

**In The Matter Of:**  
*NEW JERSEY OFFSHORE WIND TRANSMISSION  
STAKEHOLDER MEETING*

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*(AFTERNOON SESSION)*  
*November 12, 2019*

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STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES  
BPU DOCKET NO. QO19010068

IN RE: NEW JERSEY OFFSHORE WIND TRANSMISSION  
STAKEHOLDER MEETING

BEFORE: SUZANNE N. PATNAUDE, PRESIDING OFFICER,  
BOARD OF PUBLIC UTILITIES

DATE: Tuesday, November 12, 2019  
TIME: 1:15 p.m.  
PLACE: War Memorial Building  
One Memorial Drive, Delaware River Room  
Trenton, NJ 08608

REPORTED BY: EDWIN SILVER, CCR

J. H. BUEHRER & ASSOCIATES  
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1 BPU MEMBERS PRESENT:

2 CYNTHIA HOLLAND

3 JALEN FERRIS

4 ABRAHAM SILVERMAN

5

6 PANEL 3: TECHNICAL CONSIDERATIONS FOR

7 OFFSHORE TRANSMISSION FACILITIES

8 PANELISTS:

9 LAWRENCE H. MOTT, ANBARIC

10 MIKE KORMOS, EXELON

11 STEVEN BURROWS, MOTT MacDONALD

12 EMMANUEL MARTIN-LAUZER, NEXANS HIGH VOLTAGE USA

13 AARON BERNER, PJM

14

15 PANEL 4: COST RESPONSIBILITY AND BUSINESS MODEL

16 CONSIDERATIONS

17 PANELISTS:

18 MICHAEL BORGATTI, GABEL ASSOCIATES

19 JODI MOSKOWITZ, PSE&G

20 SHARON SEGNER, LS POWER

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1 MS. PATNAUDE: We're here for the  
2 afternoon session of the Stakeholder Meeting on  
3 New Jersey Offshore Wind Transmission, BPU Docket  
4 No. QO19010068.

5 Good afternoon. Pursuant to the Open  
6 Public Meetings Act, N.J.S.A. 10:4-6, et seq.,  
7 this Stakeholder Meeting was properly noticed by  
8 the New Jersey Board of Public Utilities  
9 Secretary, Aida Comacho-Welch.

10 My name is Suzanne Petnaude. I am  
11 Senior Counsel of the New Jersey Board of Public  
12 Utilities and have been duly designated by the  
13 Board to serve as the presiding officer in this  
14 matter.

15 The purpose of this meeting is to  
16 discuss how New Jersey should plan its  
17 transmission system to accommodate the major role  
18 offshore wind will play in New Jersey's energy  
19 future. We appreciate your attendance in this  
20 meeting.

21 The Clean Energy Act of 2018, L.  
22 2018, c. 17, Offshore Wind Economic Development  
23 Act, otherwise known as OWEDA, O-W-E-D-A, N.J.S.A.  
24 48:3-87(d)(4) and N.J.S.A. 48:3-87.1 to -87.2, and  
25 Executive Orders 8 and 26 require the BPU to

1 implement certain green energy initiatives to  
2 achieve 100 percent clean energy by 2050.

3 To achieve these goals, the BPU has  
4 established an Offshore Wind Renewable Energy  
5 Certificate, or OREC, O-R-E-C, to incent the  
6 creation of through offshore wind facilities. In  
7 June of 2019, the Board approved an 1,100  
8 megawatt, MW, offshore wind generation project,  
9 the first of several expected qualified offshore  
10 wind projects eligible to receive ORECs.

11 In preparation for future  
12 solicitations, BPU Staff is establishing the first  
13 of a series of technical conference-format  
14 meetings where interested stakeholders can provide  
15 comment on one or more offshore wind transmission  
16 solutions that may further the State's offshore  
17 wind ambitions in a cost-effective manner for New  
18 Jersey ratepayers. We asked interested  
19 individuals to self nominate to serve on panels to  
20 discuss how best to meet the State's objectives.

21 As you can see, we have a court  
22 reporter present to transcribe the panelists' and  
23 stakeholders' comments. In order to provide  
24 clarity and be courteous to the court reporter, I  
25 will insist that people not interrupt or speak

1 over one another, identify themselves by name and  
2 organization for the record, and speak slowly,  
3 clearly and loudly enough to be heard.

4           There may be additional technical  
5 conferences to further explore options, and  
6 written comments may be filed by November 28th,  
7 2019. Stakeholders should be aware that, for the  
8 purposes of the Open Public Records Act, these  
9 comments may be considered public documents.

10 Stakeholders may identify information that they  
11 wish to keep confidential by submitting them in  
12 accordance with the confidentiality procedures set  
13 forth in N.J.A.C. 14:1-12.3. The BPU thanks all  
14 stakeholders that have already taken part in this  
15 process for their participation and comments.

16           The information and views presented  
17 by Staff today do not necessarily represent the  
18 views of the New Jersey Board of Public Utilities,  
19 its Commissioners, its Staff or the State of New  
20 Jersey. Staff's comments do not provide a legal  
21 interpretation of any New Jersey statutes,  
22 regulation or policies, nor should they be taken  
23 as an indication or direction of any future  
24 decisions by the Board of Public Utilities.

25           We will have a 15-minute break

1 halfway through the afternoon session, when the  
2 panels change. The restrooms are in the hallway.

3 Written comments are encouraged and  
4 should address the questions posed by Staff and  
5 reference the associated question by number.

6 Written comments must be submitted to Aida  
7 Camacho-Welch, Secretary, New Jersey Board of  
8 Public Utilities, 44 South Clinton Avenue, 9th  
9 Floor, Post Office box 350, Trenton, New Jersey  
10 08625.

11 Written comments may also be  
12 submitted electronically to  
13 OSW.Stakeholder@bpu.nj.gov in PDF or Microsoft  
14 Word format. Written comments should be submitted  
15 by November 28th, 2019.

16 Please note that these comments may  
17 be considered public documents under the Open  
18 Public Records Act, and stakeholders may identify  
19 information they wish to keep confidential by  
20 submitting them in accordance with the  
21 confidentiality procedures set forth in N.J.A.C.  
22 14:1-12.3.

23 As previously mentioned, the  
24 transcript that will be produced from this  
25 stakeholder meeting shall be made part of the



1 record in this matter and shall be reviewed by all  
2 members of the Board.

3 And with that, we will get started  
4 with our first panel.

5 I'm going to start on the far end,  
6 and you are Steve Burrows. Right?

7 MR. BURROWS: Right.

8 MS. PETNAUDE: Do you have a  
9 PowerPoint?

10 MR. BURROWS: Yes.

11 (Pause.)

12 MR. BURROWS: Okay. Well, good  
13 afternoon, and thank you to the BPU and the  
14 commissioners for having this open forum for  
15 discussion.

16 My name is Steve Burrows. I work  
17 with Mott MacDonald. We are a consulting  
18 engineering firm here in New Jersey. Our  
19 experience comes from work we've done in offshore  
20 wind in the U.S. as well as work we've done in the  
21 European market.

22 Today, I'd like to discuss some of  
23 challenges to bring offshore cable on shore and  
24 some of the technical and regulatory issues that  
25 will be found by any developer, engineer, or owner

1 within the process.

2           So, today, I'd like to begin with  
3 basically the landfall segment of when we would be  
4 doing an offshore substation project.

5           There's two methods primarily for  
6 bringing the cable on shore that would be direct  
7 landfall, which is an open trench, and then  
8 trenchless technology, horizontal directional  
9 drilling, the second of which is most likely more  
10 preferred in a lot of instances, that is through  
11 permitting and regulatory action.

12           Most of what we've seen is that HDD  
13 is preferred. When doing HDD, you would typically  
14 have two sides. You would have the pit side,  
15 where you begin the drill, and then you have the  
16 opposite side, where you would receive the other  
17 end of that drill. So, within that operation,  
18 you're essentially going to have to pick parcels  
19 of land on either side, this, obviously, being in  
20 the ocean.

21           So there's a lot of things that you  
22 take into consideration. Preferred staging areas,  
23 they're often near population centers or located  
24 in remote areas of barrier islands. You're also  
25 going to look for shallow waters in this instance,

1 so that routing is easier and also maintaining  
2 your equipment while you're doing installation  
3 becomes more effective.

4           Now, once you get the cable on shore,  
5 there's a number of things that have to be  
6 considered while we are routing the cable from the  
7 landfall to the point of interconnection. At this  
8 stage, we would probably begin by defining the  
9 most important constraints, which is one, the  
10 landfall locations, but also the substation  
11 high-end locations. So your point of  
12 interconnection and electrical studies become very  
13 important at this stage.

14           Other things that we would typically  
15 look at are parcels, the existing infrastructure,  
16 whether or not we can utilize that infrastructure  
17 or have to upgrade that infrastructure.

18           Railroads, roads, existing utilities,  
19 you have to do traffic counts, a multitude of  
20 different environmental studies, geotechnical  
21 studies. Depending on whether you're going  
22 through state or federal lands, this might require  
23 a special use case.

24           And then after that, we would perform  
25 different analyses, costs, constructability, total

1 route. If you're going to be using different  
2 methods of getting your cable from Point A to  
3 Point B, maybe you're doing a trenchless again on  
4 land, you could go overhead, or you could do an  
5 open trench, depending on what municipality you're  
6 in, county, or area.

7 The other things you might want to  
8 consider at this stage are any traffic disruptions  
9 and permitting constraints, especially, which is  
10 what I'm going to get into next.

11 So, for any part in this process, we  
12 are going to experience significant environmental  
13 and permitting issues. All phases of the projects  
14 will experience these challenges. They will be  
15 complex, and you're going to most likely have to  
16 deal with multijurisdictional efforts on the  
17 federal, state, county, and municipal levels.

18 Just as a for instance, CAFRA will  
19 definitely have to be dealt with when coming on  
20 shore. This is typically a long process, and it  
21 takes a lot of manpower in order to get  
22 completed.

23 It is important that there is  
24 significant planning in these permitting areas to  
25 evaluate bottlenecks in the process. Some things

1 that we've got to take a look at are existing and  
2 competing commercial recreational uses, coastline  
3 and offshore areas, contaminated impact sites and  
4 landfill along land and water routes, especially  
5 community resistance and environmental justice  
6 considerations since we will be working along the  
7 New Jersey shore.

8           Some of the solutions or approaches  
9 to vacate some of these issues may be early and  
10 often approach to stakeholders and its engagement,  
11 a robust stakeholder engagement plan, a  
12 comprehensive evaluation of existing environmental  
13 conditions and constraints for routing and  
14 landfall options, active management of federal,  
15 state and local permitting programs, leveraged use  
16 of NJDEP's Office of Permitting Coordination and  
17 Environmental Review, and also to community  
18 outreach, especially along shore towns, where a  
19 lot of this work may be completed.

20           I'd like to thank you for your time,  
21 and that's it.

22           MS. PATNAUDE: Thank you very much.

23           And next we have Mr. Berner, from  
24 PJM.

25           MR. BERNER: Good afternoon,

1 everyone. My name is Aaron Berner. I'm the  
2 manager for interconnection for transmission plans  
3 at PJM interconnection. I've been at PJM for  
4 approximately 10 years, transmission studies and  
5 interconnection studies the entire time that I've  
6 been at PJM.

7 I'll talk a little bit about the PJM  
8 queue, something that's been mentioned a few times  
9 today. This is just an indication of the activity  
10 that we have in the queue as of the point earlier  
11 this year, as of a few months ago.

12 I will say that there is additional  
13 activity that has entered into the queue at this  
14 point. So, there's several thousand megawatts, as  
15 was mentioned earlier, that are in the queue for  
16 development. You'll see that they're aggregated  
17 in a couple of locations. And we'll see why on a  
18 later slide. I just want to stop here and look at  
19 this for a minute and think about this.

20 These are a number of different  
21 projects. You can see at one point they're almost  
22 six of them on top of each other. There is some  
23 benefit to having the queue available for defining  
24 what issues might occur. But, as has been  
25 mentioned earlier, the queue might not be the best

1 way forward for thinking about long term.

2           The queue as it's processed and was  
3 mentioned earlier, the way this works is there is  
4 one project built behind another. So, as we do  
5 this, we're layering possible interconnections one  
6 on top of each other. So, as you're looking at  
7 that, you're going to have to take into  
8 consideration all of those previous projects. So  
9 it doesn't give you a clear view of what you might  
10 get to in the end if all these projects don't go  
11 forward. We can define what the required  
12 reinforcements are for all these different  
13 projects. However, if they don't all go forward,  
14 we have to back up and restudy them.

15           Sue talked about earlier, Sue Glatz,  
16 state agreement approach is an option that we  
17 could look at possible phased projects to total  
18 capability that might be awarded.

19           As you work through those different  
20 phased approaches, different capabilities,  
21 different tranches of megawatts capability, you  
22 could get a good idea of what that capability need  
23 might be on shore.

24           This is similar to some maps that  
25 you've seen. There's some additional information

1 on them. As you can see, on the right and the  
2 left there are different voltage substations  
3 indicated in distances from the shoreline to those  
4 substations.

5 This calls into question some of the  
6 discussion earlier around how do we get to that  
7 backbone, that 500 kV facility. As you can see  
8 here, we're showing a minimum up at the north  
9 there about 20 miles. In the south, where a  
10 number of the projects are already being sited, or  
11 at least proposed, you're looking at 40 miles  
12 coming in to 500 kV.

13 So, as you turn to the right and take  
14 a look at that, there are lower voltage facilities  
15 that are available. At those 230 kV facilities,  
16 they will provide some amount of capability. That  
17 capability will not support much beyond what is  
18 currently envisioned in relation to that 3,500  
19 megawatts. This is another issue that was brought  
20 up earlier.

21 Thinking about what is the next step,  
22 if we keep that in mind, we have to think about  
23 what is a way that we could build out any  
24 infrastructure on land that would support the  
25 connections. Otherwise, you're looking at



1 building a minimum of 20 miles on land or up to 40  
2 miles on land to get to the infrastructure needed  
3 to support those heavier capabilities, those  
4 larger megawatts in the future.

5           So, this is something that we think  
6 is very important. Looking ahead is much more  
7 important than thinking about the individual  
8 projects in our queue. If we don't move ahead  
9 thinking about what that end game might look like,  
10 we might build some upgrades on the system, the  
11 ratepayers might be responsible for some upgrades,  
12 and then we would have to tear them down.

13           They are only a certain number of  
14 locations where you can probably come on shore.  
15 Those will be limited. Thinking about that,  
16 thinking into the future, that scalability, be  
17 flexible in how you procure, be flexible about how  
18 you plan to move forward. Make sure that what is  
19 being planned can be scaled up to some larger  
20 value, or think about what the implications are of  
21 that and be cognizant of what that is.

22           There was some discussion about  
23 whether or not we should increase the onshore or  
24 the offshore grid earlier. We think there is room  
25 for both. Some of the discussion was, Yes, you

1 have to reach the load. Once you bring that power  
2 on shore, you need to disperse that energy to  
3 locations around the grid.

4 Is there some benefit to having some  
5 offshore grid capability?

6 Sure. That could, in fact, allow for  
7 some contingencies for the loss of some of those  
8 radial lines. And that again develops other  
9 questions. How do you control that capability as  
10 it comes on shore.

11 One of the questions was around  
12 whether or not AC or HVDC was the proper way to  
13 connect out into a grid. Keep in mind that even  
14 if you build out for the AC interconnection, you  
15 could at some point in the future insert a  
16 back-to-back HVDC facility to provide  
17 controllability.

18 Something to keep in mind, you could  
19 build a more cheap AC system at the beginning,  
20 insert that back-to-back HVDC in the future, and  
21 have some controllability if you do start to  
22 network things together out in the water.

23 I want to thank you, and I look  
24 forward to discussion with the panel.

25 MS. PATNAUDE: Thank you.

1                   Next up we have Mr. Mike Kormos, from  
2 Exelon.

3                   MR. KORMOS: Thank you. I'm Mike  
4 Kormos. I'm here representing Atlantic City  
5 Electric and Exelon. And I do appreciate the  
6 opportunity to come and sort of discuss some of  
7 what's already been said.

8                   I think at the end of this, at a  
9 minimum, this is absolutely something we should be  
10 studying. I just don't see a reason why we  
11 wouldn't want to study it and make knowledgeable  
12 decisions as we go forward. There's been a lot of  
13 discussion as to which way is the right way.  
14 Personally, I don't know if we will even know that  
15 until we actually put some numbers on papers and  
16 do that.

17                   I'd like to try to build on some of  
18 the previous discussions and go a little bit into  
19 some of the deeper questions from a technical  
20 perspective.

21                   One thing I would say is under full  
22 disclosure, I want to talk a lot about the PJM 2  
23 process and the state agreement approach. But I  
24 probably should say that I spent 27 years at PJM.  
25 So anything I do bashing it, I take full

1 responsibility, and it's not Aaron's fault, for  
2 anything that I may point out is a deficiency in  
3 the PJM process.

4           With that in mind, I really think,  
5 you know, in looking at this, a lot of people  
6 talked about the interconnection points themselves  
7 and, you know, how will we go about identifying  
8 it.

9           One of the first things I would point  
10 out is the big difference I think between the  
11 current generation queue process and what we would  
12 potentially do under a study approach is that the  
13 generation queue process only looks at reliability  
14 problems. They study interconnections at the peak  
15 and they study them at the minimum. Basically,  
16 they will put in upgrades to ensure that under  
17 those conditions, which are very limited  
18 conditions, the generation is deliverable to serve  
19 the load. The rest of the 8,000 plus hours that  
20 may be in the year, they're really not looking at  
21 in the study.

22           For most generations, that may work,  
23 particularly for fossil fuels. For the most part,  
24 they realize they probably weren't going to run  
25 every hour of every day anyway. They have the

1 complete ability to turn on and off. If they're  
2 not running and they're not properly fueled,  
3 they're not incurring their cost.

4 For renewables, that's not the same  
5 business models. In their case, they want to run  
6 every hour that they absolutely can. In most  
7 cases, if they don't run, they don't get paid.

8 We did some studies for Illinois, and  
9 really what you expect to see at high penetrations  
10 of renewables, the problems are no longer at the  
11 peak. The problems are no longer at the  
12 (inaudible).

13 You probably have heard the duck  
14 curve in California. But that's where you start  
15 to see the problems. You start to see very sunny,  
16 bright, windy spring and fall days, when there's  
17 no air-conditioning or heating. That's when you  
18 start to see the problems. That's when you start  
19 to see the curtailments.

20 So, one of the things I think in  
21 looking at an interconnection process, you know,  
22 as part of our study, it's not just looking at the  
23 interconnection points themselves and how much can  
24 you inject in there. That's part of the issue.  
25 But it's also then how much can you inject

1 year-round, what is the congestion going to be,  
2 how do you maximize actually and also balancing  
3 out those injection points to basically maximize  
4 how much actually can be delivered in all hours of  
5 the year at all times.

6           So I think that would be one of the  
7 critical technical things that we would want to  
8 look at and study is, and there are plenty of  
9 tools, and PJM is as good as anybody at doing  
10 this, in looking at how we would model that and  
11 how we would come up with some of those different  
12 scenarios.

13           I think from there, you also want to  
14 look up once you identify where sort of those  
15 prime points are. And I would agree, you know,  
16 those points are not going to be the ones closest  
17 to the coast.

18           So, representing Atlantic Electric, I  
19 can tell you yes, everybody who is looking to  
20 interconnect right now through the queue process  
21 has found the closest substation to the shore and  
22 to connect there.

23           That is not the strongest part of our  
24 system. It was not designed to be the strongest  
25 part of our system. It was designed to serve the

1 load at that coastal area, and that's it. It's  
2 almost (inaudible) in many cases in reaching those  
3 points. And really you need to have to beef that  
4 up or basically reach back in. And talking about  
5 beefing up, I was talking to Abe before the panel,  
6 I've been around long enough and I'm experienced  
7 enough to remember something that was called the  
8 seashore room.

9 So, way back in late '70s, the Exelon  
10 utilities along with Jersey Central Power and  
11 Light and PSE&G signed something called the LDV  
12 Agreement, Lower Delaware Valley Agreement.

13 The agreement was done at the time to  
14 basically interconnect the nuclear plants, Peach  
15 Bottom, Limerick, Salem, Hope Creek, and go up  
16 into northern PS with 500 kV, and at the time it  
17 was envisioned another nuclear plant being built  
18 at the Forked River substation by Jersey Central  
19 Power and Light, and so they envisioned actually  
20 coming up from New Freedom going all the way out  
21 to Smithburg with 500 kV that would have actually  
22 been wonderful to have in this day and age.

23 Unfortunately, that nuclear plant was never built  
24 and that line was never built there. But just  
25 again, there have been on the books in the past

1 some projects that we would probably want to look  
2 at.

3           Also, in looking at these  
4 interconnection points, I really do think also the  
5 ability to reuse the existing infrastructure in a  
6 couple different ways. I think anybody who has  
7 tried to build a new transmission can tell you  
8 it's probably one of the hardest things to do,  
9 and, therefore, again maximizing the existing  
10 infrastructure, the existing right-of-ways in  
11 order to basically bring this power grid I think  
12 would be one of our highest priorities.

13           I also think we also want to look at  
14 it more realistically, because one of the previous  
15 questions, you know, again many parts of the  
16 system, particularly in the ace territory, we're  
17 looking at 30-, 40- or 50-year-old infrastructure  
18 in most cases, a lot of old whip holes, a lot of  
19 towers that are suffering corrosion from being so  
20 near the saltwater, that we're sinking major  
21 investments into that area on a systematic basis,  
22 as is every utility in New Jersey. It's part of  
23 our ongoing responsibility.

24           One of the things we want to make  
25 sure we're doing is as we are looking at what



1 investments we are making, how does it fit in with  
2 the bigger picture. We don't want to actually  
3 rebuild the line, rebuild it as existing voltage  
4 just to find out two or three years later that we  
5 need to tear it down or rip it down and rebuild it  
6 at a higher voltage to accommodate offshore wind  
7 in some form or fashion. So, again, I think  
8 there's a benefit of really going back and looking  
9 at the list of it.

10           The other technical issue that I  
11 would mention is the actual agreements  
12 themselves. And this is a little less on the  
13 engineering technical side but more on the legal  
14 technical side. I do believe the PJM study was  
15 designed and discussed exactly for this condition,  
16 exactly what we're talking about. The issue is  
17 it's never been tried before. We have not done  
18 one. Being serial number 0 or being 1 is always a  
19 challenge.

20           Also, it was designed to be very  
21 flexible, as I think Sue talked about before. It  
22 was designed to be very flexible and be very open  
23 and allow a state really to dictate what the  
24 process is. And that's great, except there are  
25 really no rules.

1           So one of the things that we really  
2 want to talk about from a technical perspective is  
3 what do those agreements look like, how would we  
4 effectuate them, when do we file them, what are we  
5 filing them, things can be filed at FERC and  
6 memorialized there, things don't have to be filed  
7 at FERC, it can be done just through different  
8 type of state agreements, how you then integrate  
9 the RFPs and the wind contracts themselves, and  
10 how do they respect each other I think is all part  
11 of that. So I think that's another area where we  
12 want to have this conversation sort of earlier in  
13 the process and so everybody at least understands  
14 how it would play out.

15           Some of the other questions that were  
16 asked, just real quickly. The jet tide lines and  
17 the ability to use that, I think there's two  
18 issues there. I think one is yes, you could  
19 absolutely incorporate any radial jet tide feed  
20 that is already on the books or being done into  
21 any longer term plan.

22           The issue there is two things. One  
23 is actually the FERC rules. There's a five-year  
24 grace period where that generator does not need to  
25 make that available for open access.

1           Now, again, it's something  
2 contractually you might be able to get out of it  
3 and basically tell the developer they have to make  
4 it open. But under the FERC rules, they don't  
5 have to make it available for open access.

6           The other point is they are typically  
7 sized to be only exactly what the generator  
8 needs. And so there's usually very little  
9 incremental headroom or capacity for people to  
10 join in. But that's not always the case. And  
11 that's something again I would think we would want  
12 to look at and consider, particularly just going  
13 forward on what questions we should be asking.

14           Whether there are standards that  
15 would need to be put in place, I think if we  
16 answered the first two questions, I think we do  
17 the planning and the study and we understand what  
18 we want to built and we do the contractual piece,  
19 I think that would cover it. I don't know if you  
20 would need anything from the standards beyond  
21 that, although I think standard contracts sort of  
22 blend a little bit there altogether.

23           On the AC/DC question, I guess my  
24 short answer is that's exactly why we should study  
25 this. There are pros and cons, and there are

1 probably better experts than me on this panel, to  
2 both AC and DC. I mean, obviously, the longer the  
3 lines need to be the, the DC basically becomes  
4 more cost effective at a certain point. The need  
5 for controllability, again, can be solved in many  
6 ways. DC, obviously, brings some of that.

7           So, again, I would just suggest that  
8 is one of the things I hoped we would look at in  
9 our study and be doing those kind of cost benefits  
10 in making those decisions.

11           And then the last question on  
12 challenges for interregional share transmission.  
13 And I guess my shorthand is yes, challenges, yes.  
14 As Sue I think earlier noted on the panel said, I  
15 don't think they're technical challenges. They  
16 would absolutely be political cost allocation  
17 challenges.

18           I would not suggest we start there.  
19 I think ultimately we'll get there. I think we'll  
20 have to get there. And I think we should keep  
21 that in mind in whatever we're doing. But I would  
22 not recommend we start there. Basically, some of  
23 the time constraints I think we'll be looking at  
24 at some point in putting this together. I think  
25 those negotiations would take a fair amount of

1 time. But I do think again you'll have to take,  
2 as we said, I think open access we'll apply for  
3 any facilities to be ultimately built and maybe  
4 this five-year grace period, we may be able to  
5 file with FERC for other exclusions. But  
6 ultimately at the end of day, that interconnection  
7 will probably be something that we'll take a look  
8 at.

9 And so, with that, I'll afford you  
10 questions.

11 MS. PATNAUDE: Thank you.

12 Next up we have Lawrence Mott, from  
13 Anbaric.

14 MR. MOTT: Good afternoon. Thank you  
15 for this opportunity to make some remarks and for  
16 the BPU in providing the context for our approach  
17 and what we're trying to accomplish and the  
18 opportunity to really look hard at the picture of  
19 integrating offshore wind power.

20 I come at this as a guy who I  
21 interned with for my senior project in college,  
22 and it's now 34 years, and I'm still in this  
23 business, nine years in the offshore sector, and  
24 some scars from working on cape wind and also  
25 fishermen. I'm here.

1           Let me really hit on an update or  
2 perspective on comments that have been made during  
3 the day, and also hit on the technology. I'll  
4 also note that the picture here is during events  
5 on bringing the cable from New Jersey to Long  
6 Island. So this is a submarine cable. This is a  
7 direct notion of submarine cables and how to look  
8 at the energy future for New Jersey.

9           Much of this has been said. I'll go  
10 very quickly. We like to think about it as let's  
11 start with where the needs are, which is what  
12 people here say, we have to upgrade the onshore,  
13 absolutely. So let's take this opportunity to  
14 build an offshore network that's fresh and new to  
15 support the onshore grid and how we can be smart  
16 about that, because we all know it's very  
17 difficult, as has already been said, on working  
18 onshore, the possibility of actually burying the  
19 cable in the mud is much better than going across  
20 the condominiums' backyards on shore. So let's  
21 focus on how we may use tie-ins and various  
22 designs offshore to support the onshore grid.

23           As has been said before, let's look  
24 at the ultimate goal this morning. What are we  
25 going to do for generation. What are the peaker

1 requirements. What's going on in PJM's terrain.  
2 The significant reduction in coal generation, how  
3 are the planners to consider what the generation  
4 sources are, a lot solar DP.

5           Timing, the question was put forth  
6 what do we see for this notion of the need for  
7 planning for considering alternate transmission  
8 methods, how do we get this offshore generation to  
9 market.

10           I'd like to pull back from what was  
11 mentioned this morning of 10 years to say maybe  
12 five years. The emphasis is we need to start  
13 planning right now, today, for this effort. We  
14 need to really look at the aspects of how the  
15 regulatory mechanisms fit the various tariffs and  
16 how we can allow them to be flexible to fit what  
17 we're going for.

18           The idea is flexibility, the idea is  
19 we want lowest cost, and we want to induce  
20 competition. And so having an open competitive  
21 idea of various transmission players in the sphere  
22 may be a better way to at least have it open.  
23 And, of course, it doesn't preclude the generators  
24 from bidding and participating, and it's not at  
25 all denying the fact that the next let's pick

1 three years we're going to be focused on getting  
2 steel in the water. Let's get the first projects  
3 built and operating. We've got a long ways to go  
4 to build this industry out.

5 I think the other points are obvious  
6 down below on building a suitable grid. It's been  
7 mentioned, I would bring up was mentioned  
8 curtailment, battery storage costs are coming down  
9 significantly. We need to consider storage as we  
10 plan this network and provide a lot of benefits.

11 And I'd echo Mike's comments on  
12 renewable generation and the real impacts of  
13 curtailment, and all the obvious ones on  
14 permitting and the hard work involved in  
15 permitting. Anbaric continues to push, as an  
16 example, both comments, the boardwalk project and  
17 the New York, Long Island, as we try to mature  
18 these so they're ready for the need to bring this  
19 energy ashore.

20 So, technology, my point here is it's  
21 so dynamic. We are, as has been mentioned,  
22 looking at 10, 12 megawatt wind turbines, not 2  
23 and 3. We're looking at much larger transmission  
24 systems. This is the concept for the new tenant,  
25 2 gigawatt offshore HVDC. We have seen now that



1 Equinor, in Scotland, on the outer bank, with a  
2 3.6 gigawatt project looking at HVDC and larger  
3 systems. Wind turbine voltages are going up,  
4 we're now at 66 kV, and I think that we're going  
5 to see higher voltages coming off the turbines.

6 So, as was mentioned absolutely in  
7 the case of where we put together the concept  
8 design for our Liberty wind bid, we were running  
9 from the turbines right through the HVDC  
10 platforms. So we saved an entire combined air  
11 platform, and we're reducing costs and impacts on  
12 that case.

13 Our cable industry continues to  
14 progress on technologies. Innovation,  
15 fabrication, a lot of different methods on how  
16 we're fabricating platforms. They're becoming  
17 modular. You may bring two platforms together to  
18 form a single substation, what types of  
19 foundations we used, and installation methods.

20 In summary, the U.S. market is  
21 absolutely its own market. There's absolutely  
22 some lessons to learn from Europe. But we must  
23 remind ourselves that we're fresh and new and the  
24 technology is new.

25 So, while I appreciate the lessons

1 from Europe, I really want to emphasize that we do  
2 not lean too heavily on that, and we must chart  
3 our own course, and I think Americans are  
4 well-suited for that.

5 I'm going to throw out just an idea,  
6 because the notion here is it's not AC or DC, it's  
7 both, and a cost effective and regulatory smooth  
8 idea might be that we build an AC offshore  
9 network. So we're building AC, which can be built  
10 at a low cost. The generators are very custom and  
11 very savvy at building AC infrastructure and how  
12 to build platforms. And I think it was this  
13 summer that Orsted put out a bid for nine AC  
14 platforms, and they're really looking at maturing  
15 and driving costs down. We can then set up very  
16 clear demarcations on how the generators connect,  
17 and then we use the features of a DC link to bring  
18 that power ashore. As was mentioned  
19 controllability, we may look on a DC link of 3  
20 percent losses versus 8 or 9 percent with AC.

21 So there's the features that we want  
22 to combine, and we have a lot of options on how we  
23 perceive that and speak of resiliency, redundancy  
24 and how we can bolster and integrate with the very  
25 precious onshore resources.

1 I'd also note the ability to  
2 interconnect between--this offshore grid is  
3 interconnecting between offshore resources. So  
4 we're sharing and using HVDC. The operators at  
5 PKM actually shuttle power from one way to the  
6 other as they may need or when a Sandy Superstorm  
7 comes in.

8 So, I've summarized some of these  
9 points. But I wanted to kind of put them up on  
10 the screen just for folks to look at the idea of a  
11 lot of progress on high voltage AC and how we can  
12 use it.

13 I think we have to remind ourselves  
14 that some of these longer AC lines may require  
15 additional an platform, the midpoint  
16 compensation. We have, you'll see that the list  
17 of items there, DC would not require that. For  
18 longer distances, we can use fewer cables. So  
19 they all have their points of competitiveness, and  
20 I'd like to just keep us away from saying one or  
21 the other.

22 I will stop there, and thank you.

23 MS. PATNAUDE: Thank you very much.

24 And our last panelist on the third  
25 panel is Emmanuel Martin-Lauzer, from Nexans High

1 Voltage USA.

2 MR. MARTIN-LAUZER: Thank you.

3 My name is Emmanuel Martin-Lauzer.

4 I'm director of business development of Nexans  
5 High Voltage USA.

6 Two disclaimers. First, in the  
7 technology industry, we provide the entire  
8 possibility of technology for developers, the user  
9 of transmission line, and second as a transmission  
10 solution provider of transmission lines, we work  
11 with the entire panel of customers at BTS  
12 Developers, which is transmission developers.

13 So, we talked about AC and DC, and  
14 I'm going to talk about it very quickly.

15 There is two technology called track  
16 on 2 for transmission, AC track that has a much  
17 longer track requirement than DC track, and each  
18 of them has strength and weakness, and both of  
19 those technology contract, the normalcy over the  
20 last 20 years, is basically bigger, better, faster  
21 further away. You remember your Marvel days.

22 So we have increased the voltage  
23 class from about 161 kV voltage to 420 kV. For  
24 all practical means, offshore wind transmission,  
25 especially when the offshore wind farm is further

1 from shore, we are reaching about the end of that  
2 technology called track, the voltage is going to  
3 be around 275 kV.

4 If you increase the voltage further,  
5 whatever you think you are getting on one hand,  
6 you lose it on the charging on the other hand. So  
7 it's not going to gain much. But if you are  
8 closer to shore, there is still some room for  
9 progress.

10 Basically using that envelope of  
11 technology, it's between 300 and 400 megawatts.  
12 You could push further, 490 megawatts. Under  
13 certain is favorable conditions and (inaudible)  
14 operations and to get there, the units have done a  
15 lot of engineering studies and know exactly where  
16 you're going to lay your cable.

17 So, basically you have to bear in  
18 mind the envelope use of AC technology is 350 to  
19 400 megawatts per transmission line.

20 The DC technology, which is more new  
21 compared to the U.S. technology, started in the  
22 '60s, '70s (inaudible) with what they call  
23 (inaudible) cables, and sometime in the early  
24 2000s a different septic version was developed  
25 with dry insulation, which is the same as AC, and

1 we have now DC technology which has been used, for  
2 instance, in Germany.

3           So people have in mind 900  
4 megawatts. It has nothing to do with the new  
5 technology. That was the way, I guess,  
6 (inaudible) would come together. But the envelope  
7 use of new technology is, let's say, 800 to 1,200  
8 megawatts. You could push it further by upping  
9 the voltage to 400 kV and under certain favorable  
10 considerations the addition of 1.6 gigawatts.  
11 Okay. We covered that.

12           So just so to bear in mind, again we  
13 are speaking (inaudible) footprint. We are  
14 looking at similar footprint in some of the  
15 substations onshore and offshore.

16           AC is very well (inaudible)  
17 technology. DC (inaudible), which is the  
18 technology of choice for offshore wind if we go  
19 DC. DC has a more limited (inaudible) and  
20 experience than AC. AC, you don't need those  
21 quite expensive offshore and onshore converters.  
22 It requires lower KAF ECS (ph). DC requires much  
23 higher KAF ECS. But usually if you have long  
24 distance, you have less losses, so OPECS (ph) is  
25 better in the long run.

1 AC you want, let's say, 1.2  
2 gigawatts, you need three (inaudible) cables. So,  
3 two corridors at least, one sufficiently wide.  
4 So, two in the same corridor are normally  
5 dependent.

6 In DC you need only one corridor,  
7 either by pole or symmetric by pole. So we have a  
8 much narrower footprint in terms of right-of-way.

9 You will see the same thing onshore.  
10 You can put basically if you were willing to  
11 inject 2.4 gigawatt at one given substation, which  
12 would be (inaudible) network, you can put those  
13 two by four on one bank. You would not be able to  
14 do that in AC because you would need that minimum  
15 of (inaudible), which we have a hard time to find  
16 any road where you have right-of-way that  
17 available on both sides of the road.

18 In terms of transmissions, so it's an  
19 increment of 400 megawatts. So it's no surprise  
20 to see all the packages obtain an increment of 400,  
21 800, 1,200 megawatts. DC you can do 1 gigawatt to  
22 1.2 gigawatt, and in AC the developers are raising  
23 AC to balance load power, load factor, distance,  
24 losses (inaudible) and so on. In DC there is no  
25 limitation in terms of distance and (inaudible)

1 can control everything.

2           Now, the point is, which is an  
3 important, one is capacity technology. So I would  
4 say it's inherently a bit more reliable than DC,  
5 which is more active technology. I'll show some  
6 pictures later, if you want.

7           Two examples to show that both  
8 technologies work. One is the 1.4 gigawatts in  
9 England. It's done with AC with midpoint  
10 compensation, and it goes 170 kilometers.

11           Another one is done in Germany. So  
12 the other one we have seen is 900 megawatts. It  
13 doesn't come from the limitation of the  
14 technology. It's the way that they decided to do  
15 it. They could have done also 1.2 or 1.4  
16 gigawatts. The AC will allow them to come from  
17 the Darwin area to (inaudible) in Germany.

18           Why do we see that we have seen over  
19 last 20 years the technology pushing (inaudible)  
20 that far and we are reaching the end I think of  
21 the (inaudible) track on the AC, but we have a lot  
22 of room to grow on the DC. It's because  
23 everything got bigger and further away.

24           We started in this area, which is  
25 close to shore, small offshore wind, and now we



1 have arrived, we are in this rectangle, where we  
2 are quite far from shore. And being offshore,  
3 even in U.S., we went straight into that area here  
4 far from shore, about 50 to 100 miles, 800  
5 megawatts 1.1 gigawatt (inaudible) New Jersey 1.2  
6 gigawatt.

7 So (inaudible) provides transmission  
8 solution is the technical consideration for  
9 offshore, and I'm not technical, the technique is  
10 already there. It exists. Okay. There is  
11 nothing new there.

12 What we can see is that in terms of  
13 AC (inaudible) close to what the transmission  
14 technology allows. On the other hand, DC there is  
15 still room where maybe different source of showing  
16 power to be bundled together. But it's not  
17 possible in AC if we go on the track of 800  
18 megawatt, and so on.

19 So the first of those technical  
20 considerations, the way I see it personally, is  
21 more about of what is the vision of the future  
22 that New Jersey has regarding the offshore wind  
23 industry in it state and with the other states  
24 around it.

25 So, I put a few bullet points, which

1 does not list everything, but right now the  
2 classification is clear (inaudible). But the  
3 question maybe New Jersey wants to us is how do  
4 you want to allocate the cost to all the parties,  
5 the state ratepayers the (inaudible), maybe some  
6 utilities interested in the stake in the game.

7           The second one you need to ask the  
8 question is right now all the assets are owned by  
9 the developers, how do you see in the future  
10 (inaudible) transmission.

11           The third one, and it goes onshore  
12 and so far it hasn't been discussed, is how does  
13 New Jersey (inaudible) the connection of  
14 transmission or power.

15           We have all heard that one of major  
16 risks of failure is in the transmission, and I  
17 will put a quote on that, it's not the cable.  
18 It's the damage that (inaudible) close to the  
19 cable. So if we lose the transmission line,  
20 certainly you lose 400 megawatts of generation.  
21 And it's not going to take two weeks to repair  
22 that. It's going to take months.

23           So, how do you value that. How do  
24 you value connecting different offshore renewable  
25 source of energy to be able to give some N plus

1 one redundancy. Maybe you will find redundancy by  
2 other means and offshore. But that's a question  
3 you need to ask yourself.

4 Another one, and I'm not an expert in  
5 that, but in the U.S. it's something I have heard  
6 over 12 years I've been here, technology is not  
7 easy, the regulatory aspect is always complicated,  
8 and we have a tendency to think that technology is  
9 going to resolve everything, and technology has  
10 already resolved the technological aspect, and the  
11 regulatory aspect, that is always a challenge. So  
12 what would be the 1,000 regulation and the PJM  
13 rules. So we've heard a lot about the state  
14 agreement, which is apparently sort of why folks  
15 right now think it's the same ones that have not  
16 really been used.

17 And the last two points that I think  
18 is important is we have heard--we hear all of the  
19 states talking themselves, sometime within their  
20 ISO region, but the Northeast is free from ISO,  
21 many states all belong to the same country, so  
22 that would be a mean to be able to work together.

23 I'm just saying that, because in  
24 Europe we have a beautiful country with new  
25 organization, and they have a very different ISO

1 organization, and they have found a way to work  
2 together. So there is some hope that we should  
3 find a way to work together.

4           And New Jersey has this big advantage  
5 from the State of New York. The State of New York  
6 right now is three times higher than yours, but  
7 they have a real big problem, their shoreline.  
8 You have a big shoreline, and so far your target  
9 is 3.5 gigawatts. Could there be a mean for you  
10 to (inaudible) that. Are you interested to  
11 (inaudible) with New York. Can you work with New  
12 York to develop an industry where both states  
13 benefit.

14           So what are your ambitions for New  
15 Jersey, for the State of New Jersey, for the  
16 neighboring state, also your neighbor in the  
17 north. Do you share a common vision with them,  
18 could you find ways to work together, and if you  
19 come to that agreement, when you would come to an  
20 agreement, and from there you will know what you  
21 have to do.

22           I will go back to what some people  
23 said. Right now the most important thing, we need  
24 to get your line in the water.

25           MS. PATNAUDE: Thank you.

1           If staff would like to come back to  
2 the table.

3           MR. SILVERMAN: I feel like I know  
4 less now than I did earlier. But it's great to  
5 have two such different visions of technical, one  
6 on the interconnecting side and the other on sort  
7 of the hard-core engineering side. So, I greatly  
8 enjoyed hearing all that.

9           One of the questions I have is how do  
10 you account for the benefits of a network  
11 facility?

12           Because I look at both from a  
13 reliability benefit, sort of a N minus becomes an  
14 N minus 1, 2, 3, or 4 kind of thing. There's L  
15 and P benefits, which comes back to ratepayer  
16 under our current structure.

17           So how do you think about, how do you  
18 quantity those benefits?

19           MR. KORMOS: Well, I think there are  
20 different ways to do it. I mean, one is, as you  
21 mentioned, the L and P benefits, the fact that you  
22 can look for ways to minimize congestion. That  
23 has an overall benefit as to the customer seeing  
24 that.

25           Now, I think that the trick then

1 becomes how do you then allocate the cost to who  
2 you perceive the benefit is. And, quite frankly,  
3 I've been in the business 30 some years, and that  
4 has been the problem for the entire 30 some years  
5 that I've been in the business.

6           So I think, you know, one of the  
7 benefits I think of the state agreement approach  
8 is start with Jersey, start with where your  
9 benefits and your costs are pretty much in your  
10 own state. Then you have some control of that.  
11 You have the ability to basically then allocate it  
12 between either the ratepayers or the developers,  
13 as you so desire. You can be sort of the judge as  
14 to how ultimately those benefits are. And if we  
15 can do those studies for you to help identify why  
16 certain solutions have certain benefits, my  
17 suggestion would be the more you can keep it  
18 inside the state, the better off you are because  
19 you can control that cost allocation.

20           As you--and this is sort of leading  
21 to your last question on the benefits. As you get  
22 into the interregional issues, we all have scars  
23 from those battles, because everybody loves the  
24 benefits and nobody wants to pay for them.

25           MR. MOTT: Just a quick comment.

1           Both gentlemen on my right are far  
2 better suited to answer that question, but I would  
3 like you to just consider the notion of the more  
4 transparency and how we may consider generation  
5 costs and transmission costs in getting them out  
6 in the open is how we can at least understand what  
7 those costs are so we can figure out how to  
8 distribute them.

9           MR. FERRIS: I'd like to drill down a  
10 little bit into something specific, and that's  
11 storage. Mike mentioned it, I think Lawrence  
12 mentioned it, and it was mentioned in the panel  
13 earlier this morning, also.

14           I'm just asking if you can expand a  
15 little bit on what you think that looks like, what  
16 the benefits are, how it integrates with the  
17 transmission system, are you looking at storage as  
18 a potential transmission upgrade cost deferral or  
19 replacement. Just a little bit more, if you  
20 would, on how storage fits in.

21           MR. KORMOS: Sure. And I think the  
22 answer is yes to all those questions. But a  
23 little more detail.

24           I think we've seen the benefit of  
25 storage, particularly with interconnections. As I

1 mentioned, I think building the transmission  
2 system to accept every megawatt hour produced by  
3 offshore winds may be cost prohibitive.

4 I don't know that for an answer yet.  
5 It will ultimately depend on where you ultimately  
6 end up where your goals go. But that would be my  
7 concern is, you know, having the copper sheet sort  
8 of approach the transmission may not be the most  
9 cost effective. But then you look at what the  
10 alternatives are, one alternative is just curtail  
11 the generation itself. There are downsides to  
12 that, particularly economically, to the wind  
13 developers themselves.

14 I think that's where storage now  
15 starts to play. We're seeing a lot more  
16 discussions about whether we can then  
17 strategically locate the storage to not only store  
18 the energy, but then control the transmission  
19 system at the same time. So, by pulling the power  
20 in or pushing the power off at certain hours, the  
21 congestion we just talked about and the network  
22 benefit is amplified. You have now that ability  
23 to sort of control the injections and withdrawals  
24 to some degree to help maximize whatever flow or  
25 throughput you can put onto the grid itself.



1           So I think that is something we would  
2 definitely want to study. It absolutely is  
3 something that I think you can have as a  
4 transmission asset to the extent it has replaced  
5 the transmission upgrades. That may be the most  
6 appropriate place. It is also one that there are  
7 some commercial opportunities that can be buying  
8 either in the RFP solicitations themselves or  
9 through some of the market functions of PJM.

10           MR. MOTT: And I think this is in the  
11 tariff structure and in the regulatory environment  
12 of how to understand these benefits, how to avoid  
13 peaker generation, some of those may retire or not  
14 be cost effective and allow storage, whether it's  
15 small plug-ins or very large storage, and I really  
16 believe building coming on in the market, 100, 200  
17 megawatt type areas that fit some of the points  
18 that Mike made.

19           MS. HOLLAND: So, it's my turn. And  
20 I'd like to take this moment to clarify for the  
21 record that Mike blamed everything to do with the  
22 PJM interconnection queue process on Aaron. So I  
23 just wanted that reflected.

24           But, actually, Mike, referencing your  
25 presentation, you mentioned this Lower Delaware

1 Valley Agreement process.

2 Can you elaborate on that a little  
3 bit?

4 I have to confess a lack of  
5 familiarity with it.

6 MR. KORMOS: I don't think many  
7 people are familiar with it, because you have to  
8 be really old.

9 So, I mean, again, most of LDV was  
10 actually done through collaboration with the  
11 utilities way back, 40, 50 years ago, where it was  
12 joint owned and joint controlled, with the idea of  
13 basically bringing at that time either nuclear  
14 generation or mine mouth coal units to the actual  
15 loads that needed to be serviced.

16 These agreements were put into place  
17 as to how to then do again sort of what we're  
18 suggesting here is that holistic design and  
19 building the transmission system to look at  
20 everything that's happening, not just inclusive to  
21 one utility and one set of nuclear plants, but to  
22 really look at the overall picture.

23 So I think there was really some  
24 great work and some really smart people way before  
25 I was in the industry who developed these

1 agreements that were done, again, for the nuclear  
2 plants and that were done up in the Susquehanna  
3 area, they were done in the Keystone area.

4 So there is some history of us  
5 looking at that. I think when we deregulated, we  
6 got away from that. We stopped doing integrated  
7 system planning. You know, there may be some good  
8 reasons. There were some pros and cons to  
9 integrated system planning.

10 But I do think at least in the  
11 transmission space we may be lost. Some of the  
12 benefit of doing that collaboration, looking at  
13 longer term more holistic pictures as to where is  
14 this generation going to be, what is it replacing,  
15 how is most cost effective. I mean, I think John  
16 said it very well on the other panel, our goal  
17 used to be do this at the lowest cost to the  
18 customer.

19 I think stepping back and looking at  
20 it holistically, like we did in the previous  
21 agreement, makes a lot of sense.

22 MS. HOLLAND: I think that was really  
23 interesting, and I refer to you and I think the  
24 other companies that were associated with that to  
25 maybe, you know, kind of identify some of that in

1 the post-technical comments. But I think that  
2 that's particularly interesting, at least from my  
3 perspective, speaking only for myself, to the  
4 earlier caveats.

5 I did want to also get some more  
6 clarity, if I could, about, I believe Mr. Mott  
7 referenced how the offshore wind transmission  
8 grids could be supporting the onshore grids, and  
9 there was also reference in the last presentation  
10 with regard to redundancy concerns.

11 So, I'm really kind of curious about  
12 how the offshore wind transmission grids could be  
13 supporting the onshore grids, and whether or not  
14 I'm even viewing that correctly as like requiring  
15 fewer onshore upgrades or enhancing resiliency or  
16 redundancy.

17 MR. MOTT: I'd be glad to--I'm trying  
18 to keep it to simple remarks right now.

19 We want to, as we have a radial  
20 system coming down to the beach, how do we find  
21 ways that may actually connect those radial  
22 systems via the new offshore grid is one example,  
23 and using HVDC as the connection technology, which  
24 offers a lot of controllability and maneuvering  
25 some of the power flow depending on demand,

1 depending on conditions.

2 So that's one type of example that I  
3 can put forth.

4 MR. MARTIN-LAUZER: Everyone is aware  
5 of exactly what they need. But should one of the  
6 transmission lines be lost, there is no backup.  
7 So it would be more a question how you going to  
8 incentivize the next package maybe to be  
9 (inaudible) for the wind farm, for accessibility  
10 on the wind farm, which we would require  
11 (inaudible) later on to maybe connect the wind  
12 farms and connect them, so for whatever reason  
13 their direct injection has a problem, they have a  
14 route at least to partially inject powers from  
15 another injection point.

16 But at the end of the day, we shall  
17 not expect anybody that is speaking (inaudible)  
18 exactly what is in it because they are going to  
19 price themselves out of it.

20 So if you don't want that to happen  
21 or if you want someone else to build it, you're  
22 going to have to call out to (inaudible) or that  
23 would allow them to provide that at a given cost.

24 MS. PATNAUDE: State your name and  
25 who you represent.

1 MR. BAIDWAM: My name is Sanbeeb  
2 Baidwam.

3 MS. PATNAUDE: Spell your name.

4 MR. BAIDWAM: First name is Sanbeeb,  
5 spelled as S-a-n-b-e-e-b, and last name is  
6 Baidwam, spelled B-a-i-d-w-a-m.

7 I'm a principal in Continuum  
8 Associates.

9 My question is related to the PJM  
10 connection process. So, specifically to you,  
11 Aaron.

12 What we have seen in different ISOs  
13 and RPOs is that as a new generation technology  
14 comes, it has its form nuances, which ISOs try to  
15 accommodate in their interconnection process.

16 So, we saw in Texas and midwest ISO  
17 change its field management process when it became  
18 big, because wind has certain attributes, which  
19 the existing process at that time could not  
20 accommodate, and what we are noticing is a lot of  
21 offshore wind developers are, you know, the U.S.  
22 market is new to them, the ISOs and the RPOs in  
23 the U.S. are new to them, and they are still  
24 finding some not sharp companies, but maybe  
25 roadblocks as to how the ISO process works and may

1 not be completely aligned with how the offshore  
2 wind project is chosen and ultimately is in  
3 commission.

4 Does PJM anticipate any change to its  
5 interconnection process, a new management process  
6 in the near future? Are you folks thinking  
7 anything along those lines?

8 MR. BERNER: Thank you.

9 Well, for those of you who are not  
10 aware, recently PJM actually entered into a  
11 discussion with our stakeholders in relation to  
12 just this very topic. We entertained some  
13 discussion for in excess of six, seven, eight  
14 months, I believe, over the course of time to try  
15 to see was there a need to alter our process as it  
16 currently exists.

17 We offered a lot of education to the  
18 stakeholders, and throughout those discussions  
19 there were thoughts and ideas around making  
20 changes. But we found at least at this point that  
21 in relation to the quantities of both megawatts  
22 and projects and the means by which they're being  
23 introduced, the current processes were  
24 accommodating, assuming that the individuals  
25 entering into the queue actually went about what

1 they were doing smartly, that they understood how  
2 to work through the queue process, and they were  
3 able to navigate what they needed to navigate.

4 MR. BAIDWAM: Was it specifically  
5 related to offshore wind?

6 MR. BERNER: Yes, it was.

7 MS. PATNAUDE: Any other questions  
8 from the audience?

9 MR. BRODBECK: My name is John  
10 Brodbeck, B-r-o-d-b-e-c-k. I work for EDP  
11 Renewables. That's echo, delta, poppa.

12 I guess my question comes down to  
13 this.

14 Well, first of all, Mike, I worked  
15 with the LBD buildings at one point, so I know  
16 exactly what you're talking about.

17 So, we've got this list of issues.  
18 Do we take a holistic view. We have  
19 infrastructure, which is an end of life, needs to  
20 be replaced. We have a stakeholder process where  
21 there's a large number of stakeholders who don't  
22 want to see any money spent on transmission,  
23 because they deem it wasted money, and yet we have  
24 public policy that PJM was going to require five  
25 to 10,000 megawatts of renewables to be built



1 every year for the next 30 years to get us to  
2 something like a 70 to 100 percent renewable  
3 environment.

4 And my question is, how do we get  
5 there?

6 What has to break?

7 Can there be a comprehensive rebuild  
8 of the system and a holistic look at the system  
9 while we get that much new generation being put in  
10 the ground?

11 We have to go back to the 1960s,  
12 where we were building nukes in the mine mouth  
13 coals in the same sort of environment. I'm pretty  
14 old, but I don't remember that.

15 So I just wanted to sort of leave  
16 that with a really open question as to how do we  
17 get there from here.

18 MR. KORMOS: You can respond.

19 MR. BERNER: Thanks, Mike.

20 I think you brought up some good  
21 points. As Mike indicated earlier and what you're  
22 talking about now, there are many different  
23 drivers for transmission. We have to take them  
24 all into consideration. We can't look at them in  
25 isolation.

1           I think that during the PJM process  
2 we are able to look at many different factors as  
3 you move through those different drivers, and at  
4 times we look at making changes to require  
5 upgrades to the system before they're built,  
6 because we recognize those multiple drivers that  
7 are coming along. I think the system will allow  
8 that to occur.

9           The issue here is thinking about what  
10 is not there right now, that offshore wind, that  
11 injection, is a capability or a need that, while  
12 we see that it might be coming, we need to  
13 understand how do we want to build it out and how  
14 will it be built, and then we can incorporate that  
15 into the process.

16           Mike.

17           MR. KORMOS: I'll answer that  
18 question, John.

19           I think one of the things is, you  
20 know, as an industry are we ready to get away from  
21 sort of a but-for pricing, which we live under,  
22 the generator interconnection, which is but-for  
23 the generator interconnecting, one is the  
24 transmission and the generator, things like that,  
25 to sort of build it and they'll come approach,

1 where you sort of build the generation ahead of it  
2 and wait for generation to be there. There are  
3 different risks, and they are shifting the risk,  
4 and where is that risk.

5           And I think you're right. It's a  
6 good question to be asking, do we need to shift  
7 that risk aspect.

8           I think we have not seen it out of  
9 the Midwest, and I think there's a lot of  
10 legitimate complaints about wind developers out of  
11 the Midwest. It has not happened, and it's been  
12 very insufficiently dealt with out there.

13           But part of the problem there is  
14 you're just dealing with too many states, too many  
15 stakeholders to get any kind of agreement as to  
16 what transmission should be built and who should  
17 pay for it. The West would love to deal with it,  
18 the Midwest would love to deal with it, and they'd  
19 like the East to pay for it.

20           I think that's the benefit of where  
21 New Jersey is right now. We have a much smaller  
22 microcosm to work with, and I think again I would  
23 like to take the opportunity, because I think if  
24 we could demonstrate its success here, I think you  
25 can then leverage that off into other areas where

1 again you may see these kinds of renewable energy  
2 generation.

3           Again, we're all still for  
4 competition, but we actually have to increase  
5 competition by building out that transmission by  
6 sort of...

7           Again, I was very surprised by  
8 somebody who said, you know, build the  
9 transmission back from closer to the shore, but  
10 you didn't want us to actually get past the shore,  
11 because, to me, I would actually have us get past  
12 the shore out into the water, because I think you  
13 then have pure competition from the generator  
14 development.

15           Getting that last five miles is going  
16 to be brutal. There's no doubt. I don't want to  
17 do it more than once or twice. Why anybody would  
18 want to do it anytime you put a wind farm in is  
19 sort of beyond me.

20           So I think again by doing and putting  
21 a platform out offshore and just have people--you  
22 would actually increase competition. You can take  
23 sort of the transmission piece out of the  
24 equation. But I do think there are risks going  
25 forward.

1           MR. MOTT: John, thanks for the  
2 question. And from a generation guy, who has now  
3 moved to the transmission side, I think the  
4 biggest perspective of when we look at the rush on  
5 solar, California, the East, Italy, the U.K. are  
6 struggling under this massive endeavor, and New  
7 Jersey on these things, I think it's really the  
8 best opportunity is that this workshop is  
9 transmission, and it's really trying to bring the  
10 transmission to integrate into this market and how  
11 it's discussed as flexibly and openly  
12 entrepreneurial as generation has been so that we  
13 do make these better decisions and we're really  
14 informed on costs and where we're going.

15           MR. BRODBECK: I just hope that it's  
16 built soon enough so that we can actually  
17 interconnect our generation.

18           MS. PATNAUDE: We're going to take a  
19 10-minute break now, and the panel of three people  
20 can identify themselves when they come back.

21           (A short recess was taken.)

22           MS. PATNAUDE: This panel is on Cost  
23 Responsibility and Business Model Considerations,  
24 and we're going to start with Michael Borgatti,  
25 from Gabel Associates.

1           MR. BORGATTI: All right. So, thanks  
2 very much. My name is Mike Borgatti. I'm the  
3 vice president of (inaudible) services and  
4 regulatory affairs for Gabel Associates. We're  
5 and energy and public utility consultancy that's  
6 been around since 1993, and I'm very active on the  
7 behalf of our wholesale clients, both in the  
8 generation and transmission and surveying energy  
9 spaces and PJM and the other ISOs throughout the  
10 country.

11           So what I thought I might try to do  
12 with our portion, or my portion, I guess, of the  
13 panel here would be to think about ways that we  
14 could maybe dissect all of the information that we  
15 talked about today.

16           And I don't know if anybody else  
17 feels like this, but the amount of just technical,  
18 intense, deep sort of wading information that  
19 we've been wading through for the last, I don't  
20 know, five or six hours feels intimidating. It  
21 feels sort of challenging, it feels daunting, and,  
22 frankly, for me, anyway, when I see these type of  
23 complex problems, the biggest challenge becomes  
24 not getting stranded by sort of paralysis by  
25 analysis, where you're digging into the weeds of

1 all of these different pieces and how do you get  
2 to a spot where you can actually sort of make  
3 meaningful progress towards sort of a thoughtful  
4 and constructive decision on what the right map  
5 for it is here.

6 I think actually using sort of the  
7 business model considerations as a vehicle to sort  
8 of triage these complications makes a lot of sense  
9 to me. I think the way we can attack this problem  
10 is to take the idea of cost allocation and then  
11 the idea of these different business  
12 considerations and break them down into their  
13 decisional parts, and then I think you'll find  
14 there's actually only a couple of threshold  
15 decisions that you need to make to sort of get the  
16 ball rolling in the direction that you want to and  
17 be able to start progressing towards what you  
18 think the solution might be.

19 So let's try that. So, business  
20 models. Right?

21 So here's the good news. As far as I  
22 see things, there are really only three  
23 transmission business models that are of note here  
24 in this conversation, only three of them, and we  
25 can deal with all of them, because actually in New

1 Jersey you guys have all three of these business  
2 models existing today and you know about them  
3 already. So, that's the good news.

4 The first one we've talked about a  
5 lot is the traditional vanilla regulated  
6 rate-making type of process where the state would  
7 decide that there was a transmission solution that  
8 satisfied their public policy objective. They  
9 would go ahead and work with PJM to have that put  
10 into the RTEP process, and it would look like any  
11 other transmission project that was out there, but  
12 the only difference being instead of a reliability  
13 fix or a market-efficiency fix, it would be a  
14 policy-based driver, pristine. You guys have seen  
15 those before. And that's one of the three  
16 business models.

17 The next two are kind of variations  
18 on each other, and they're the merchant model.  
19 The good new is you know both of these two.

20 The one merchant model out there is  
21 to run a solicitation where there would be an  
22 anchor tenant that would sign up to basically have  
23 control over the rights or the capacity along that  
24 transmission line for an extended period of time,  
25 something like 20 years, for example, and you



1 would go out and you would say, Transmission  
2 developers, go ahead and make me a transmission  
3 solution, I want it to be X megawatts large, bring  
4 me a bid, may the best company out there win, and  
5 then ultimately we're going to allocate those  
6 rights to wind farms in the future and come up  
7 with a mechanism to compensate them over a  
8 long-term period for those rights.

9           We see that, for example, the Neptune  
10 line here that runs from New Jersey into New  
11 York. It's also the case of the vast majority of  
12 the HVDC project that runs from sort of northern  
13 New Jersey in the (inaudible) territory which runs  
14 right into 49th Street in Manhattan. It's a  
15 pretty easy business model. I think we can figure  
16 that one out.

17           And the third is just the pure  
18 merchant transmission lines. So you can go out  
19 there today and you can plug a transmission line  
20 anywhere into PJM, provided you're willing to pay  
21 the costs.

22           You can then go to FERC and say, I  
23 would like to have the ability to go and  
24 essentially hold an open season and to take  
25 bidders on the capacity for my line, and the

1 revenues that that line would earn would be based  
2 upon the deal that they could get out in the  
3 market for those products.

4 We see that, too, in the Linden  
5 (inaudible) facility that runs between New York  
6 and New Jersey, which is effectively purely a  
7 merchant play, and every now and again they go out  
8 there and they put those rights up for bid and  
9 folks go out there and they run a solicitation and  
10 select a winner, and then they arbitrate power  
11 between those two markets.

12 So, that's it. If we're thinking  
13 about the three different opportunities that are  
14 out there, we've got RTEP merchant, you've got  
15 contract merchant, and you've got merchant  
16 (inaudible). That's it. We're done. That's the  
17 three business models. That's all there are.  
18 Thanks.

19 The other one is do nothing. That's  
20 the status quo of the day. Just let the ones  
21 (inaudible) themselves over there. We've taken  
22 that whole second sentence off the table here, and  
23 we're still down to those three parts.

24 Your cost allocation part is easier,  
25 because there's only two decisions, or essentially

1 one decision with two outcomes, that you can  
2 make. Do you want to tackle the interregional  
3 cost allocation fair or not.

4 Mike Kormos is a really smart guy,  
5 and I think he gave you some wise counsel that  
6 those interregional issues are very challenging.  
7 And, by the way, when I say interregional, I mean  
8 both interregional as in perhaps between ISOs,  
9 think about New York and New Jersey, as an  
10 example, or, appropriately enough, states that  
11 have similar interests, like maybe Maryland or  
12 Delaware.

13 Frankly, I actually don't think that  
14 it's easier to do one or the other. I think  
15 they're both equally as complicated, because at  
16 the end of the day, you're going to have to get  
17 more than one entity to sign up and say, I'm going  
18 to write a check for a policy that maybe New  
19 Jersey gets the benefit from some of my money, and  
20 vice versa. And those are difficult questions.

21 But I think as a threshold item, you  
22 make the decision of do we want to tackle that  
23 there or not or do we want to try to, yes or no,  
24 and you tackle that, because there's really only  
25 two options here. There's interregional or

1 leaving those costs within the state. So, for me,  
2 when I think about taking this apart, it's really  
3 those three core ideas.

4 Now, when you guys are thinking about  
5 what are the outcomes here, ultimately the  
6 transmission is a solicitation solution. It's a  
7 means to get to the end, which is sort achieving  
8 the offshore winds goals that the state is looking  
9 to get to here and out into the future.

10 Whichever one of these pathways we  
11 take to get to that solution, one key point that I  
12 want to leave with you is the value of certainty.

13 When you go out to bid for the next  
14 wind project or your next solicitations out there,  
15 if you run a solicitation for transmission  
16 infrastructure, or something to that effect,  
17 providing the highest degree of certainty out  
18 there is the absolute best way for you guys to  
19 maximize the value of the proposition of the state  
20 by lowering your costs.

21 The more uncertainty that you inject  
22 into the process, the higher likelihood you have  
23 of getting into the field that has a risk premium  
24 associated with it.

25 And so let's just say you decide the

1 contract merchant is the way to go on the  
2 transmission solution, the state likes that,  
3 that's the one that it thinks is going to have the  
4 biggest bang for the buck, when you go out and do  
5 the solicitation for wind farm, be very, very  
6 clear about the expectations that that's the  
7 transmission solution that you're going to use to  
8 plug these things into New Jersey.

9           If you say we might do that one or we  
10 might do the public policy transmission plan  
11 through PJM RTEP, you may potentially end up with  
12 that uncertainty, leading to higher outcomes.

13           So as long as we can create a path  
14 where we're giving people the most vast  
15 information ever, really for us it's about coming  
16 up with the interregional versus interstate cost  
17 allocation problem and which must be business  
18 models we want to use.

19           So thanks for the opportunity to talk  
20 about the pros and cons here by those of us here  
21 and for the rest of the panel. Appreciate it.

22           MS. PATNAUDE: Thank you.

23           Next up we have Jodi Moskowitz, from  
24 PSE&G.

25           MS. MOSKOWITZ: Good afternoon,

1 everyone.

2 I think one of the downsides of being  
3 on the last panel is I feel a lot has already been  
4 said, and I'll try not to be too repetitive, but I  
5 want to just make a few points to kind of explain  
6 PSE&G's perspective on the issue of cost  
7 responsibility and cost allocation and business  
8 models that could be used to develop transmission  
9 for offshore wind.

10 The first point I want to make is  
11 that PSE&G definitely understands the complexities  
12 associated with cost allocation. We have been  
13 actively engaged in all of the myriad cost  
14 allocation proceedings at FERC over the last  
15 several years trying to protect the interest of  
16 our customers, trying to work with the State of  
17 New Jersey in aligning our objectives in support  
18 of our customers. So we understand that these  
19 issues are not easy, and we also understand the  
20 importance of tackling them at the same time to  
21 try to make sure that the state is able to satisfy  
22 its ambitious offshore wind agenda.

23 We do believe and there's obviously  
24 been a lot of discussion today about the state  
25 agreement approach, but the fact is that there is

1 clear language in the PJM operating agreement that  
2 permits a state or states to agree to find a  
3 public policy project.

4 All that has to happen is there has  
5 to be a cost allocation methodology developed that  
6 has to be filed at FERC. FERC has articulated the  
7 guidance principles for cost allocation as sort of  
8 a general overarching principle is the beneficiary  
9 paid, which FERC has said the Order No. 1,000 is  
10 the cost into the, quote/unquote, roughly  
11 commensurate with the benefits and a way to go.

12 And, of course, that all sounds a lot  
13 easier than it is. But I do want to emphasize  
14 that we believe that there is flexibility and the  
15 ability for the state to act within the existing  
16 operating language in terms of the state agreement  
17 approach to address cost responsibility for  
18 offshore wind transmission.

19 I would also note that the language  
20 provides the state with the flexibility to  
21 designate which entity or entities should build on  
22 and operate those facilities. That language is in  
23 there. So, again, that language would, in our  
24 opinion, give the state some degree of control  
25 over both who gets to build these facilities and

1 then how the costs are allocated.

2           There has been some discussion about  
3 interregional projects. We agree with Mike and  
4 with others who have said, obviously, this is very  
5 challenging, and we've seen that play out at FERC,  
6 and we have these ongoing themes issues.

7           But there is a mechanism that exists  
8 right now to both plan and cost allocate an  
9 interregional project in New York, for example,  
10 there's a joint operating agreement that was  
11 approved by FERC, and there are protocols that  
12 accompany that. And so there is a  
13 mechanism--again, it won't be easy, but there is a  
14 mechanism for the state to utilize.

15           In terms of business models, I think,  
16 you know, Mike is right on target in articulating  
17 that those are the three business models at play,  
18 and we see costs and risks associated with all of  
19 those models. In our mind, having a plan  
20 centralized build-out for phases 2 and 3 makes  
21 sense, and they ultimately mitigate risk to  
22 customers. We see that the best way to right size  
23 the amount of transmission that's built to make  
24 sure that there are corollary benefits to  
25 customers that you get from centrally planning,



1 economic benefits, resilience benefits, replacing  
2 infrastructure, aged infrastructure. You can do  
3 all of that by having a plan that will narrow down  
4 offshore work with the onshore upgrades that are  
5 necessary. We feel that's the best way to kind of  
6 effectuate that.

7 And, finally, I'll just end by saying  
8 that we do think that there is the need for the  
9 BPU to make a decision, and to make a decision  
10 fairly quickly, about how it wishes to proceed.

11 Even though there are existing cost  
12 allocation mechanisms and tariff provisions in  
13 place to enable the state to move forward, all of  
14 this takes time. We're talking about a FERC  
15 filing, submitting that, getting it accepted,  
16 getting the rules in place, that takes time.

17 And so we would urge the state to  
18 kind of proactively think about that and work with  
19 PSE&G and other transmission owners, who are  
20 certainly aligned with the state, and we would  
21 offer any support and help that we can, and I  
22 would encourage you also to work with PJM as you  
23 continue to think about these issues.

24 And then I'm happy to take  
25 questions.

1 Thank you.

2 MS. PATNAUDE: And last, but not  
3 least, we have Sharon Segner, from LS Power.

4 MS. SEGNER: Hi. My name is Sharon  
5 Segner, I'm vice president of LS Power, and we  
6 appreciate the opportunity to provide some  
7 comments this afternoon on this very important and  
8 cutting-edge topic that we're discussing today.

9 And really this panel is about  
10 transmission and what is the model, and what is  
11 the model moving ahead, and then how do you get to  
12 an answer on what that model is.

13 And we look at it from the standpoint  
14 of how to get the answer of what the model is  
15 should say how do we manage the cost. And we  
16 think that should be the fundamental question  
17 that's first asked in terms of we say what model  
18 do you pursue, and we would say how do we manage  
19 the cost. The state has set very aggressive  
20 public policy goals and very laudable public  
21 policy goals that are important to be met. The  
22 policy has been established. So now the question  
23 is how do we get there.

24 And the reality of the situation is  
25 that transmission costs are a material, if not

1 very material, piece of the equation here in terms  
2 of managing the cost of this public policy  
3 pursuit, and that from a cost standpoint and  
4 managing the cost we believe should be goal number  
5 one now that the policy has been set.

6           Transmission, as you know, is the  
7 fastest growing portion of a utility customer's  
8 bill. At PJM, in particular, transmission costs  
9 are a very hot issue right now and the growing  
10 issues associated with transmission costs. That's  
11 no different than the issues of offshore wind.

12           We also have seen and know that the  
13 further out the offshore wind projects are, the  
14 longer the transmission is, and that that also  
15 translates into the issue of the greater the  
16 cost. And there's a direct correlation between  
17 the cost and the link to that offshore  
18 transmission line.

19           Managing the cost in this case should  
20 be business number one. And because of that, we  
21 say the also means that business number one in  
22 this needs to be an appreciation for the value of  
23 competition.

24           We know from the offshore  
25 transmission experience in the UK, where the

1 offshore transmission has been competitive,  
2 because they have competitive offshore  
3 transmission, they saw significant values from the  
4 results of the competitive process.

5           The Brattel report recently published  
6 an assessment of the competitive processes here in  
7 the United States, but they also looked at the  
8 international market, and their report showed that  
9 because of the competitive process for the  
10 offshore transmission in the U.K., they  
11 experienced 683 million pounds to one billion  
12 pounds in savings because of the offshore  
13 transmission process, reducing the average cost of  
14 that offshore transmission by 23 to 34 percent,  
15 according to the Brattel study.

16           So when we talk about the issue, as  
17 we're talking here, is transmission competition  
18 must, in our view, be an integral part of the  
19 equation.

20           In addition, if in the world of PJM  
21 doing the regional planning, that also means that  
22 the world of FERC Order 1,000 is alive and well.  
23 In that world of FERC Order 1,000 being alive and  
24 well for regional planning, it also means that  
25 when two or more utilities, even within the State

1 of New Jersey, but if two or more utilities are  
2 paying for that regional planning, then the  
3 competitive processes under FERC Order 1,000 also  
4 needs to be invoked as well. And we don't see any  
5 separation between the world of regional planning  
6 and competition for transmission, especially when  
7 you're talking about the dollar amounts that are  
8 potentially involved in this exercise.

9 We also believe that there is value  
10 in PJM doing regional planning. There is value in  
11 a holistic perspective of looking at the overall  
12 need. And that can be not only for the onshore  
13 portion but also for the offshore portion. And as  
14 a company, we stand strongly behind the value that  
15 we see in the PJM regional planning process.

16 At the end of the day, the costs, as  
17 I have mentioned, have to be allocated, and if  
18 they're going to be allocated to two or more  
19 utilities and their customers, then competition  
20 needs to be part of the equation.

21 We have a situation in PJM where  
22 there's a state agreement approach under FERC  
23 Order 1,000. Well, the reality is that public  
24 policy planning process hasn't been used to date.  
25 And so as this process kicks off in New Jersey, it

1 is a case of first impression in terms of  
2 implementing what that state public policy process  
3 looks like, and my company stands prepared to  
4 help, to roll up our sleeves to make this work and  
5 to be constructive in the process, knowing that  
6 competition and the value of innovation needs to  
7 be critical in that, because at the end of the  
8 day, this is a very expensive undertaking when  
9 we're talking about offshore transmission.

10 It's very easy from a public policy  
11 standpoint to get lost in the issue of who holds  
12 the leases and the offshore leases, and that  
13 certainly is an important part of the cost and the  
14 discussion. But transmission costs in this must  
15 be managed. The value of competition that we've  
16 seen under Order 1,000 proceedings to date,  
17 according to the Brattel report, has been up to 30  
18 percent cost savings as a result of competitive  
19 processes. When you're talking about offshore  
20 transmission, the value of competition can't be  
21 left on the sidelines.

22 Thank you.

23 MS. PATNAUDE: Thank you.

24 Panelists.

25 MR. SILVERMAN: So, Mike, I really

1 loved your summary of issues, and I think we're  
2 going to take you and Mike Kormos in a room and  
3 not let you out until you finalize the problem.

4 Sharon, I'm very curious. Which of  
5 those two merchant models do you see LS in?

6 Is it a we're looking to build  
7 something that someone else has already designed  
8 and then recover it, that's sort of a transmission  
9 owner, and, obviously, there's potential cost  
10 savings there, or is it really LS is willing to  
11 put capital up for this building with the offshore  
12 system and then recovering it on a sort of  
13 merchant transmission owner basis?

14 MS. SEGNER: So, from LS Power's  
15 standpoint, we're willing to compete under either  
16 model. I think from a public policy standpoint,  
17 what you should be pursuing is basically saying,  
18 Look, a material part of the cost of the offshore  
19 endeavor is the transmission, and we need to put  
20 aggressive competition goals in there to manage  
21 the cost, and pick the model, however it is, that  
22 gets you the most aggressive cost savings  
23 possible.

24 This idea that if you control the  
25 leases, then all of a sudden you're managing the

1 transmission costs, I think that really needs to  
2 be questioned.

3 And the issue from a public policy  
4 standpoint, from a public policy standpoint we say  
5 put the models together to ensure that there is  
6 aggressive focus on cost.

7 We know what's going on with  
8 transmission cost in PJM. We know what's going on  
9 with supplemental projects in PJM and their  
10 skyrocketing transmission cost. And so we've got  
11 to manage the cost. And that should be goal  
12 number one from a New Jersey ratepayer  
13 standpoint.

14 MR. SILVERMAN: So, if I could put  
15 you on the spot.

16 What does the competitive  
17 solicitation from the state, assuming that we  
18 agree with all those points about competition  
19 minimizing ratepayer capital, what do you think  
20 the next step is?

21 Is it ask people to design a project  
22 that is, you know, sort of design and build, do we  
23 get various bids for that, or is it more the state  
24 should define exactly what we want built and then  
25 go out for competition on that?



1 MS. SEGNER: I think the first  
2 question you've got to ask is, who are we  
3 designing these projects for. Are we designing  
4 these projects exclusively for the benefit of New  
5 Jersey ratepayers, or if it's for ratepayers that  
6 are broader than New Jersey, then I think at that  
7 point the answer goes down another path.

8 The first question you've got to say  
9 is who are we designing these projects for, and if  
10 this is not for other states, then I think it's  
11 clearly a regional planning process. And if it's  
12 for the benefit of other states, you've got to  
13 answer the question for who is benefiting, and  
14 then how do we aggressively manage these  
15 transmission costs.

16 MR. SILVERMAN: So let's take it on a  
17 regional context for these folks, because  
18 everybody is pointing out the regional problems  
19 with doing a regional plan, and I tend to share  
20 those views.

21 So, if we were just doing it for the  
22 State of New Jersey, what do you think that  
23 would? What do you think the steps would be?

24 And I don't mean to put you on the  
25 spot. I'd be interested to hear from others as

1 well.

2 MS. SEGNER: I would say that if  
3 you're just doing it for the State of New Jersey,  
4 in some ways your options are somewhat simpler  
5 from the standpoint because you're looking at it  
6 on a single-state basis, and at that point you've  
7 got the freedom to say, Look at the CREZ model in  
8 Texas. And part of the reason I think that CREZ  
9 was successful is because it was a single-state  
10 construct, and it was the power of the state  
11 legislature as well as the power of the state  
12 commission in Texas saying, Look, we want this to  
13 be the public policy of the State of Texas and  
14 we're going to bid out wind in West Texas and bid  
15 out transmission associated with it, and I would  
16 say it's probably more like a CREZ type process.

17 Jodi might be able to add to it.

18 MS. MOSKOWITZ: There's kind of a lot  
19 to tackle here, I think.

20 One thing that I'd kind of like to  
21 say up front is that, you know, as we said before,  
22 the state agreement kind of public policy approach  
23 is kind of one slate, it hasn't been tested, it  
24 clearly exists in the tariff, and there's a lot of  
25 flexibility and optionality that the state can

1 utilize in going down that road.

2           We are not opposed to competition.  
3 That is one route that the state could take. The  
4 state also has the ability, as I said before,  
5 under the language of that operating agreement  
6 provision to designate who it wants to have build  
7 a project, and there could be reasons why it would  
8 make sense to not put the transmission out to  
9 competitive solicitation. I don't know that that  
10 needs to be decided right here and now, but the  
11 state can make that decision.

12           I think we've had a lot of discussion  
13 today about some of the real challenges from a  
14 constructability perspective, a permitting  
15 perspective, a utilization of rights-of-way  
16 prospective associated with building this type of  
17 transmission.

18           There's significant risks here in  
19 building it. We all know that even for a typical  
20 traditional project, it can sometimes be extremely  
21 difficult to get transmission sited.

22           I mean, I could envision a scenario  
23 here where there's a possibility that whoever  
24 builds the requisite transmission facilities would  
25 need to exercise condemnation authority. And as

1 we know, only the public utilities in New Jersey  
2 currently have condemnation authority. I think  
3 there's a fairly recent BPU order in the last year  
4 or so which made it pretty clear that a  
5 third-party developer did not and could not  
6 exercise condemnation because it did not serve  
7 retail customers in the state.

8           So that's something that really needs  
9 to be factored in as the state moves forward.  
10 Again, there is flexibility as to how it would  
11 proceed under a rate-based transmission model, and  
12 there are arguments that can be made in terms of  
13 competition, no competition. But we can't ignore  
14 some of the practical realities involved and some  
15 of the risks involved in actually getting this  
16 transmission built.

17           And I will say that there have been  
18 very few transmission competitive solicitations in  
19 PJM. I think you know from our company's  
20 perspective that the jury is still out on that.

21           And so as the state thinks about  
22 moving forward with this type of complex  
23 transmission build, those are all things that the  
24 state should factor in.

25           MR. BORGATTI: So, it's a great

1 question, Abe. And way to go. I'm really glad to  
2 see you using the decision-making framework that  
3 we laid out. That's perfect. So we've already  
4 crossed one issue off the list if we're talking  
5 only in state. So we've addressed half the  
6 problem. Nice work.

7                   So now we have the next decision on  
8 the decision tree for you, which really is a  
9 merchant interconnection line. Whether it's  
10 contracted or not doesn't matter, merchant or RTEP  
11 conventional solution.

12                   And you would need to make that  
13 decision. Right? Because if it's going to go the  
14 merchant route, the merchant route, the folks that  
15 want to develop that project will submit an  
16 interconnection request to PJM and they're going  
17 to go out and call some vendors and do all the  
18 things that they do, and you would have them bid  
19 to build that kind of a project.

20                   If you go the other route, the  
21 vanilla RTEP solution, I would think you would  
22 need to work with PJM and with the utilities to  
23 identify what components of your infrastructure  
24 are ripe to be upgraded here to give you the type  
25 of benefits you're looking for. And then once

1 you've gone through that process to identify those  
2 pieces of infrastructure, you've got to go through  
3 that same process. Here's the stuff that needs to  
4 get fixed, here's what we think needs to get done,  
5 it gets done in this time frame, give us the best  
6 possible outcome, and you would make a decision  
7 based on the performance of the bid.

8           So for me I think if you make that  
9 merchant versus kind of conventional decision,  
10 that leads you ultimately to the process that you  
11 want to put together to go about doing a  
12 competitive solicitation.

13           MR. FERRIS: So, I guess this is  
14 directed to Jodi, but I think everyone will have  
15 an opinion.

16           So, to pursue the public policy  
17 option, what does that look like, what are the  
18 next steps, what needs to happen, and what's the  
19 schedule?

20           MS. MOSKOWITZ: Schedule is a good  
21 question. And as I said, I think it's important  
22 that the state kind of begins the process as soon  
23 as possible.

24           I think that discussion should be had  
25 with PJM as soon as possible regarding what a

1 public policy project could look like, and the  
2 transmission owners can certainly play a role as  
3 well in helping to identify optimal points of  
4 interconnection. But I think that that dialogue  
5 needs to happen as soon as possible in terms of  
6 trying to figure out what that process is going to  
7 look like.

8 MS. HOLLAND: Are you going to  
9 answer?

10 MR. BORGATTI: No. Go right ahead.

11 MS. HOLLAND: No, no. You had all  
12 the answers earlier.

13 MR. BORGATTI: The answer will lead  
14 to another question. So--

15 MS. HOLLAND: Go, go, go.

16 MR. BORGATTI: Fair enough.

17 So, the answer is you could use the  
18 state agreement approach to build a public policy  
19 line right now.

20 Now, you don't know which line you  
21 want to build and which projects are the right  
22 ones. So I think that Jodi's counsel that you  
23 need to go and do the due diligence of what needs  
24 to be fixed is the necessary next step. But from  
25 that point, as long as the state makes the

1 decision that's the way they want to go, you tell  
2 PJM we want to do that, and they'll put that in  
3 the next open RTEP, and then effectively, other  
4 than the limitations on performing that analysis,  
5 they'll go ahead and do it as soon as possible.  
6 And that could happen tomorrow.

7 MS. HOLLAND: That actually does  
8 weave in with what I was going to say, which was--

9 MR. BORGATTI: Everything is fine.

10 MS. HOLLAND: Yes, that's the thing.

11 So, I actually kind of thought that  
12 it was a little bit of what Abe was asking  
13 earlier, which was, you know, the question of how  
14 do we ask the question. Are we identifying a  
15 specific line, when we want this one, so everyone  
16 is competitively bidding on it, or are we opening  
17 up the process like a competitive window for an  
18 actual potential solution as to how New Jersey  
19 would I guess achieve its aggressive offer for  
20 wind goals, like transmission solutions for that.

21 So, would that be a process or not?

22 So, feel free.

23 MS. SEGNER: Our view is actually the  
24 state agreement approach. PJM is still doing that  
25 regional planning and making what goes into the



1 plan, per se, is the public policy needs that the  
2 state come forward with and they say, Hey, these  
3 are the public policy needs, I'm willing to pay  
4 for it, and then at that point it goes into the  
5 regional planning process and we believe it also  
6 goes into the competitive process as well.

7 I don't think it's consistent to  
8 think with Order 1,000 we can think, Oh, we can  
9 just sort of do a statement agreement approach and  
10 then regionally cost allocated and there's not a  
11 competitive process. I think that's going to have  
12 some real legal challenges pursuing that path.

13 The better path for the consumers and  
14 the ratepayers is essentially by identifying these  
15 are the needs, this is what the needs are, express  
16 the willingness to pay for the solutions, and then  
17 the needs themselves go into the RTEP window and  
18 PJM to include the solutions and does the planning  
19 for the projects, per se.

20 But the state's role is saying  
21 there's a need, and the state's role is also  
22 saying, I'm paying for it, or a portion of it.  
23 But the planning we think could appropriately be  
24 handled through a competitive process and through  
25 PJM to administrate that.

1                   MR. SILVERMAN: Let me ask this  
2 really fundamental question, which is, why do we  
3 have to be involved in this at all? Is there  
4 anything stopping the Orstedes (ph), the Anbarics  
5 and the LS Powers from coming together and doing  
6 this on their own with absolutely no involvement  
7 from the state, other than sort of as a cheering  
8 squad?

9                   Are there rules that stand in the way  
10 of that today?

11                  MR. BORGATTI: So, to be honest with  
12 you, there are ways that that could most certainly  
13 happen.

14                  The state agreement approach to do a  
15 vanilla transmission upgrade is limited solely to  
16 you guys. You absolutely have to expressly  
17 authorize PJM to go down that path and plan it.

18                  So, if you were to take an entirely  
19 hands-off approach, it would take that option off  
20 the table for you. But it is at least feasible  
21 that you could use either of the other merchant  
22 models to achieve that result. I'm not saying it  
23 would necessarily pencil out a business case, but  
24 it is, I'll say, feasible.

25                  MS. MOSKOWITZ: Again, I would agree

1 with that. I think, obviously, the state  
2 agreement approach requires state involvement  
3 because it requires state agreement in terms of  
4 allocation of the costs and authentication of the  
5 need that would drive the project.

6           There are other models which would  
7 involve we're talking about either merchant  
8 transmission or generator lead, that would not  
9 need involvement with the state, you don't need  
10 involvement with the state. But that then gets  
11 into some of the risks we've been talking about  
12 today in terms of interconnection queue process,  
13 the fact that there is no separate queue for  
14 offshore wind, so a project gets put in there and  
15 then it's behind other projects in the queue.

16           You know, one thing I think we can  
17 all agree on is I think this is just sort of an  
18 end result of the but-for cost allocation  
19 methodology, the interconnecting queue process is  
20 slow. It's a serial process. You have studying,  
21 you have restudying to try the make sure that you  
22 precisely determine the exact, you know, amount of  
23 upgrades that are required. And so it may not  
24 really work with the timing of the state. It's  
25 also more of a piecemeal approach to planning, and

1 it may not get you the most long-term cost  
2 effective result for customers.

3 MS. SEGNER: We would say that if the  
4 State of New Jersey chooses not to get involved,  
5 then you're de facto saying merchant models will  
6 be pursued in terms of from that vantage point.

7 If you say as a matter of public  
8 stakeholder policy we would like to see regional  
9 cost allocation for these projects, then at that  
10 point you need to pursue the state agreement  
11 approach, because that's how regional cost  
12 allocation can be allowed.

13 I mean, basically you think about,  
14 you know, FERC Order 1,000 at its core is about  
15 allowing regional cost allocation and allowing the  
16 regional planning process to occur.

17 And so if you want the opportunity  
18 for there to be regional cost allocation, then you  
19 essentially need to pursue the state agreement  
20 approach, or maybe there needs to be a better  
21 approach coming out at PJM in terms of to approve  
22 the state agreement approach to facilitate this.

23 But it's basically your involvement  
24 in getting involved with PJM and say, Hey, we want  
25 to pursue regional cost allocation versus a

1 merchant model, which is a much more risky and a  
2 different business model.

3 MR. BORGATTI: Maybe just to circle  
4 back to Cynthia's original question.

5 So, when I was at BPU, that was sort  
6 of during the first iteration of the offshore wind  
7 exploration here in New Jersey, and we actually  
8 asked PJM to model for us explicit transmission  
9 solutions that were potentially being proposed at  
10 that time, and then just to generally help us with  
11 that.

12 The RTEP plan that PJM puts together,  
13 they plan for their actual system needs. But it  
14 also includes what I'm going to sort of call  
15 alternative features, and here in New Jersey there  
16 were what would need to happen from a transmission  
17 planning perspective to meet all of the RPSs in  
18 the states.

19 Illinois, for example, is a state  
20 that requested scenarios where a number of the  
21 nuclear units closed and what do the transmission  
22 upgrades need to look like in order to make sure  
23 that the system was stable there.

24 So one way for you guys to initiate  
25 this would be certainly to talk to them privately

1 about situations you're looking at. But to have  
2 that as an existing vehicle today in that RTEP to  
3 think through some of this planning processes,  
4 that's a public document where everybody would get  
5 an opportunity to see what sort of that type of  
6 cost benefit analysis looks like and what the  
7 universe of options might look like as well.

8 MS. PATNAUDE: Do we have questions  
9 from the audience?

10 Come on up.

11 MR. SCHMITT: Mark Schmitt, with  
12 Ecology Environments.

13 THE REPORTER: Spell your name.

14 MR. SCHMITT: Mark, M-a-r-k, Schmitt,  
15 S-c-h-m-i-t-t.

16 I'm from New York, and I'm a little  
17 familiar with the process that's happening under  
18 the public policy transmission.

19 You mentioned Illinois. How come  
20 we're not really asking what they're doing over  
21 there, as an example?

22 They seem to be under the process  
23 there. They're definitely under this process  
24 where they're looking for their needs, and they've  
25 been doing that for quite some time, maybe over a

1 year by now. So I'm not too sure if that's a  
2 thought to look to see what they're doing and  
3 determine where there's risks or there's benefits,  
4 or whatever, so, you know, just to have an  
5 opportunity to talk to a neighboring state.

6 MS. MOSKOWITZ: Just to kind of note  
7 that, you know, while I think there hasn't  
8 probably been enough progress in the area of  
9 interregional planning, cost allocation, you know,  
10 there are vehicles to look at that. In other  
11 words, there's the IPSAC between PJM New York and  
12 the IS in England, and we all know that New York  
13 has very aggressive offshore wind goals, and  
14 England is focusing on this, and there are other  
15 states, and PJM, obviously, that have aggressive  
16 goals as well.

17 And so while there are some real  
18 challenges associated with that, I think it sort  
19 of behooves New Jersey to think about this in kind  
20 of a broader context. And that would be a reason  
21 I think to work with PJM as the regional planning  
22 authority and have those discussions and have  
23 various scenarios modeled, and that would enable  
24 you to kind of take things to the next step.

25 MS. SEGNER: And just in terms of

1 follow-up to your comment about New York and  
2 looking at some of the lessons learned from New  
3 York, I mean, the New York commission actually  
4 made a very interesting ruling several years ago,  
5 and one of the things they ruled is they said,  
6 Look, the ratepayers of New York have paid for the  
7 property and the easements and the transmission in  
8 New York, personal and real property, and it's  
9 actually the ratepayers that have paid for these  
10 assets over time, and so, therefore, because the  
11 ratepayers actually paid for this, then when it  
12 comes to competition and transmission, that both  
13 the new entrants and the incumbents have access to  
14 that personal and real property in New York. And  
15 there's some very good lessons learned that New  
16 Jersey can look to that New York commission as you  
17 look at these type of issues in that regard.

18           And the other thing is I think that  
19 New York also has looked at the issue of regional  
20 cost allocation. And what's also clear from a New  
21 York perspective, as well as anywhere in the  
22 country, is that when you're talking about two or  
23 more utilities, even if they're in the same state,  
24 that are benefiting from a transmission line,  
25 that's when the Order 1,000 and the regional



1 planning process kicks in.

2           It's not just if the project, you  
3 know, only benefits one state, then we don't have  
4 to, you know, be a part of a regional planning  
5 process. The reality is you can look at New York  
6 or any other region in the country that when two  
7 or more utilities are benefiting from that  
8 regional planning process, that's really when the  
9 PJM and the competition processes kick in.

10           MS. PATNAUDE: Thank you.

11           Do we have any other questions?

12           Oh, here we go.

13           MR. LEVITT: Good afternoon. Andrew  
14 Levitt, L-e-v-i-t-t, PJM.

15           So, great panel so far.

16           New Jersey is really unique in having  
17 existing HVDC underwater transmission facilities.  
18 It really only just occurred to me right now.  
19 They're both merchant facilities, as Michael  
20 pointed out.

21           So, is there--if I think about the  
22 discussion this morning about lots of radial lines  
23 versus an offshore collector system of some kind  
24 or lots of onshore infrastructure versus lots of  
25 offshore infrastructure or high voltage AC versus

1 high voltage DC facilities, is there any  
2 interaction between that technical solution and  
3 the business model that selected--is merchant  
4 better suited to offshore, for example, is  
5 merchant better suited to DC, for example?

6 MR. BORGATTI: I can hop in there.

7 So, from my perspective, I think from  
8 a technical side, as I understand it, and again,  
9 I'm not an engineer, that DC infrastructure is  
10 better for the underwater portion of the lines,  
11 for whatever reason. It's sort of a more stable  
12 infrastructure there.

13 From a market perspective, it's a  
14 controllable facility. So you get--effectively,  
15 it looks like a generator to PJM from a planning  
16 perspective, and so that gives it a certain access  
17 rate that AC facilities don't have.

18 However, I think the previous panel  
19 said something that's really important. The  
20 limitation isn't necessarily the offshore  
21 infrastructure. Offshore wind developers are very  
22 good at controlling that aspect of their plan that  
23 they've building all over the world for a while  
24 now and they can figure out those types of  
25 technical solutions.

1           It's all well and good until they  
2 connect into shore, and then they have all of the  
3 issues that are associated with that onshore  
4 infrastructure, which is very much an AC  
5 facility.

6           So I wouldn't think about it  
7 necessarily as sort of what's the best solution,  
8 DC or AC. I would think about it more as are you  
9 trying to tackle the offshore component of the  
10 grid or are you trying to tackle it as an onshore  
11 component of the grid. I think that should be the  
12 dividing line that you use to sort of initially  
13 begin the thought as to what to do.

14           MS. PATNAUDE: Any other questions?  
15 Any questions from staff?

16           MR. SILVERMAN: You know, I'll just  
17 say, I really thank everyone for being here  
18 today. It looks like, unless there's a hapless  
19 volunteer that walks up in the next 30 seconds,  
20 we'll probably be pretty much done. But I want to  
21 thank everyone for being here.

22           And, you know, I was talking to  
23 someone earlier about how we wish we could have  
24 another five-hour discussion on each one of these  
25 panel topics, and the answer is that we can.

1                   So I would very much urge all of you  
2 to treat this--maybe not five hours--but to treat  
3 this type of a conference as really the first in a  
4 series of conversations that I know at least some  
5 of staff, I don't know if it's Jalen or Cynthia, I  
6 don't want to put them on the spot, we would very  
7 much welcome having you comment and talk to us  
8 about sort of, you know, the next ten words and  
9 how do actually make this work.

10                   So, we're very excited to be talking  
11 about all these issues, and we really look forward  
12 to continuing with the dialogue.

13                   MS. PATNAUDE: I'd like to thank all  
14 of the panels and all of the folks in the  
15 audience. I know that many of you had a lot of  
16 trouble getting here with canceled flights and may  
17 have some issues getting home, but I hope everyone  
18 gets home safely, and thank you all so much.

19                   This stakeholder meeting is now  
20 concluded.

21                   (The hearing concluded at 3:30 p.m.)  
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C E R T I F I C A T E

I, EDWIN SILVER (Certificate No. XI00379),  
Certified Court Reporter and Notary Public of the  
State of New Jersey, do hereby certify the  
foregoing to be a true and accurate computer-aided  
stenographic transcript taken in the  
above-entitled matter at the time and place  
hereinbefore set forth.

*Edwin Silver*



EDWIN SILVER, CCR

Dated: December 9, 2019

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