In The Matter Of:

NEW JERSEY OFFSHORE WIND TRANSMISSION STAKEHOLDER MEETING

(AFTERNOON SESSION)

November 12, 2019

J.H. Buehrer & Associates

884 Breezy Oaks Drive

Toms River, NJ 08732

732-295-1975

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
884 BREEZY OAKS DRIVE
TOMS RIVER, NJ 08753
(732) 295-1975

BPU MEMBERS PRESENT:
CYNTHIA HOLLAND
JALEN FERRIS
ABRAHAM SILVERMAN

PANEL 3: TECHNICAL CONSIDERATIONS FOR OFFSHORE TRANSMISSION FACILITIES
PANELISTS:
LAWRENCE H. MOTT, ANBARIC
MIKE KORMOS, EXELON
STEVEN BURROWS, MOTT MacDONALD
EMMANUEL MARTIN-LAUZER, NEXANS HIGH VOLTAGE USA
AARON BERNER, PJM

PANEL 4: COST RESPONSIBILITY AND BUSINESS MODEL CONSIDERATIONS
PANELISTS:
MICHAEL BORGATTI, GABEL ASSOCIATES
JODI MOSKOWITZ, PSE&G
SHARON SEGNER, LS POWER

I N D E X

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

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

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

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

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

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

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

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

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

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

There may be additional technical conferences to further explore options, and written comments may be filed by November 28th, 2019. Stakeholders should be aware that, for the purposes of the Open Public Records Act, these comments may be considered public documents. Stakeholders may identify information that they wish to keep confidential by submitting them in accordance with the confidentiality procedures set forth in N.J.A.C. 14:1-12.3. The BPU thanks all stakeholders that have already taken part in this process for their participation and comments.

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

We will have a 15-minute break

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

Written comments are encouraged and should address the questions posed by Staff and reference the associated question by number. Written comments must be submitted to Aida Camacho-Welch, Secretary, New Jersey Board of Public Utilities, 44 South Clinton Avenue, 9th Floor, Post Office box 350, Trenton, New Jersey 08625.

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

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

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

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

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

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

MR. BURROWS: Right.

MS. PETNAUDE: Do you have a PowerPoint?

MR. BURROWS: Yes.

(Pause.)

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

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

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

within the process.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MS. PATNAUDE: Thank you very much.

And next we have Mr. Berner, from PJM.

MR. BERNER: Good afternoon,

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

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

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

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

way forward for thinking about long term.

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

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

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

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

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

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

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

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

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

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

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

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

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

Is there some benefit to having some offshore grid capability?

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

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

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

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

MS. PATNAUDE: Thank you.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The agreement was done at the time to basically interconnect the nuclear plants, Peach Bottom, Limerick, Salem, Hope Creek, and go up into northern PS with 500 kV, and at the time it was envisioned another nuclear plant being built at the Forked River substation by Jersey Central Power and Light, and so they envisioned actually coming up from New Freedom going all the way out to Smithburg with 500 kV that would have actually been wonderful to have in this day and age. Unfortunately, that nuclear plant was never built and that line was never built there. But just again, there have been on the books in the past

some projects that we would probably want to look at.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MS. PATNAUDE: Thank you.

Next up we have Lawrence Mott, from Anbaric.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

So, while I appreciate the lessons

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

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

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

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

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

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

I will stop there, and thank you.

MS. PATNAUDE: Thank you very much.

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

Voltage USA.

MR. MARTIN-LAUZER: Thank you.

My name is Emmanuel Martin-Lauzer. I'm director of business development of Nexans High Voltage USA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

can control everything.

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

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

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

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

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

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

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

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

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

So, I put a few bullet points, which

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

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

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

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

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

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

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

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

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

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

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

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

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

MS. PATNAUDE: Thank you.

If staff would like to come back to the table.

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

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

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

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

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

Now, I think that the trick then

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

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

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

MR. MOTT: Just a quick comment.

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

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

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

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

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

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

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

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

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

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

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

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

Valley Agreement process.

Can you elaborate on that a little bit?

I have to confess a lack of familiarity with it.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

depending on conditions.

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

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

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

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

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

MR. BAIDWAM: My name is Sanbeeb Baidwam.

MS. PATNAUDE: Spell your name.

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

I'm a principal in Continuum Associates.

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

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

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

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

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

MR. BERNER: Thank you.

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

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

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

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

MR. BERNER: Yes, it was.

MS. PATNAUDE: Any other questions from the audience?

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

I guess my question comes down to this.

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

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

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

And my question is, how do we get there?

What has to break?

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

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

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

MR. KORMOS: You can respond.

MR. BERNER: Thanks, Mike.

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

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

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

Mike.

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

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

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

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

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

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

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

again you may see these kinds of renewable energy generation.

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

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

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

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

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

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

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

(A short recess was taken.)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

And so let's just say you decide the

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

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

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

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

MS. PATNAUDE: Thank you.

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

MS. MOSKOWITZ: Good afternoon,

everyone.

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

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

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

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

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

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

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

then how the costs are allocated.

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

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

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

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

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

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

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

And then I'm happy to take questions.

Thank you.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Thank you.

MS. PATNAUDE: Thank you.

Panelists.

MR. SILVERMAN: So, Mike, I really

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

well.

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

Jodi might be able to add to it.

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

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

utilize in going down that road.

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

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

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

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

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

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

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

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

MR. BORGATTI: So, it's a great

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

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

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

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

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

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

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

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

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

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

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

MS. HOLLAND: Are you going to answer?

MR. BORGATTI: No. Go right ahead.

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

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

MS. HOLLAND: Go, go, go.

MR. BORGATTI: Fair enough.

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

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

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

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

MR. BORGATTI: Everything is fine.

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

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

So, would that be a process or not?

So, feel free.

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

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

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

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

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

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

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

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

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

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

MS. MOSKOWITZ: Again, I would agree

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Come on up.

MR. SCHMITT: Mark Schmitt, with Ecology Environments.

THE REPORTER: Spell your name.

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

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

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

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

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

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

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

MS. SEGNER: And just in terms of

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

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

planning process kicks in.

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

MS. PATNAUDE: Thank you.

Do we have any other questions?

Oh, here we go.

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

So, great panel so far.

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

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

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

MR. BORGATTI: I can hop in there.

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

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

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

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

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

MS. PATNAUDE: Any other questions?

Any questions from staff?

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

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

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

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

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

This stakeholder meeting is now concluded.

(The hearing concluded at 3:30 p.m.)

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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