets with a plant  
15 shutting down because they're not being compensation one,  
16 for their environmental considerations. And two, for their  
17 reliability considerations.

18           You go back to the polar vortex we've kept the  
19 grid up with the nuclear units that loaded core for 18 to 24  
20 months and it kept it rolling when you couldn't get gas to  
21 the plants. You couldn't get the coal piles unfrozen. So,  
22 I just think FERC and the RTOs need to make a consideration  
23 around the diversity of the generation sources, say you  
24 don't care about the environment at all, if that's the  
25 administration's position. There's still a significant



1 reliabilities issue that has to be built into the market,  
2 and it is not built in today. It's the lowest cost  
3 generator comes in and it doesn't matter what else happens  
4 and that's not the design our states want, or our consumers  
5 want. That was it.

6 CHAIRMAN CHATTERJEE: Thank you Mr. Crane for  
7 that point. And it's actually a perfect transition to my  
8 next question. I want to call on Sue Tierney. You're a  
9 real expert both in terms of markets and are able to give  
10 the environmental perspective, and to Mr. Crane's point I  
11 want to state clearly on the record I do care about the  
12 environment and I understand the benefits there to consumers  
13 as well.

14 But Miss Tierney, if you could please -- one of  
15 the reasons I was eager to see that you were able to  
16 participate today, is I wanted to ensure that we heard the  
17 environmental perspective and also couched in your market  
18 expertise. And so I guess my question for you are you know,  
19 similar to the question I asked Mr. Segal. What are your --  
20 in your view, the most important conclusions for the  
21 Commission to take away from today's panel, and what unique  
22 perspectives from specifically, the environmental component  
23 markets, should my colleagues and I focus on?

24 DR. TIERNEY: Thank you for that great question.  
25 I really appreciate it. It's like a nice ball for me to

1 hit, so thank you. You know we've heard really great things  
2 today, both from lawyers and business people, investors, and  
3 economists about the power of markets and the importance of  
4 doing something here.

5 But let me then go back, step way back and say  
6 the majority of electricity consumers in the United States  
7 are served by electric companies and live in states where  
8 the citizenry wants something done on climate change. And  
9 like you, they care about that issue. So the states are  
10 going to act in a number of ways in the absence of the  
11 federal government taking action. So we should expect that  
12 to continue to occur.

13 I take away that the Commission has authority to  
14 act on this issue, especially if proposals are brought to  
15 the Commission with a carbon price. I think that there are  
16 the extraordinary benefits of harnessing those market forces  
17 that you heard about all day. We need innovation, we need  
18 investments, we need economic efficiency and incorporating a  
19 price on carbon into the electricity markets will help send  
20 a very powerful signal to investors.

21 And that's investors and consumers. So to me,  
22 carbon pricing is a piece of what is needed to harness the  
23 changes among the economy that have to happen. And as I  
24 mentioned in my opening statement, the imperatives and  
25 urgency of addressing climate change really call for action

1 to happen quickly. The pace of innovation needs to happen  
2 very quickly, so a carbon price will help on that.

3 The last thing I want to add is I takeaway not  
4 just from today's comments, but from everything I've read  
5 about decarbonization of our economy is that a carbon price  
6 alone will not help. I haven't heard today, the  
7 consideration about equity. We heard about public health in  
8 people who live near air pollution from power plants and so  
9 forth.

10 But there are environmental justice issues and  
11 equity considerations that need to accompany things like a  
12 carbon price because you don't want pollution hotspots to  
13 continue to occur. So a number of policies need to happen,  
14 I don't think those are in your bailiwick. But I just  
15 wanted to say that as part of the whole package of things,  
16 of course such things are needed. So thank you Mr.  
17 Chairman, I appreciate it.

18 CHAIRMAN CHATTERJEE: Thank you. Turning next I  
19 think this panel is indicative of the diverse array of folks  
20 who are party to the petition that led to this discussion  
21 here today. We've already heard Miss Wiggin's perspective,  
22 Mr. Mattison's perspective from coal country, Mr. Segal's  
23 perspective where I want to turn in a moment to Mr. Hill for  
24 his perspective, from a gas generator point of view.

25 We heard from Mr. Crane on the nuclear

1 perspective. Miss Beane, I know I heard from that numerous  
2 feedback after we put out the initial notice that we were  
3 having and convening this Tech Conference, that it was  
4 really important to get the unique perspectives of the wind  
5 industry and perhaps that some of the key policy  
6 determinations, there are some unique attributes that the  
7 Commission needs to take into consideration as we examine  
8 these issues.

9           Could you elaborate a little bit on those unique  
10 components and provide your perspective as to what the most  
11 important conclusions for the Commission to take away from  
12 today's discussion.

13           MS. BEANE: Absolutely. Again, thank you again.  
14 This has really been so educational for me to have the  
15 opportunity to be here and just to listen and to learn. And  
16 there have been so many experts weighing in, and even though  
17 there are varying viewpoints, I see a lot of commonality in  
18 a lot of areas where things seem to be sort of aligning.  
19 And maybe I'm just too optimistic on this, but that's what  
20 it feels like to me.

21           And from my perspective, the states are moving.  
22 And there's a lot of complexity in the market. And from a  
23 business perspective, you always hear it over and over again  
24 from the different trade groups for renewables and just  
25 business in general. When you have uncertainty, and you

1 don't know which way is up, and you don't know how long  
2 something is going to last, and you don't know what the  
3 framework looks like into the future, it becomes extremely  
4 difficult to make these long-term decisions.

5 I mean these projects are in most instances,  
6 hundreds of millions of dollars of investment. A lot of  
7 these have useful lives now, extending 35-40 years into the  
8 future. So these are big decisions and there's a lot of  
9 elements that go into getting approval for those, whether  
10 it's balance, or finance, repair company, or they're going  
11 out to the market to get independent financing. That kind  
12 of certainty matters.

13 At the product perspective, I hope, and I think I  
14 speak for most companies in the renewable realm, we also  
15 want to be credible. We also want to be principle based.  
16 And the beautiful thing is as time goes on and as technology  
17 improves, the cost of renewables, you've just seen them come  
18 so far down. And so before it was a choice between least  
19 cost and clean.

20 We really entering a realm of work that isn't  
21 always the case. A lot of the time that's regional, but  
22 we're moving in a direction and you've heard this sentence  
23 today, that you know, carbon pricing is going to reduce the  
24 total economic cost of meeting these goals that the states  
25 are moving. You've heard from the economists that market

1 pricing will spur innovation.

2           Innovation is what we need to get us ultimately  
3 where we need to be to meet these clean goals at a cost that  
4 is genuinely the least cost across the board. Price signals  
5 -- I think they work. I mean if you talk about unique  
6 attributes, I mean early days in the wind industry, I can  
7 assure you that when pricing mechanisms were implemented  
8 such that it really mattered how good your forecast was and  
9 what you would ultimately end up paying, people got really  
10 smart and really good at forecasting really fast.

11           That's the beauty of business is that we will  
12 migrate to optimize value. We will adapt to be able to  
13 maximize value in these markets and to be able to maximize  
14 our investment decisions. As far as just ultimate  
15 takeaways, and I think you're hearing as states are moving,  
16 they're doing it, it's complex, it's confusing. I think  
17 that what you're hearing today is you have the authority to  
18 do this in a way that's more cost effective, that will drag  
19 the right incentives, create the right investment decisions,  
20 ultimately for the industry and that it can be done.

21           That's the most important part. The RTOs and  
22 ISOs, they basically were outlining multiple different  
23 options for solutions that can work here, and that was  
24 really encouraging to me. And finally, and this is from my  
25 personal perspective clearly, I have a little bit of a bias

1 here potentially, but it must be done. It must be done. We  
2 can't wait. We need to be able to move.

3 Climate change is affecting all of us and there  
4 is a way to do this that is cost effective and efficient.  
5 And the final piece, and I don't mean you know, to end on a  
6 downer but it's not going to be easy. That's the bottom  
7 line. There's a lot of different viewpoints here. There's  
8 a lot of different business models.

9 But I think you've heard over and over again,  
10 let's not let perfect be the enemy of good. Let's just get  
11 something in place. Get the ball rolling. Let people see  
12 that it works. And I think we can build on that and improve  
13 on it.

14 CHAIRMAN CHATTERJEE: Thank you so much for your  
15 participation today, and for your unique insights. I really  
16 appreciate it. We are coming up on nine hours, and I still  
17 want to allow plenty of time for my colleague, Commissioner  
18 Glick, and I definitely want to hear from Mr. Parker again.  
19 I have a very specific question for you, but before I get to  
20 you Mr. Parker, I want to address a question to Mr. Hill.  
21 And I suspect Mr. Crane will want to weigh in on this as  
22 well.

23 But I'll start with Mr. Hill. In your view, what  
24 do you see as the future of state carbon pricing policies?  
25 Where do you think such policies will head? What are the

1 next steps to understand the implications of such policies  
2 on the operation of RTO/ISO markets?

3 MR. HILL: Well that's a big question. You know,  
4 we've heard from New England ISO earlier today. You know,  
5 those six states are in RGGI. We've also heard from others  
6 about getting them all together and actually putting in  
7 place a carbon price. We remain hopeful that in places like  
8 New England and PJM would be a carbon price, but New York  
9 and California, you know, both are single state and there is  
10 an effective carbon price in California.

11 So hopefully the RTOs will begin to become state  
12 -- obviously, there's a possibility of federal rules as  
13 well. I think a great part, as others have said today in  
14 the conversation, that there is the, you know, FERC has the  
15 ability to actually approve tariffs with CO2 pricing in  
16 them. And so, we are going to do everything in our power to  
17 make the case that Americans are going to work.

18 Today we have ITCs and PTCs at the federal level  
19 with state RPS's. We have individual mandates in particular  
20 states from different types of renewables that even go  
21 beyond RPS and all of this is just super expensive. And I  
22 think some of the analysis talked about today, it will cost  
23 far more, far more, to achieve carbon reductions through  
24 this kind of mechanism versus a price. And I'm hopeful at  
25 the state level and at the federal level, and with FERC



1 playing a role that we'll get to a place where carbon  
2 pricing will make sense.

3 I do believe, and I do want to point out that I  
4 don't think that carbon pricing, or even you know, super  
5 high functioning energy markets with carbon pricing in it,  
6 will replace capacity markets. Capacity markets have a  
7 critical role to play in reliability and you know, obviously  
8 removing the structures for that are very important.

9 And finally if can Mr. Chairman before Mr. Crane  
10 responds, I actually think Mr. Crane and I do have the same  
11 long-term view of the way the market should work. I have a  
12 few different points of view on probably about the way  
13 things are working now. And he just brought up a couple of  
14 points that I do just think it's important, at least per our  
15 version of the record for.

16 During the polar vortex, all of our gas units,  
17 every single one of our plants was available, had fuel and  
18 was very key to providing reliability. So I don't think,  
19 you know, there is an asset class distinction there. These  
20 gas plants are going to be needed for reliability. They  
21 worked in the polar vortex. They're going to be needed  
22 decades from now, which gets back to some of my points about  
23 capacity markets.

24 Secondly, we've talked about customers -- both  
25 with Kentucky Power and Chris brought this up as well. You

1 know we have a lot of large, industrial and commercial  
2 customers and most of our customers have been against some  
3 particular state specific resource programs. These  
4 customers, if you ask them, what they really don't like are  
5 non-by-passable charges.

6                               They want the ability to make  
7 their own choices in a market context, contract for  
8 themselves, and don't necessarily want you know, to end up  
9 with charges they don't have the ability to impact showing  
10 up on their electric bills when they're competing against  
11 companies in other states.

12                       So I do just think as we've talked about  
13 customers, that it's certainly important to include their  
14 perspectives as well. So thank you, and again today has  
15 just been absolutely fantastic.

16                       CHAIRMAN CHATTERJEE: Thank you sir. Mr. Crane?

17                       MR. CRANE: Yeah sure. Thank you Chairman. I  
18 appreciate the opportunity. I agree with almost 90 percent  
19 of what Mr. Hill says, continuously but we do have our  
20 slight disagreements on finite points. But you know, the  
21 issue that we see is state by state trying to price a carbon  
22 into the market and having adjacent states with the leakage  
23 and how that efficiently works.

24                       If we put a price on carbon only in New York,  
25 where are the manufacturers going to go? Are they going to

1 go to Pennsylvania? You know adjacent states, or RTOs. So  
2 I think it is -- we've always said it's an efficient way to  
3 get what our consumers want but it's got to be much more of  
4 a broad based. One state trying to price carbon in where  
5 the adjacent states, or surrounding states aren't doing it,  
6 it just seems very inefficient.

7           You know the state programs right now we  
8 appreciate for the zero low carbon assets, but they're  
9 band-aids. It's not a true market design. And you know, as  
10 long as we have to have band-aids. We're going to skew a  
11 true wholesale market design, and so we think we need to  
12 come up with a national market design that really supports  
13 what people want.

14           I do agree with some of the things that Thad  
15 said, but not all regions in the country and I'm talking  
16 about the capacity markets now, have the gas transmission  
17 coordinated with the electric day and there is different  
18 levels of gas transmission capabilities like we saw in the  
19 Midwest and the Northeast, and we continue to see that in  
20 the Northeast, but we have gas constraints.

21           And so as we put more gas on the system, and  
22 become more dependent on gas, and we take out other baseload  
23 units like nuclear, we're putting ourselves at risk. And so  
24 beyond environmental, making sure that we've got an adequate  
25 market design for capacity and reliabilities in coordinating

1 the gas to the electric day. I don't think gas is going  
2 away anytime soon. I think it's to the benefit of the  
3 consumer. I think it's to the benefit of the economy and  
4 it's a lower carbon source and it's a bridge source.

5 So if we can keep the existing nuclear plants and  
6 continue to rely on the gas units and continue to expand the  
7 gas distribution and transmission, we'll be better off. And  
8 then who knows what the technology is in 20 or 30 years,  
9 thanks.

10 CHAIRMAN CHATTERJEE: Thank you both. There's a  
11 lot to unpack there and I'm certain several of you can have  
12 follow-ups, but I want to ensure that Commissioner Glick has  
13 time to delve into some of these issues. So for my final  
14 question I want to direct it specifically to Mr. Parker.

15 I really appreciated your comments. I guess my  
16 question is in your view, are there certain issues that are  
17 stalling ongoing stakeholder discussions around carbon  
18 pricing which could benefit from greater regulatory  
19 certainty regarding how the Commission might consider those  
20 issues? If so, what are some of those issues and what do  
21 you view if anything, as the appropriate role or vehicle for  
22 the Commission to promote regulatory certainty?

23 MR. PARKER: So thank you for the question  
24 Chairman. You know Utah does not engage. We don't have the  
25 utilities heavily engaged in RTO and ISO markets yet. We

1 participate in the EIM and we find value in that. We've  
2 tolerated the greenhouse gas pricing that's embedded in  
3 that.

4 As you know, there have been repeated attempts  
5 through the decades to get the west into a much larger  
6 ISO/RTO kind of market. Given the difference in energy  
7 policies between the states, there's a lot of fear among  
8 states like Utah that we are going to end up with other  
9 states' policies crammed down our throat.

10 And in fact, in the 2016 discussions about  
11 expanding the CALISO, I had more than one policy maker for  
12 more than one state express to me that there was no price at  
13 which it was a good deal to join up into the ISO. And to  
14 the extent carbon pricing is out there as something that  
15 maybe thrust upon us and affect our generators, we're going  
16 to be wary of participating in those markets and of giving  
17 up the level of control that that requires.

18 The enhanced day ahead market that's under  
19 discussion as the ISO right now, you know, arguably has some  
20 value. We've got a DEO grant where we're studying the value  
21 across the west of different footprints of regional entities  
22 and all of those, you know, have some promising economies of  
23 scale and efficiencies that we can achieve, but only if we  
24 can get policy makers satisfied that governance is fair and  
25 reasonable and that we are not going to end up, you know,

1 effectively doing the bidding of other states' policies.

2           And that's one of my concerns with some of the  
3 discussion today is this concept that an RTO/ISO filing -- a  
4 Section 205 filing, can somehow wash over the federalism  
5 concerns we have is troubling to me just because it's a  
6 quasi-private or private entity doesn't empower FERC to use  
7 the federal law of tariffs to impose, you know, to impose  
8 extra territorial regulation from one state into another.

9           So I understand the desire for certainty, and you  
10 know, my impulse is to say that we have a body out there  
11 whose job is to settle these matters of national concern  
12 where states have conflicts and it's called the Congress.  
13 So I'm wary of endorsing a FERC effort to take sort of, in  
14 my view, half measures. We've heard about the economy-wide  
15 need to really have an efficient carbon price.

16           We've heard about efficiencies with other  
17 mechanisms than a carbon price and their cost. And all of  
18 this to me -- I'm worried we create a structure where we  
19 have just another thing that we've bolted on to the hull of  
20 this ship that hasn't been brought to dry dock for a long  
21 time. And we're not really creating a better functioning  
22 market, we're just creating one more work around.

23           So I'm not personally looking for certainty from  
24 FERC. I would love certainty from Congress. We're not  
25 opposed necessarily to carbon pricing. We're not opposed to

1 that. We're engaged in a transition ourselves and we're  
2 building plenty of wind and solar in particular. We're on a  
3 glide path to retire a lot of generation in the next 15 to  
4 20 years.

5 So we're accomplishing a lot of those objectives  
6 without rushing them along with this, as I said, kind of  
7 bolt on policy, sorry it's a bit rambling.

8 CHAIRMAN CHATTERJEE: Not at all, and I  
9 appreciate your candor and your perspective. Thank you for  
10 your participation. Again, a lot to unpack there. I want  
11 to give my colleague, Commissioner Glick, plenty of time to  
12 engage with all of you and dive into these issues. So with  
13 that, I want to thank all of you for your participation  
14 today and Commissioner Glick, I want to thank you not just  
15 for your patience, but for your endurance as we approach  
16 hour number 10.

17 This has not just been a marathon. I think if  
18 Paul Segal were running, he'd be on two marathons and into a  
19 5K. So with that, I will turn it over to Commissioner  
20 Glick.

21 COMMISSIONER GLICK: Thank you very much Mr.  
22 Chairman and thank you again, I want to commend you for  
23 deciding to pursue this Conference. And I also want to  
24 commend this panel. It's a very stellar panel, really an  
25 amazing group of people here.

1           I don't want to take up too much of your time.  
2   We're obviously running up against the time limit here, but  
3   I want to just attempt a few questions. I want to start  
4   with a question for Miss Beane, Mr. Hill, Mr. Crane and Mr.  
5   Segal. If we had either national carbon pricing on electric  
6   generation, or even regional through RTOs and whatever,  
7   regional carbon pricing, what would that mean in terms of  
8   the investment decisions your companies would make in terms  
9   of how much additional investment would we see if you had  
10  that kind of certainty?

11           MR. MILLER: Miss Beane, we'll start with you.

12           MS. BEANE: Sure. Hello Commissioner Glick.  
13  It's great to see you and thank you so much for the  
14  question. I have not seen an official forward price curve  
15  that has a carbon price embedded in it as an official curve,  
16  but I've definitely seen sensitivities that are extremely  
17  helpful in terms of just confidence that in the out years,  
18  there will be sufficient revenue for these generation  
19  facilities to pay for themselves and not be in the red, post  
20  of PTC or whatever the current incentive period is that are  
21  phasing out as everybody is aware of that.

22           So from my perspective, it will give that  
23  certainty. Because instead of having a sensitivity, people  
24  debating over what if there isn't a carbon price, or what if  
25  it looks like this? Or what if states do something



1 differently? It just gives you that base level of certainty  
2 that I was explaining and that I've heard explained during  
3 this Conference.

4           It just gives you that base. There's probably  
5 going to be other things bolted on. I mean that's just the  
6 reality. States have the ability to set their policy, and  
7 there's probably going to be certain states that are going  
8 to choose things in addition that may be ultimately, less  
9 efficient of certain perspectives than others.

10           But ultimately, having a federal standard that  
11 people can rely on, that people can see, that people can  
12 price. When you go into these valuation models of these  
13 investment decisions, from my perspective, it would make a  
14 huge difference in the ability to have that certainty when  
15 you go for approvals.

16           MR. MILLER: Thank you Miss Beane. Mr. Crane  
17 would you like to go next?

18           MR. CRANE: Sure. Thanks. You know there's a  
19 significant investment that we make on an annual basis on  
20 keeping our generators running. Our distribution system,  
21 recovery mechanisms in our state level for the most part, I  
22 know we're not going to talk about transmission recovery  
23 today. We have seen consistency over the years.

24           But when you get to the merchant generator, and  
25 you're trying to decide am I going to put seven, eight

1   hundred million dollars-worth of capital into a nuclear  
2   fleet on an annual basis when you don't know if you're going  
3   to get recovery, and you're trying to look at public policy  
4   or federal policy to see are the markets going to allow you  
5   to get a return on your equity, it's a significant stress  
6   point.

7               You know as you can see from our announcements,  
8   we're shutting nuclear plants down. We shut two down in the  
9   last couple of years when New Jersey wanted Pennsylvania,  
10  they're not making a return on their investment. We can't  
11  operate a company that's you know, negative free cash flow  
12  and negative earnings. We have to protect the balance sheet  
13  and our investment grade is very important to us.

14              So we've announced that we're shutting down four  
15  more reactors because we don't have certainty in the market.  
16  If the policy dictates that you know, the environmental  
17  benefits, the reliability benefits, whatever the benefits  
18  are of our operating fleet, including our natural gas --  
19  highly efficient natural gas, or including our solar or our  
20  wind assets, our hydro assets, we'd be much more willing to  
21  be investing like we are in our transmission and  
22  distribution system.

23              But right now the uncertainty leads us to not  
24  only close critical assets and national security assets, but  
25  they're environmentally supportive assets and reliability is

1 critical. So it's a significant unknown right now.

2 MR. MILLER: Thank you Mr. Crane. Mr. Hill,  
3 you're up next.

4 MR. HILL: That's a great question Commissioner  
5 Glick. And you know in some ways maybe for those of us in  
6 the competitive power markets, the ban of our existence is  
7 that what has been proven again and again, if the market  
8 rules are clear and people believe they're going to invest  
9 their capital in somewhat of a level playing field, the  
10 capital will flow. Sometimes it flows too well, and I say  
11 that tongue in cheek, but it will flow.

12 And we've seen those examples. I mean in PJM  
13 there are, you know, I don't know the exact number, 30,000  
14 megawatts of new builds that have occurred in the last  
15 decade. Billions of dollars of investment and in New  
16 England we're seeing the same thing. In Texas, the  
17 resources are a little different than they are in the  
18 mid-Atlantic and the Northeast, but again market return  
19 principles, people believe they're going to get a fair shake  
20 and we've seen 25,000 megawatts going to this.

21 And we're at something like 5,000 megawatts of  
22 solar and counting. Meanwhile new gas plants are also  
23 getting built. Why? Because there's actually comfort that  
24 the market is real and that it's going to be a level playing  
25 field. And so, I actually do believe that if there is a

1 firm federal policy with carbon pricing embedded, and that  
2 is out there, that the investments will flow because people  
3 will want to put their capital to work if they think  
4 they're going to have a fair shot.

5 And so I really do think this problem, you know,  
6 it's all solved, and I think we've got the Texas market with  
7 renewables to look at, or the Mid-Atlantic and New England  
8 with gas plants to look at. If you set it up and people  
9 think it's fair that the capital lapse will be fine.

10 MR. MILLER: Thank you Mr. Hill. And Mr. Segal?

11 MR. SEGAL: I think this is a fantastic question.  
12 And it's something that I think about a lot. I would break  
13 it down this way. I think that the capital markets are  
14 getting ahead of the regulatory activity and will ultimately  
15 push the regulatory activity. I think when you look at  
16 certain clean energy stocks trading the way that they trade  
17 in this environment, there's an anticipation that we're  
18 going to need things like hydrogen down the road. There's  
19 an anticipation that we will have ultimately a price on  
20 carbon.

21 I think that one of the things that a  
22 transparent, reliable mechanism for having that price will  
23 do, is it will make that capital much more broadly  
24 available. It will lower the cost of that capital. I think  
25 many participants who are working in the new energy, clean

1 energy space, are investing with in anticipation that this  
2 price on carbon will ultimately come, but the discount rate  
3 on that is fairly high.

4           So if we had a transparent price on carbon, I  
5 think we can be much more effective as to how we allocate  
6 capital. We can avoid things like we saw with NOCS and SOCS  
7 regulation, where billions of dollars were likely invested  
8 into coal-fired plant emission controls where the plants  
9 were subsequently within, in some cases, a year or two  
10 either shut down or effectively made to be uneconomic.

11           I think again, a price -- the sooner we can get  
12 it, the better the decisions that we will make. We will  
13 invest enormous amounts of capital -- we will invest that  
14 capital across a wide range of solutions. Prices,  
15 shareholder problems will go away, with respect to  
16 willingness to accept short-term losses for long-term  
17 upside. And again, I think we will be in a much better  
18 position as a country to make smart decisions without  
19 wasting capital and ultimately achieving our goal at a lower  
20 cost in a more affordable manner.

21           COMMISSIONER GLICK: That's great. I appreciate  
22 that. If I could go back to Mr. Crane just for a second.  
23 You know, obviously if we don't have a national carbon  
24 price, it's going to take a while still for the regions, I  
25 think, to come together and the states to come together,

1 even on a single state RTO like where you are, still taking  
2 some time to move forward with the carbon price.

3 My question is if you know, given that the states  
4 have adopted second best solutions, whether it be RPS's,  
5 zero emission credits, other programs aimed at promoting  
6 zero emissions generation and retaining older generation  
7 that's threatened to be retired like you had mentioned.

8 I'm curious if the RTOs act to essentially block  
9 those state programs, or FERC does so, pursuant to cases  
10 that we're not going to talk about today, what do you think  
11 the impact might be on emissions if states aren't able to  
12 pursue those clean energy policies?

13 MR. CRANE: Well I think I said in my opening  
14 comments about the emission increases in just Illinois  
15 alone, 70 percent increase without keeping the plants viable  
16 right now. We're pursuing other methods right now, not  
17 seeing a carbon play coming. There's capacity market  
18 changes that were -- I'm not sure how far I can go down this  
19 because there's filings on this right now.

20 But you know, FRR is a way to get the states to  
21 control the actual resources they want. It buys us time to  
22 get something more integrated into an RTO, or a national  
23 policy that would be a bi-partisan agreed, you know, coming  
24 out of the legislature and so I think we have a couple tools  
25 right now that we're trying to work, but you're going to see

1 with the current market conditions and the state regulatory  
2 approaches to capacity market, you're going to see a  
3 significant increase in emissions.

4 I'll give you this one stat. In Illinois, we're  
5 the lowest carbon intense state in the country. The carbon  
6 zone is almost carbon free. And I think it's in the high 80  
7 percent. We start sharing these units now, that's going to  
8 go in a different direction. You look at the investment  
9 that has been made in other states on renewables and  
10 subsidized renewables, which I have no issue with.

11 But your single most efficient way is to maintain  
12 the current fleet as we advance technologies. Like Paul  
13 said, hydrogen is coming, storage is becoming more  
14 efficient. There's ways that we can do this in 10 to 15-20  
15 years, but right now if we can maintain the current fleet.

16 So if you look at 90 -- 60 percent of the total  
17 state generation, that's not only northern Illinois, it's  
18 all of Illinois, 60 percent is carbon free. 90 percent of  
19 that is nuclear. If we don't recognize the necessity on  
20 compensating these plants for what they're providing, not  
21 only for the carbon, but for the emission's free air  
22 quality, we're making a big mistake. And we can march  
23 across every large state that goes back east with large  
24 nuclear units that are in trouble.

25 So it's going to be a significant challenge.

1 Well I could come close to saying it would be impossible for  
2 decades to maintain the ground that we've plowed already  
3 today to maintain that without maintaining some kind of  
4 market rules that allow these zero carbon generators, like  
5 the nuclear assets, or the very efficient coal assets,  
6 excuse me, gas assets to continue to operate as we bridge  
7 into the next technologies.

8 MR. MILLER: Commissioner Glick, I believe Mr.  
9 Hill also had a response.

10 COMMISSIONER GLICK: Sure.

11 MR. HILL: Thank you John. Commissioner Glick  
12 that's a good question. I do think and I want to be  
13 cognizant that you know, these are market procurements and  
14 you know, bringing a lot of new resources in and I'll steer  
15 clear on -- bringing a lot of new resources in the eastern  
16 markets, I do think it's worth discussing, you know, the  
17 California example here, which is a lot of procurement for,  
18 you know, state resources that the state clearly wanted on a  
19 path to de-carbonization that is obviously, absolutely the  
20 state's right to pursue.

21 And they are pursuing it. As they pursue these  
22 resources, they provided a massive price suppressive effect  
23 to assets that were on the grid. Those assets begin  
24 retirement. We now believe that more assets than were  
25 needed retired and we're now in a reliability situation. So



1 I do think as we're having this discussion, and again I want  
2 to stay well aware of the capacity markets because they're  
3 onboard, but what we do need to make sure that if states  
4 are going to pursue an agenda outside of the market, that  
5 you know, there's a knock on reliability effect we're seeing  
6 in other parts of the market and we need to you know,  
7 somehow compensate for that, you know, or run the risk of  
8 having the same issues elsewhere.

9 COMMISSIONER GLICK: And just to respond to that  
10 Mr. Hill. Again, I don't want to get involved also in the  
11 cases that are pending before the Commission. I do think,  
12 and I've mentioned this this morning, I do think there are  
13 ways of addressing the resource adequacy issues and part of  
14 that is just making a new approach where we compensate  
15 resources that provide flexibility. I don't think we think  
16 enough about that.

17 And so I think we just need to get outside of our  
18 thinking in terms of the box that we put ourselves in  
19 between capacity markets and energy markets and think more  
20 about flexibility and how we adequately compensate those  
21 resources.

22 If I can just move on for a couple more  
23 questions. Doctor Tierney, first of all I want to comment  
24 you for the comments you made about environmental justice.  
25 Right on point. And you're right, FERC doesn't have the

1 authority necessarily with regard to power plant decisions  
2 and environmental justice.

3 But we do in matters where the gas pipelines and  
4 also hydroelectric facilities and I think we need to do a  
5 better job. I think this country needs to do a better job  
6 of thinking about environmental justice and so, I think the  
7 comments are well timed.

8 I wanted to ask you about your comments in your  
9 testimony and you also spoke about it this afternoon, about  
10 if we move forward on a regional level with regard to carbon  
11 pricing. Your belief that that would somehow reduce the  
12 tensions between the federal level, FERC and the states and  
13 RTOs in terms of some of the issues that have sprung up  
14 around state programs aimed at promoting clean energy  
15 resources.

16 I was wondering if you can elaborate on that a  
17 little bit about how if we just do move forward with a  
18 carbon price, how that might enable or encourage the states  
19 to stay in with the RTOs and the ISOs around the country.

20 MS. TIERNEY: Thank you for that question. I  
21 very much appreciate it and thank you for your concerns  
22 about equity and environmental justice that you have shown  
23 in a number of your decisions. So thank you very much for  
24 that.

25 As many people have said today, the ability of a

1 price on carbon to in effect raise prices so that things  
2 like renewable resources that may need to have an above  
3 market price in order to end with a market. There will be a  
4 faster deployment of such resources above and beyond  
5 potentially where the RPS programs would deliver renewables  
6 into the market.

7           So you see a trade off between a REC value on the  
8 one hand, and that additional price that would be flowing  
9 through energy in the ancillary service markets. So I do  
10 think that that would be a benefit for those states that  
11 feel that they have had to move to procurements of RECS for  
12 example, in certain places. And that those would seem as  
13 many of the speakers have said today, that there would be  
14 fewer out of market instances where things would occur.

15           Now I don't imagine that we are going to see a  
16 price on carbon were a state to adopt it, or a region to  
17 adopt it into an RTO and for FERC to approve it. I don't  
18 think that that's going to see a high enough price for  
19 certain types of low carbon resources. Off shore wind comes  
20 to mind as an example of that. At least in the moment, or  
21 CCUS as an add on to a gas plant when that would be needed.

22           So I think that this helps move things forward,  
23 especially in the near term where there's a lot of low  
24 hanging fruit that could occur and be captured in the market  
25 if there were a price internalized into the RTO markets.

1 Thank you.

2 COMMISSIONER GLICK: Thank you. John, is there  
3 anyone else who wants to respond to that question?

4 MR. MILLER: I am not seeing any panelist with  
5 their hand up.

6 COMMISSIONER GLICK: Okay great. I just want to  
7 note that one last question and following up. Doctor  
8 Tierney referenced the CCUS and I wanted to ask Miss Wiggins  
9 and Mr. Hill in particular. I've always been kind of  
10 interested because the gas industry, and you're right Miss  
11 Wiggins, NGSAs needs to be complemented for coming out in  
12 favor of carbon pricing and I know Calpine has been I know  
13 for years and years, promoting some sort of national carbon  
14 policy.

15 And obviously, Calpine has a lot of natural gas  
16 generation. And so the question I have is certainly if  
17 there's a carbon price, and since natural gas is a fossil  
18 fuel, that could disadvantage gas-fired generation in some  
19 respects. And I was always curious why the gas industry has  
20 been generally supportive, or some people in the gas  
21 industry have been supportive of carbon pricing.

22 And I wanted to ask about CCUS and carbon  
23 captures and sequestration and what you think the prospects  
24 might be for implementing that in terms of natural gas-fired  
25 generation?

1           MR. HILL: Thank you for the question  
2   Commissioner. As far as -- well I'll stick with CCUS first  
3   and I'll come back to why we're supportive of a carbon price  
4   maybe in a minute. You know CCUS, we actually are actively  
5   working on what we believe are some opportunities for that.  
6   We do need a price on carbon, a price that CCUS, you know,  
7   is above today what the economists believe carbon is \$40.00  
8   a ton.

9           There is a social cost to carbon the price of  
10   CCUS is above it. It may not be as far above it as you  
11   actually think it is. And so, you know, depending on the  
12   carbon or on the carbon mechanism -- pricing mechanism that  
13   gets put into place, we think the CCUS is a very real  
14   solution and in fact, if we are going to approach as we get  
15   into later this first half of the century, anything even  
16   beginning to approach net carbon neutrality, given by  
17   earlier comments about the importance of these units to  
18   reliability, it's going to be something we have to figure  
19   out.

20           There will be a higher carbon price than \$40.00,  
21   but it won't be, you know, many, many multiples of that to  
22   get to where we need to get. So we're working on it, and I  
23   know others are as well. And happy to talk more about that.

24           As far as why does somebody who burns a fossil  
25   fuel push for a carbon price? You know the alternative is

1 ITC and PTC tax credits, it is state procurement mandates,  
2 and it has really hard to compete. We are comfortable that  
3 are assets are well-operated. They're efficient, they're a  
4 relatively young fleet and they're going to be needed for  
5 decades.

6 And we would much rather be in a place where we  
7 know the market rules and can compete. We think that  
8 renewables are going to come in waves anyway and that's a  
9 good thing. We want to de-carbonize, and so we are pushing  
10 for a carbon price, not to make it more expensive for us to  
11 do business, but so that we can operate in a world of  
12 regulatory certainty, and deploy our capital efficiently.

13 COMMISSIONER GLICK: Thank you.

14 MS. WIGGINS: Commissioner Glick, shall I reply  
15 now?

16 MR. MILLER: Yes go ahead please.

17 MS. WIGGINS: Thank you. I agree with much of  
18 what was just said that what we're looking for is some  
19 certainty. I think that CCUS is still a new technology.  
20 Our member companies are already spending an enormous amount  
21 of money on investment and all sorts of new technologies and  
22 this would just be an even clearer market signal that this  
23 is something that needs to be pursued.

24 And we are committed to a lower carbon energy  
25 future. We understand that that is not only a FERC

1 conversation, or a regional conversation, or a national  
2 conversation, it really is an international conversation.  
3 There's a lot of effort being put into a lower carbon energy  
4 future. We think we've got a place in that lower carbon  
5 energy future, and we just would like the market signals to  
6 further incentivize further investment in some of those  
7 technologies.

8           In the meantime, and responding to some of the  
9 other comments that were made earlier, we do believe that  
10 there is a reliability issue that we need to pay attention  
11 to, and we continue to believe that natural gas is an  
12 important partner to renewables. We know that there is a  
13 lot of support for renewables. We also know that there are  
14 some intermittency issues that have to be addressed.

15           There might be all sorts of interesting,  
16 innovative technologies coming down in the future that would  
17 address those concerns or those issues, but right now,  
18 natural gas has the ramping up capability to address those  
19 issues. There was a comment earlier about the lack of  
20 natural gas in the northeast.

21           There is an abundant supply of relatively  
22 low-cost natural gas. We need pipelines in place to get it  
23 to the northeast, and as you can appreciate, that has been  
24 somewhat of a problem. But there is an abundant supply. It  
25 is a low cost, affordable energy resource and we believe

1     that it needs to be in the mix for many years to come as EIA  
2     as said, even with the price of carbon.

3                 EIA has released a study saying that natural gas  
4     is part of the energy mix, thank you.

5                 MR. MILLER: Commissioner Glick, we have three  
6     other panelists in the queue, would you like me to continue?

7                 COMMISSIONER GLICK: Yes please.

8                 MR. MILLER: Okay. Mr. Paul Segal please.

9                 MR. SEGAL: Thanks. Yeah. I just wanted to add  
10    that on the carbon capture and sequestration side, a key  
11    thing to keep in mind is that these energy systems, whether  
12    it's pipelines for natural gas, or pipelines for carbon  
13    ultimately, to find a place where we can sequester it.

14    These systems are incredibly complicated and complex, and  
15    this transmission will require enormous amounts of capital.

16                 Sorry, the other point that I wanted to make is  
17    that the -- we own a lot of gas-fired generation, and I  
18    think again when you look at what we need, as we move  
19    forward to the grid of the future, natural gas is going to  
20    play for an extended period of time a critical and important  
21    part. And there will be places where natural gas plants  
22    that are currently operated on natural gas may be operated  
23    on hydrogen in the future.

24                 There are places where carbon capture and  
25    sequestration will be necessary. Deep de-carbonization is



1 going to require many different solutions. The role that  
2 gas plays in what we build, or what we spend money to  
3 preserve in our existing grid, will very much depend on how  
4 we price carbon and how quickly we have zero emission  
5 resources like renewables coming into the market and  
6 pushing marginal power prices down towards zero.

7           There will be more and more need for flexibility,  
8 and there will be less need for energy. So whereas today,  
9 we are primarily in markets like PJM building and have been  
10 building, combined cycle plants as an industry. We may in  
11 fact, not need those combined cycle plants to operate as  
12 combined cycle plants.

13           We may need a highly flexible peaking generation  
14 that can respond and use gas in a different way. We will  
15 need the gas delivery infrastructure that we have today for  
16 a long time to come. Thank you.

17           MR. MILLER: And next in the queue I have Doctor  
18 Tierney, go ahead please.

19           DR. TIERNEY: Thank you. Commissioner Glick, I'm  
20 going to say something that may sound out of turn in light  
21 of your question about CCUS. But we've spoken all day today  
22 about the generation side of this industry and the  
23 importance of a carbon price for incentives for innovation,  
24 for investment and so forth.

25           I think we would be remiss to not also just hear

1 the value of a price on carbon in wholesale markets with  
2 respect to animating the demand side of the market.  
3 Certainly, that has to occur through things to be done by  
4 state regulators, of course, but the flexibility of demand  
5 will be really important in the future, and a price on  
6 carbon will create innovation for new services and respond  
7 in tandem with the new order that you guys have just  
8 issued. So I just wanted to add that to the mix, thank you.  
9

10 MR. MILLER: Okay Commissioner Glick, we have no  
11 other panelists in the queue.

12 COMMISSIONER GLICK: Okay. Well thank you Sue  
13 for that. I mean that's a very important comment. It came  
14 up a little bit in our discussion earlier with Doctor Hogan  
15 about making sure the price is going to reflect it when  
16 people make choices.

17 I could go on with questions, this is a great  
18 panel, but given the time, given how long we've been here  
19 I'll stop there. But again, I want to thank you Mr.  
20 Chairman for putting together a series of really great  
21 panels, and I think it will help the Commission going  
22 forward in thinking about these matters, so thank you again  
23 Mr. Chairman.

24 And Mr. Chairman if I can say one more thing, I  
25 just want to also thank the staff for putting up with us and

1 sitting there all day and putting together very, very  
2 helpful information in getting us ready for this Conference.  
3 So thank you so much to all the staff and the team for  
4 putting this all together.

5 CHAIRMAN CHATTERJEE: Thank you Commissioner  
6 Glick for your strong participation, and what I think has  
7 been a great day and for the work that you and your team put  
8 into pulling all of this together. Again, many thanks to  
9 our panelists for this outstanding closing panel.

10 To close out the day, I just want to again extend  
11 my deep thanks to all of the panelists throughout the day,  
12 throughout nine and a half hours for what was truly rich  
13 dialogue, and I appreciate what everybody brought to the  
14 table. And like Commissioner Glick, I want to spend a  
15 moment to really thank the staff team.

16 You all did phenomenal work in putting on today's  
17 Conference. We could all appreciate the skill and effort it  
18 takes to plan such an exceptional content and manage the  
19 logistics, and I really, really appreciate your work.  
20 Thanks especially to John Miller, who led the team and  
21 moderated today.

22 Also, Jorge Moncayo who helped moderate and to  
23 the rest of the team. Mark Armamentos, Sanjay Bhatia, Bob  
24 Hellrich-Dawson, Anne Marie Hirschberger, Amr Ibrahim, Gary  
25 Mahrenholz, Adam Pan, Rakesh Puram, Alan Rukin, and Lodie

1 White. I also want to give a shout out to our IT team,  
2 pulling off a Conference like would have been a challenge  
3 had we stuck to my original hope, which was to have had it  
4 in person in the Commission meeting room, to have been able  
5 to execute a nearly nine and a half hour Tech Conference  
6 virtually is truly an impressive IT feat.

7 And the fact that they were able to so-quickly  
8 respond and react to the issues we were having with the web  
9 feed is just an example of how skilled and how they thrive  
10 under pressure, our IT team. So a big thanks to them.

11 I want to give particular thanks to Jette Gebhart  
12 who leads our Office of Energy Market Regulation for her  
13 outstanding leadership and her work to bring us here today.  
14 I know firsthand how much she put into this over several  
15 months and I think -- I hope she was as satisfied with the  
16 content and the record we were able to build today as I was.

17 And then finally, I could not close out this  
18 Conference without recognizing my own team, Maria Farinella,  
19 Rachael Marsh, Lindsee Gentry, Mindi Sauter, Andrea Spring,  
20 Jennifer Mellon, Angelo Mastrogiacomo, John Umberger, Mike  
21 Smith, and a special shout out to Annelise Rickert and Susan  
22 Griffiths, who additionally for oh yeah, helped us to  
23 navigate all of this and put it all together.

24 Could not have done it without my team and so I  
25 just really want to thank and comment the panelists and the

1 staff for what I think has been a very, very informative day  
2 and I look forward to following up with all of you all as we  
3 continue to work through these complicated and significant  
4 issues, thank you. I don't know John, if you want to say  
5 anything to close it out or if --

6 MR. MILLER: Mr. Chairman thank you. Nothing  
7 further from me. That's a wrap for this Conference. Thank  
8 you everyone.

9 CHAIRMAN CHATTERJEE: All right, thank you all.

10 (Whereupon the Technical Conference adjourned at  
11 6:31 p.m.)

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1 CERTIFICATE OF OFFICIAL REPORTER

2

3 This is to certify that the attached proceeding  
4 before the FEDERAL ENERGY REGULATORY COMMISSION in the  
5 Matter of:

6 Name of Proceeding:

7 Technical Conference regarding Carbon Pricing in  
8 Organized Wholesale Electricity Markets

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15 Docket No.: AD20-14-000

16 Place: Washington, DC

17 Date: Wednesday, September 30, 2020

18 were held as herein appears, and that this is the original  
19 transcript thereof for the file of the Federal Energy  
20 Regulatory Commission, and is a full correct transcription  
21 of the proceedings.

22

23

24 Gaynell Catherine

25 Official Reporter