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MEREDITH BRASELMAN: Good afternoon. And welcome to the Atlantic Offshore Wind Transmission Stakeholder Workshop. I'm Meredith Braselman with ICF and I will be your host today. A few housekeeping items as we get started. This WebEx meeting is being recorded and may be used by the U.S. Department of Energy. If you do not wish to have your voice recorded, please do not speak during the call. If you do not wish to have your image recorded, please turn off your camera or participate by phone. If you speak during the call or use a video connection, you are presumed consent to recording and use of your voice or image.

All of our participants today are in listen-only mode. If you have any technical issues or questions, you may type them into the chat box and select to send to the host. If you would like to see only the active speaker during today's workshop, please select layout in the upper-right corner of your screen and toggle off show participants without video. We will be taking questions today throughout the webinar. You may submit them throughout the event using the chat

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

function and select to send to host. When you submit your questions, if you can, please reference the topic and speaker so that we can get them to the right person.

If you need to view the live captioning, please refer to the link that will appear in the chat now. And finally, our most popular question, a copy of today's presentation will be posted on the Atlantic Offshore Wind Transmission webpage by Friday. Then a recording of today's workshop will be available on that same page in about two weeks.

So we are excited to kickoff today's workshop with remarks from Alissa Baker, Offshore Wind Transmission Lead from the Office of Electricity at the U.S. Department of Energy. Alissa is going to be discussing the goals and the purpose of today's workshop. So please join me in welcoming Alissa Baker.

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

ALISSA BAKER: Hello, good morning and thank you all for joining us. On behalf of BOEM and DOE, we're really happy to have you here. This is just one of many convening events that we're hosting throughout the year and we're really excited to get into the details of some of those a little later on today. But, for now I'll just talk about what today is going to look like. So we are focusing on the benefits and challenges of offshore wind transmission development along the Atlantic coast. We recognize that this event, this effort is much larger than us, much larger than any single agency, single state, community, or group, and it's going to take a partnership with all of us to tackle the route that's ahead of us.

So today's workshop is really going to focus on the strategies to support sustainable and equitable development of offshore wind transmission in a way that minimizes impacts to ocean users and marine environments and creates benefits for our coastal communities and our underserved communities. So, as

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

you can see here in the agenda, we have an incredible line of speakers prepared. We're going to cover a lot of educational ground and create a space for discussion of a wide range of benefits and challenges that stem from this topic.

So, you can see we've got some wonderful keynote addresses. We're going to have some topical panels. And between each one, while it's not on the slide, we'll have time for Q&A. So I'm really excited to get into these topics. At the very end of the day, you see Feedback Opportunity and that really is our biggest goal of today. We really want to hear from you. Feedback of how we can leverage the benefits and mitigate the negative impacts as we're planning and thinking through the future is going to be so crucial and that's why we're here.

So there's a lot of folks on the webinar, we're really excited about that. And while we'd really love to be able to have a dialogue with each of you individually, there's just not going to be enough

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

time in the four hours that we have allocated. So we've designed this event to allow as much written feedback as possible. We'll be using a program called Menti as well as the WebEx chat function throughout the day. And we have a whole team of dedicated staff on the backend collecting and recording anything you submit. So we'll address as much of it as we can, but I want to assure you that if you don't hear your comment know that our team has received it, it is part of the record, and it will be thoughtfully considered.

So without much further ado, I am very excited about today and I will pass the mic back to our host extraordinaire, Meredith.

MEREDITH BRASELMAN: Thanks so much, Alissa. Next we have Chris Lawrence, Management and Program Analyst from the Office of Electricity at DOE. Chris is going to provide us with an overview of the interactive Menti software that we're going to be using for feedback today during the webinar. Chris?

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

CHRIS LAWRENCE: Thanks so much, Meredith. Good morning.

Actually, good morning, good afternoon to many of you out there today. Again, as Meredith discussed, we are going to be seeking feedback using a tool called Menti. The administrators of the meeting today are going to share that link out with everyone as well as a code, but I am going to show everyone here how to join Menti right now. You can use this actually on your phone. You could either go onto the website, www.menti.com and enter the code that's on the screen, or use the QR code.

Alright, so I'll give everyone a minute or two to - Oh, I'm seeing a lot of hearts, that's wonderful, awesome. So I'll give everyone a minute to join up on Menti. And then we're going to do a couple of warm-ups and then you'll see me after our sessions this afternoon to get into some more deep feedback. But, we're just going to do some fun warm-up exercises just to get a sense of where everyone is joining and just to get everyone used to the software. I'm seeing

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

a lot of hearts, favorites, that's good, that means people are joining and are able to do that. So I'll give one more minute, if that's okay, and then we will proceed.

And again, the purpose of this is just a different way to get feedback from everyone on today's call. As Alissa had mentioned, we have hundreds of people on today's workshop. It's kind of difficult to get feedback from each individual person, but what we're going to try to do today is get feedback from you using this tool. I'll explain later on, later in the proceedings today that some of the feedback you'll be giving is going to be private just for our team. So not everyone is going to see your responses, but for these next exercises we're about to do, everyone will see your responses.

So without further ado, I will go when I see the number of hearts hit 100, so I'm at 95. This is fun, I don't know if you guys can see the hearts but it's pretty cool. Alright, well, we're going to go in the

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

interest of time. So this is what's known as a word cloud. So please enter in the word cloud, type in where are you joining from today. If you're joining us from another country, please indicate that. Tribal nation, U.S. state, etc. So as you're going to see here, as you put in words you're going to starting the more people are from one particular area you'll see that word get bigger.

And seeing a lot of, obviously a lot of East Coast here so far. And if I proceed to the next slide and you're not ready, and you're not ready to proceed to the next slide, you can actually hit stay on this slide, finish your word, and then go to the next one. So your responses will still count. I'm seeing a lot of Virginia, went to college in Lynchburg. Obviously, seeing Massachusetts, Texas. So this gives a pretty good indication of where everyone is coming from. Awesome. Okay. And it's going to keep morphing like that, but you can see kind of where we got - Oh, Germany, welcome. Or should I say guten tag.

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

Alright. Jupiter, I'm going to assume that's Jupiter, Florida and not the actual planet, okay. Alright, so we're going to move on to our next question. What type of organization or stakeholder group do you represent or most identify with? Now, this is more of a polling question. Again, try to jam as many of the groups that we can think of off the top of our head, but we do have one where if you are not necessarily in any of these, please just indicate individual. But, again, we're trying to capture as many potential responses as well, but, again, the point of this is trying to show you the different functionalities that we may be dealing with later today when we collect feedback.

So I'll give it about 30 more seconds here. So right now we have 87, 92 responses. 98... Awesome, seeing a pretty diverse amount of people here, obviously a lot of federal agency representation, utility companies. Seeing a lot of NGOs, that's awesome. Alright, fantastic. Alright, we're going to go over to the next question. Now, this is another open-ended

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

question here. Looking at it for a word cloud, so we're going to advance. Okay, what are the greatest opportunities for offshore wind transmission in the United States? Again, what we're doing here, we're not looking for consensus, this can be things like coastal community grid benefits, long-term job creation, maybe grid reliability, oh, I'm seeing grid resilience already on here. So think about those types of things as we you're answering this question.

Equity, awesome. Environmental justice, obviously a big priority for the administration and for the Department of Energy. Grid reliability. I'm really digging everyone's enthusiasm and participation on this, this is fantastic. Energy independence. Thank you for that comment. Someone said this tool is amazing. I can't take all the credit, my colleagues in the office decided to use this tool and it is a great tool.

Alright, so I'm seeing, again, the bigger words are the ones that we're getting a lot of people to

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

respond to, a lot of people are using those terms. So, clean energy, grid reliability, coordination, jobs, those are big themes coming out of here, but not to be undone, power diversification, less air pollution, those are also coming out as well.

Alright, so one more warm-up question and then you don't have to see my face for the next few hours. So what are the greatest challenges or needs for offshore wind transmission in the U.S.?

Again, we're just looking for some words here. Coordination, maybe across multiple sectors, technological improvements, cost reductions. So, just a couple of the - Buy-in, that's a good one. Cost allocation. Permitting, we'll be hearing a little bit of that today. We've got one more minute on this and then I'll hand it back over to our MC. [unclear] coordination. Interconnection. A lot of participation here, this is fantastic. Alright, well, this gives you an indication of kind of what this tool does. When I come back we're going to be doing a couple of different types of question types, more open-ended,

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

but those answers will be private except for one more question that we'll have for you at the end of the day. So, again, I appreciate everyone joining us this afternoon slash this morning and I really look forward to hearing from all the presenters today. With that being said, I want to hand it back over to Meredith. Thank you all.

MEREDITH BRASELMAN: Thanks so much, Chris. We'll look forward to having you back a little bit later. And now I want to welcome Kelly Speakes-Backman, Principal Deputy Assistant Secretary in the Office of Energy Efficiency and Renewable Energy at DOE. And, wow, here we go, it's still early here. And Amanda Lefton, Director of the Bureau of Ocean Energy Management at the Department of Interior. They're going to be providing us with an overview of our national and regional transmission needs. Kelly and Amanda, over to you.

KELLY SPEAKES-BACKMAN: Thank you, Meredith. And Chris, that was so much fun, I never get tired of those

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

cloud surveys. So I get the privilege of standing here with or sitting, I'm not sure what she's doing because I can only see the top half, with Amanda Lefton, and to welcome you. And I just really appreciate everyone joining us today for this really important workshop. Today we're going to have this conversation around offshore wind transmission needs in the Atlantic. And I just really appreciate everybody participating in these discussions during such an exciting time for offshore wind.

So today I am just going to say a few words to welcome you and talk to you about the details of the convening effort that we're talking on with BOEM, DOE and BOEM. And also talk about how we can collaborate to achieve our share of energy, climate equity and economic goals. I hope this background sets a good stage for what's sure to be a really awesome few hours together. So just to start off and just to level set, President Biden has indeed set this ambitious clean energy goal for us to deploy 30 gigawatts of offshore wind generation by 2020 and to

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

achieve 100% clean energy economy with net-zero emissions not later than 2050.

Now, meeting this 30 by 30 goal is going to support 77,000 jobs in the offshore industry and adjacent communities. It's going to generate enough electricity to power ten million American homes and it's going to cut 78 million metric tons of carbon dioxide emissions of our atmosphere. It's also going to spur, by the way, \$12 billion dollars in capital investments in offshore wind projects each year. It's going to support the construction of five to ten new manufacturing plants for offshore turbine components. It's going to help us with getting new ships to install offshore wind turbines. It's going to help us with up to \$500 million dollars in port upgrades. That's a lot of economic development.

It's going also incentive, really, the building of Jones Act compliant wind turbine installation vessels and establish the U.S. as a major participant in the global offshore energy industry. Now, importantly, we

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

see the 30 gigawatt goal not just as an endpoint, but really as a stepping stone to expanded offshore wind development and deployment in the United States. And analysis from our National Renewable Energy Lab, or NREL, shows that meeting this 30 by 30 goal would enable more than 110 gigawatts of offshore wind to be deployed by 2050.

To get there there's a lot of things that have to happen in concert and a big part of that is why we're here today. We need infrastructure investments in on and offshore transmission. We know that existing onshore or land-based grid interconnection points for offshore wind are limited and they're likely to become a bottleneck for deployment, we already know that. One of the key solutions is onshore transmission expansion which is critical to delivering electricity from offshore wind to load centers.

Another solution, though, is new offshore transmission networks that can offer shared

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

interconnection points with additional cost savings and reliability benefits. These solutions could minimize the impacts on the environment and ocean co-users while reducing costs and improving the reliability of the grid. Now, here at DOE, our mission is to really drive the research, development, and the demonstration and the deployment of these innovative technologies, and systems, and practices that are going to enable us to reach President Biden's clean energy goals and ensure that the clean energy economy benefits all Americans.

We are fully committed in DOE to using all the tools in our toolbox to address offshore wind transmission challenges from technical assistance, and research analysis, to funding for new infrastructure development, and upgrades to current infrastructure. We're going to continue convening stakeholders to help us explore and identify solutions for these challenges that we face as a nation. The state public utility commissions, state energy offices, and ISO and RTOs, as well as tribal nation national

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

leadership have been all leading the way together. And we commend those efforts and we hope that all of you listening today will join in and partner with us to ensure that the offshore wind effort is a part of our nation's climate, a big part of our nation's climate solution.

Through this joint effort between DOE and BOEM, we're hoping to harness your leadership and your expertise to help us to understand how we could enable this reliable and resilient future for regional and interregional long-term transmission. These transmission efforts are just one of the critical areas of DOE's Building a Better Grid initiative, which is advancing grid resilience and transmission infrastructure across the country. Michelle Manary, Acting Deputy Assistant Secretary in our Office of Electricity, is going to speak this broader initiative a little bit more later today.

So, the challenge here is big. There's not one single entity that can face this alone. It's going to take

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

all of us, federal agencies, tribal nations, states, local government, industry, utilities, labs, community members. It's really critical that we all work together to coordinate to make sure that this is a holistic transmission planning effort, that we have predictable siting and permitting processes, that we have equitable costs and benefits, and that expeditious and effective construction of transmission is affected.

Today we're looking for your input on our proposed path forward. We want to know from you all, does the proposed plan laid out by us, by DOE and BOEM address this need? How can we ensure that mutually beneficially outcomes happen when we're developing this transmission plan? We've entered a critical and a crucial time and offshore wind has a crucial role in decarbonizing this grid, meeting our climate goals, creating jobs. Transmission is key to getting it all there and pulling it all together. So I know that together we're going to be able to accelerate this thoughtful planning process. I appreciate your

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

participating in it and appreciate your having me today. And with that, I'm going to turn it over to my friend, Amana.

AMANDA LEFTON: Well, thank you so much, Kelly. That was so well said. And at the Bureau of Ocean Energy Management we're truly so pleased to partner with the Department of Energy, particularly under your really great leadership to ensure that we are all successful towards our shared goals of achieving our 30 gigawatts of offshore wind by 2030 and particularly pleased to be partnering with all of you to host this really important workshop, which is of course one in a series to share lessons learned on transmission. And I think Kelly really well articulated the fact that we have really this transformative moment in front of us for offshore wind where we have this enormous opportunity those jobs, that economic potential, the importance of fighting climate change, and really benefitting our underserved communities.

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

And in fact, the nation is primed for this transition to a clean energy future that will do all those things, that will combat change, that will create good paying union jobs, and ensure that economic opportunities are accessible to all communities. And at BOEM and at DOE, we're up for the challenge. You know, collectively we're working hard to achieve the administration's clean energy goals and we're embracing an all of government approach. And in fact, BOEM has been working expeditiously to advance new projects and lead sales to ensure that we are well-positioned to meet our 2030 goals. And we have, of course, our great Deputy Director, Walter Cruickshank, who will discuss BOEM's activity in more detail a little bit later to talk about sort of the challenge and opportunities in front of us.

And most certainly, we know that we're well-poised. We have the projects in front of us, we have a plan to achieve our future lease options, to ensure that not only are we well-positioned to achieve our short-term goal of 2030, but as Kelly well articulated, to

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

ensure that we are well setup for the future, for that future opportunity for offshore wind in subsequent years. But, we all know that we can't deliver this energy to shore without a robust energy transmission infrastructure system.

And as we do that, and we build offshore wind transmission, we have to ensure that our coastal and underserved communities can access clean energy responsibly and with minimal impacts. And of course, we know that there's a lot of progress to be made on transmission. And there's a lot, as Kelly well articulated, a lot of different players that need to be at the table. And that's why we're here today and that's why we've taken the approach that we have taken because we truly need a collaborative approach with states, with ISOs, with tribes, with academic institutions, with energy agencies, conservation agencies, all of the appropriate players at the table, and of course ocean users to ensure that as existing projects move forward, as regional efforts move forward, and as we plan for our longer term

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

horizon, we need to ensure that we really have everyone around the table to build towards these shared outcomes because it will, in fact, take all of us.

And so that's why we really want to hear from you. It's so critical [audio breaks up briefly] manner that is inclusive and really ensures that we are benefitting everyone around the table to realize those best outcomes as we continue to move forward. And we're going to talk more today about how we're going to plan to accomplish this, how we're going to work together, and collaboratively and hopefully have all the right people at the table to move this forward because we know that there are so many integrated things at play. We know investment is going to be so critical, how we pay for this. We know that we need to understand better the transmission related challenges and really work together to identify those potential solutions.

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

And so this workshop is going to discuss strategies to develop sustainable and equitable offshore wind transmission on the Atlantic coast. We're going to provide resources to discuss benefits and challenges, and really gather feedback for you. And as we move forward, we're going to continue to build out the information that we've gathered in our scoping meetings, at gap analysis, and the ongoing Atlantic Offshore Wind Transmission Study so that we can fine tune, propose solutions to overcome the obstacles that we identified and ensure that we are well-positioned to achieve our really ambitious yet achievable and important climate goals.

So as this process moves forward, DOE and BOEM with all of you are going to develop recommendations and an action plan to address offshore wind transmission challenges and we're going to do so in an inclusive manner to help us find the right answers for the Atlantic coast and the nation. And, you know, critically, as we look in front of us and certainly what I've seen in the last 18 months with the great

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

partnership with Kelly and DOE, is the fact that our transition to a clean energy future isn't just a dream, it's not something far off, it's something that's unfolding right before our very eyes right now.

And so the work that we do collectively together will really help create the foundation for us to ensure that offshore wind is here to stay and that we're successful in achieving our shared goals. And today is really a continuation of the many productive conversations on addressing transmission and I know that together we can move offshore wind development forward in a safe and responsible way so that we can really harness those great benefits that Kelly so well articulated earlier today.

So thank you, everybody for your time and for spending a few hour with us today and for the continue partnerships in the months to come. I'll turn it back over to you.

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35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

MEREDITH BRASELMAN: Thank you, Kelly and Amanda so much for joining us today and thank you for setting the stage for us. I now want to introduce our next speaker, Congressman Paul Tonko, representing New York's 20th District, for remarks on offshore wind transmission. Congressman Tonko, welcome.

PAUL TONKO: Thank you. I enjoyed the conversation between the two of you and great to be with you. I thank certainly the Department of Energy for its great involvement with these wonderful issues and certainly our Assistant Secretary, Speakes-Backman, and thank all at BOEM and Director Lefton. So Kelly and Amanda, it's great to be with both of you. Not only do I appreciate the opportunity to join today's workshop, but I am so very grateful that the agencies are so involved in building our nation's offshore wind industry. Interagency coordination is not always easy, as we can understand, but I know DOE and Interior are working incredibly hard to ensure that we seize this tremendous economic and clean energy opportunity.

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

And this cooperative spirit is a perfect representation of what we must foster amongst the broader stakeholders working on this issue. That includes space in local governments, it includes grid operators, project developers, component manufacturers, environmental groups, and certainly commercial ocean users. They all need to play a role. It is critical that people come together to plan for a clean energy future that benefits each of these interests. And this convening can play a great role in helping to foster that dialogue.

So, again, I wanted to express my gratitude to both of the agencies for their very, very stalwart efforts because this industry has so much potential. Offshore wind is more than just a technology needed to achieve our national and state clean energy goals, it is indeed a rare opportunity to create a whole new industry in the United States, to produce affordable and clean domestic energy and high quality jobs while boosting our nation's manufacturing competitiveness.

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

We know the national goal to deploy 30 gigawatts of offshore wind energy by 2030. It's a staggering goal. And many states have their own ambitious targets, but we're going to get it done. We cannot take for granted that will be achieved, however. They will be significant challenges and barriers that will have to be overcome.

And I believe discussions, like the one that we're having today, will be critical to getting the job done thoroughly, effectively, and soulfully. We also shouldn't forget the significant benefits that will come from achieving these goals. An industry that will support 77,000 jobs, generate sustainable and reliable electricity to power more than 10 million homes, cut 78 million metric tons of carbon dioxide emissions, and result in over \$100 billion dollars worth of domestic supply chain investments just in the next decade.

These are pretty incredible stats. And these benefits will be felt throughout our great country. Turbines

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

installed off the coast of New York will contain components manufactured in Upstate New York that I represent. Steel from plants in West Virginia and Maryland and constructed by ships built in Texas. There will be many opportunities to go around, if we build it right and if we work together. One of those areas we must get right is offshore transmission. We know the difficulties of getting any new big transmission built is difficult.

I expect offshore won't be any easier. Ultimately, I don't know what the best offshore grid system will look like, but I am not here today to advocate for one approach over another. But, I do know that people at DOE and our National Labs and many people at this workshop are the right people to be thinking about this. This is why in the House passed reconciliation package, the Build Back Better Act, we included \$100 million dollars for interregional and offshore wind transmission planning, modeling, and analyses for DOE. This will allow more resources to go toward

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

assessing the potential economic and reliability impacts of various offshore transmission plans.

It will allow for greater consideration of the placement of land-based and offshore substations and of course cabling. We can map cable routes to avoid military sensitive areas, cultural areas, fisheries, and other areas of ocean use. DOE's Atlantic Offshore Wind Transmission Study is already underway to evaluate these different options to achieve that offshore wind goal through coordinated transmission solutions. So hopefully these efforts will develop incredible evaluations of different planning pathways so that we can ultimately build an offshore grid network that is cost effective, that is reliable, that is environmentally sound, and that gets completed in a timely manner, because the excitement around lease auctions and generation permitting will not mean much if we cannot build the infrastructure to get those electrons on land.

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

I know this will be complicated, involving numerous states, and three different electricity markets in the northeast, each with their own goals and each with their own motivations, but I am confident that, guided by the expertise of our federal government and the stakeholders on this call, we can understand and certainly evaluate all the options before us for a coordinated, multi-decade offshore transmission plan. I'm looking forward to hearing people's thoughts and their suggestions and if there are ways Congress can help, I am ready to partner with you to get them done, because Congress is seriously prioritizing these projects.

In addition to funds already available through our DOE's Loans Programs Office and the bipartisan infrastructure law, the House passed reconciliation packaged included an additional \$1.5 billion dollars in grants and \$500 million dollars in direct loans for our narrow set of high impact transmission projects including offshore infrastructure. We also included a new transmission investment tax credit

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

which offshore transmission certainly would be eligible for. Many of us in the House are still fighting to get clean energy investments enacted through reconciliation this year. And if enacted, I believe this will help significantly with the financing and cost allocation issues that will come from offshore transmissions. We simply cannot abandon the efforts for reconciliation this year.

Again, I want to thank DOE and I want to thank BOEM for bringing everyone together. I know today's agenda will lead to great discussion and I hope others can see the value of bringing a diverse group of stakeholders together to help grow public support and education around a coordinated offshore transmission plan. This opportunity is simply too great to mess up. And all of our constituents, our ports, our states, and RTOs will stand to benefit if we work together towards a sensible, common goal. So thank you, again, for the invitation to join with all of you this morning. It is the cutting edge clean energy activity, the decarbonization of our environment, the

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

response and respect for our planet that motivates
and impassions all of us. So thank you for the
leadership and let's get'er done.

MEREDITH BRASELMAN: Congressman Tonko, thank you so much
and thank you for joining us today.

PAUL TONKO: My pleasure, indeed.

MEREDITH BRASELMAN: Alright. Well, now for an
introduction of offshore wind in the Atlantic region,
we'll hear from Dr. Walter Cruickshank, Deputy
Director at BOEM and the Department of Interior. Dr.
Cruickshank?

WALTER CRUICKSHANK: Thank you, Meredith and thanks to
all of you for calling in today and participating in
this session. Well, again, thank you all for joining
us today. What I plan on doing is just providing a
quick overview of the status of offshore wind.
particularly in the Atlantic region, to provide some

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

context for today's discussion on transmission. Next slide, please.

And those of you that are not familiar with the Bureau of Ocean Energy Management, we manage the energy and mineral resources on the nation's outer continental shelf in an environmentally and economically responsible manner. This includes, of course, renewable energy, wind, which we're talking about today, oil and gas, and marine minerals, particularly sand used for coastal restoration and protection projects. And all of our programs are underlined by a very robust environmental science and assessment program. Next slide, please.

You've already heard from our leadership this morning about the ambitious goals this administration has set for offshore wind, no need for me to repeat them, but I do want to note that the Bureau of Ocean Energy Management sets some goals for itself to help us move towards achieving the administration's goals. In particular, by 2025 we plan to hold seven lease

ICF Transcription
35504_DOE & BOEM Atlantic Offshore Wind Transmission
Stakeholder Workshop-v1

sales, two of which we have already held. We also plan to complete the review of 16 construction and operations plans. These are the plans where a developer tells us what they want to build, how they're going to build it and operate it, and our review of that plan represents the major decision point on whether a project is approved, modified, or denied. But, I also want to point out, besides these federal goals, the states themselves have provided extraordinary leadership in providing goals for offshore wind.

Currently the Atlantic states, from Massachusetts to North Carolina, have expressed goals for offshore wind totaling over 34 gigawatts. Some of these are goals that are written in the legislation's requirements, other ones are more aspirational goals, but they are in total quite a lot of capacity that we expect to be built in the coming years. This is led by New York with nine gigawatts, New Jersey with seven and a half gigawatts, and Massachusetts and Virginia which each have over five gigawatts of

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Stakeholder Workshop-v1

offshore wind as part of their goals for moving to a clean energy economy. And importantly, the states are already moving to fulfill those goals. State procurements have already awarded contracts for eleven and a half gigawatts of offshore wind power and another ten gigawatts of procurements are already scheduled. Next slide, please.

So I noted that we - When the goal of 30 gigawatts by 2030 was announced, we said BOEM holds seven more lease sales. This graphic shows the seven sales we are planning, two we have held in the New York Bight and Carolina Long Bay. We have also put out proposed sale notice for our first sale of offshore California, our first sale on the West Coast coming perhaps later this year. And we're in the planning stages for lease sales in the Gulf of Mexico, in Oregon, in the Gulf of Maine, and also in the Central Atlantic where we're looking at areas farther offshore than the current projects that we've already leased. And being further offshore that has important

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implications for how we look at transmission. Next slide, please.

So you can see on this slide, particularly on the maps, where we have activities going on. The Atlantic map, in particular, shows not only the leases that we have issued, but also those areas that we're continuing to study with potential for future lease sales. At this point we have 27 active commercial wind leases in the Atlantic including the eight that we issued this year. And we expect, obviously, the developers to move forward with construction and operation plans on these leases. We have already approved two such plans, one for Vineyard Wind One, offshore of Massachusetts, and another for South Port, offshore Rhode Island which will be connected to Long Island.

In addition to the two already approved, we have ten COPs for which our formal environmental review process is underway. We've received five more COPs from developers who are undergoing preliminary review

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to see if they are ready to go into the formal environmental review. And we expect at least two more to be submitted in the coming months. Next slide, please.

So clearly we have very ambitious goals at both the state and federal level for offshore wind and there's plenty of progress being made in both leasing and in project plans, but what does this mean for transmission? Currently all of the early projects that we have are running radio lines to shore, that's where there's just a single transmission line going from the project to the coast, that's likely not a sustainable solution. We expect there will be many more projects proposed over the years and, as we've already heard, there's limited points of interconnection, so it's unlikely we can sustain and model where everyone is building their own transmission.

We've also heard plenty of comments from stakeholders along the way that they want us to minimize the

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Stakeholder Workshop-v1

footprint of transmission facilities to reduce impacts on the environment and conflicts with other ocean users, and that is something that we at BOEM certainly know how to do. We are experienced in marine spatial planning. We can consider everything that's going on offshore, all the resources out there, and perhaps come up with cable corridors that are optimal in terms of avoiding or minimizing conflicts in the offshore space.

But, if we were to do that on our own, we might end up taking a cable corridor that runs close to a state and comes to shore where there's no point of interconnection or at least no infrastructure that can be easily upgraded to accommodate offshore wind. So this is why what we do offshore at BOEM needs to align with onshore infrastructure investments. But, that's an area, onshore investments, grid interconnection, where BOEM has no jurisdiction and limited capacity, and that's why we've been delighted to partner with the Department of Energy on

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transmission, and why together we're convening sessions like today's.

We know that some states are already considering approaches, perhaps, to bring offshore wind into the grid. New Jersey is considering proposals they've received under a state agreement approach pursuant to [unclear] order 1,000. And New York is looking at adding into its next request for proposal some readiness to accommodate offshore transmission solutions. But, the goal for long-term transmission planning is to go beyond what any individual state might be doing to bring offshore wind to shore and to find regional solutions that work for all parties. Next slide, please.

That's why it's so critical for us to hear viewpoints from across stakeholders and industries. We need to know what you all think, we all need to know what solutions you think have the most promise. The email on the slide is something I'm sure you'll see several times today, it's a way you can get your feedback to

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Stakeholder Workshop-v1

us, get your ideas to us, and I encourage you to do so as we need to hear from all of you to understand what solutions may work best for this industry. Also, as we move forward, BOEM will be providing opportunities for feedback on individual projects as they come in for review. So we can get your feedback specifically on the offshore components and solutions we hope to develop with all of you through this convening sessions.

So thank you all for joining us today. And I look forward to hearing from you over the coming months as we try and solve this very challenging problem. Thank you.

MEREDITH BRASELMAN: Thank you, Dr. Cruickshank. And now I want to welcome back Alissa Baker, Offshore Wind Transmission Lead, as well as Josh Gange, Renewable Energy Program Specialist at BOEM, for their presentation on DOE and BOEM offshore wind transmission action. We will be taking questions following this presentation, so please submit them in

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Stakeholder Workshop-v1

the chat, and do please try to reference the topic and/or the speaker when you submit your questions. Josh and Alissa, over to you.

ALISSA BAKER: Thank you so much. So we really want to cover today kind of some groundwork on what's already occurred, what DOE and BOEM have already done based on feedback we've received. So, next slide.

As you all know at this point, the administration's targets have set a lot of things moving in the offshore wind community, which is really exciting, but there's a lot to be done. So we've got some mapping of efforts and events for this, what we're calling the convening, all of this joint agency action that we're taking to try to address the need. So in order to hit that, you know, when we started there was a lot scoping and gaps analysis work, particularly last year that was really in the works to try to get our feet under us and make sure that whatever we propose makes sense and is useful for the community, for the industry, and for the nation.

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Stakeholder Workshop-v1

And then this year we're really going into like a three-fold attack, as you would say, where we're doing these convening workshops and we're having these more in-depth technical conversations with people who live and breathe these issues so that we know we understand them and that we know that anything that we propose at the end of the year really is meaningful and useful.

There is the transmission analysis work, the National Labs are just working their tail off putting in the modeling and trying to answer these really challenging questions that have never been looked at before. And then there's technical assistance efforts. You know, we'll get into some of the details of that a little bit later on in the day, but, you know, there's some federal funding and some federal financing on the table to kind of help move some of these processes along because we know that cost is a limitation.

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Following the end of this year and into next year we'll be looking at developing final recommendations. That is, you know, what DOE and BOEM think need to be done in this space, what needs to change, that could be policies for our agencies that may change the way we permit things or the way that we recommend things get done, it could be best practices for industry, it could be requests for Congress for particular funding needs. It could be a lot of things and so that's why we're tackling such a wide range of transmission related issues and topics through both the study and the convening.

So after we get some recommendations, it's go time, time to start making some changes on the ground and implementing these. And then following that is what we're calling a needs assessments and value which is where we kind of zoom back, look at the Atlantic coast and say, how much impact did we have? Was it what we thought? Was it useful? And should we start applying that to the West Coast and the Gulf and the Gulf of Maine, Gulf of Mexico? You know, these other

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Stakeholder Workshop-v1

areas where we know we need to have work done. Next slide, please.

So let's go back into look at the scoping and gaps analysis. Now one thing I will note on this is the term scoping can be kind of loaded, it means a lot of different things to a lot of different people. And so I just want to be clear that I'm going to say scoping a lot today and what I really mean is that it's kind of the introductory work, the introductory research, the introductory conversations to help lay the groundwork, lay the understanding, help us all get on the same page. I don't mean any kind of formal NEPA process or something that would have a really defined use of that word. So if you've got any questions, drop them in, but I just wanted to set that there.

So the team did a lot, we pulled in the National Labs, looked at lot of - You know, there's a lot of great work coming out of the labs, pardon me, the universities, a lot of different groups, developers are putting in a lot of effort here. So we tried to

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Stakeholder Workshop-v1

pull together that think tank of knowledge and really condense that down into what's useful. And while there's a lot more that went into this, you know, some of our big takeaways are here on this screen. So I won't read them all for you, but we know that initial development could limit our future potential, right. The choices we make now have implications in the long-term and that's something we need to think about.

You know, we know that traditionally our transmission system isn't built strongly out to the coast, there's onshore needs that are going to have to have happen in order for us to get large amounts of generation off in the ocean back into load centers where it's needed. There's a lot of siting challenges. Those are near term needs. And then we start looking at mid to long-term cost allocation, very, very complicated. And, you know, with all of these reforms, be it cost allocation or some of the incredible work that FERC is doing right now, that takes time and it takes to implement and it takes time to understand, and we

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Stakeholder Workshop-v1

really don't want to slow down development by proposing something new or by getting in the way of what's happening. So I think there's a balance there that we're trying to be very cognizant of.

The current interconnection process. There's a lot of concerns there, there's a lot of challenges that a lot of really smart people have been thinking about for a while. So we're excited about the most recent FERC NO-PER [phonetic] and we'll get into that a little bit too. But, the final thing was just the issue of project and project risk. Right, when you talk about transmission there's risk there, right. There's risk for the developers, there's risk for, you know, if the customers are funding it, you know, there's project on project risk of what gets built first, you know, are there stranded assets? That's some scary stuff when we're talking about this amount of money and this amount of infrastructure. Next slide, please.

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Stakeholder Workshop-v1

Okay. So this is just a quick overview. So last summer, DOE and BOEM held a series of scoping calls. I'm sure a lot of the people on today, we're excited to have you again, you may have been part of those calls or you may have had colleagues or friends who were involved in those calls. So those really helped shape a lot of things. So you can see some of the themes we heard. Josh and I today are just going to pull out a couple of those and talk about how they've been implemented already because we want you to know that while it may seem like you hear one of these webinars and it's all quiet on the western front for months and you're like, what's even happening? There's a lot of work going on, there's a lot of really great information that we received that we're trying to act on and plan for. And so we're just going to pull some of those out and talk about what's already happened today. Next slide.

Okay. So what we heard and what we're doing about it. So there is a need for long-term transmission planning. There is a need for that everywhere, but

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Stakeholder Workshop-v1

particularly we're talking about the coast. So three things that DOE is doing right now that are super relevant to this is the Atlantic Offshore Wind Transmission Study, most everyone has heard of that, NRAL has a great page for it, if not, there's a National Transmission Planning Study and a National Transmission Needs Study that are going on. And while we'll mostly talk about the Atlantic one, it's important to note that all of these, you know, they've got overlapping footprints when it comes to the onshore parts and so our teams are working really closely together. The labs and the modelers working very closely together to ensure that we're making smart, smart studies, smart modeling systems for the nation as a whole. Next slide, please.

So, the Atlantic Offshore Wind Transmission Study, specifically this is a two year study that is looking at the transmission needs related to offshore transmission, I guess you could probably tell that from the title, but it's looking at the needs that we actually have across a really large footprint of the

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Stakeholder Workshop-v1

coast. So I've got some of the milestones up there and that's important because when you talk about a two year study a lot of times you think, we're not going to have anything actionable, nothing useful for two years, and we know we need things sooner than that, so that was milestones. We plan on pulling information from those, we've already been doing that, through both the technical review committee for the study, which involves a lot of really incredibly smart people in various parts of industry and government and community groups and through the convening efforts like today, so that we can really get the freshest information as soon as we know, as soon as we think we know, as soon as we have anything to share, we can get that out in and be transparent and share that, and so that we can start acting on these things as we go. So that's been a really exciting initiative and NRAL has a great page, you can just Google it, if you want to learn more about the study. Next slide, please.

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Stakeholder Workshop-v1

Okay. So the need for R&D. There is a lot of space for R&D in the offshore wind and transmission space. There was a lot of things that we heard and I think just an incredible thing is that we noticed a lot of that. We noticed the Wind Energy Technologies Office, part of DOE, it's an R&D powerhouse. They do incredible work, which you can read about on their website. Next slide.

But, I'll just highlight a couple of major projects. They're doing work with the HVDC breakers, intra-hour wind power databases, optimization with GETs, wind PACK. They do collaborative work with the Solar Energy Technology Office to do I2X which is looking at interconnection reform. And the grid forming consortium, as well as just funding a lot of research through different organizations. I've highlighted the National Offshore Wind Research and Development Consortium here, they have a lot of really relevant projects that they're working on currently that are funded in partnership with DOE. Next slide, please.

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Stakeholder Workshop-v1

Okay. So speaking of interconnection, we've heard a lot about interconnection queue processes and some of the needs, some of the pinch points around there. And so while FERC is part of the Department of Energy, we recognize that they have their own authority, their own space, their own rulemaking process. So we just want to direct your attention to some of the incredible efforts that they have under work right now. They have three NOPRs on the street, that's a ton of really relevant, really meaning discussion that's going on. I really encourage you guys to go look at those, please comment on them, you know, let the agency know what you think is meaningful and what changes need to be made.

So they're on there. There's the one from last April which kind of talks about transmission planning and cost allocation. And then two that came out this last month which really are focused on the generation interconnection queue process and then, what will we do about extreme weather? So please go check those out, really great resources. Next slide.

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Stakeholder Workshop-v1

Last thing, it's such a big one, but federal funding to address these cost allocation issues. There are a lot of funding opportunities coming up through different departments, through the Office of Electricity, the Loan Programs Office, and through the Western Area Power Administration. We have Michelle and Jigar here to talk about the Office of Electricity and the Loan Program Office's programs, the opportunities there. And I mentioned the WAPA staff, go check it out, if you're interested, if you live in that area. Since it's not overlapping with the Atlantic, we're not going to get into details on that today, but it is there, so check it out.

And I believe that's my last slide, so I will pass it over to Josh, thanks so much.

JOSH GANGE: Thanks, Alissa. Happy to be here with everybody today. Let's go ahead and go to the next slide. One of the first things we did here was that there was a strong interest in having federal

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Stakeholder Workshop-v1

involvement in this process, particularly with regard to interstate and interregional coordination as well as a request for increased conversations, both formal and informal, with federal partners. So most notably, what we're doing about that is this effort and Alissa already highlighted the study and some of the other aspects, but really to continue this discussion. It's this series of workshops, one of which is of course today, that were kicked off earlier this year and will continue through the rest of the year. Next slide, please.

And just to highlight what we're hoping to get out of these convening workshops including this one today. There are really four main themes here: the stakeholder partnership piece, which we're discussing today, to make sure we really have all the information from everyone that we need to really do an effective job here, planning and development, economics and policy, as well as siting and permitting. So each of these themes have one or two or more workshops dedicated to sort of specific

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Stakeholder Workshop-v1

topics that really can allow us to build off what we heard in those scoping calls and use information from the study to continue these efforts.

So the outcomes we're hoping to get out of this are listed here, including phase development for shared transmission resources, identification of potential route, and needed onshore upgrades to facilitate the solutions, nearer-term recommendation for optimizing cable routes and existing points of interconnection, and recommendations for incorporating policy and permitting changes into the existing regulatory framework. So at the conclusion of these workshops we will be forming an action plan based on the results of these conversations and all of the efforts that Alissa had previously highlighted. So we're really looking forward to continuing these. And again, feedback on any or all of these efforts is quite welcome today and in the future. Next slide, please.

So another thing that we heard was a desire from many parties to learn more about the status of current

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projects. You know, it's often times only when Federal Register notices appear that it really kind of perks up people's ears. And so I just wanted to highlight that BOEM does regularly update our website as projects advance. Walter Cruickshank earlier highlighted that we have many projects in the pipeline and they continue to progress. Our newer leases have also sort of strengthened the reporting requirements to increase transparency in this process. And another resource I would direct folks to is FAST-41 Permitting Dashboard which is routinely updated as projects advance and provides information on the status of the various permits associated with offshore wind projects as well as providing timelines for these permits. Next slide, please.

The other thing we heard was that the U.S. should look to international models for guidance on transmission planning really to learn from some of our European colleagues on their efforts. And DOE and BOEM have engaged with and we continue to work with several foreign counterparts and delegations to

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discuss transmission planning and learn from these lessons that they've already experienced including Denmark, Germany, United Kingdom, Netherlands among others. Next slide, please.

So another thing that we heard was a need to continue engagement with the fishing community and to continue to find ways to avoid and minimize impacts to the fishing industry from this transmission planning effort. So a couple of things I wanted to highlight here is that BOEM does require lessees to create a fisheries communication plan and employ a fisheries liaison to discuss any aspects of the projects as they advance. And I also wanted to highlight that just last week we were able to release draft fisheries mitigation strategy and the link is there for those that would like to review that. There's an open comment period right now to provide input on that and there will be associated meetings that we will post over the course of the next month. So I encourage all to take a look at that and participate in those meetings. Next slide, please.

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So there's also strong interest in ensuring the domestic supply chain and associated jobs are developed in conjunction with the development of the offshore wind industry and the associated transmission infrastructure. I wanted to highlight a couple things that BOEM has done for this. In our last couple of auctions, for example, in the New York Bight we included operating fee incentives for workforce and supply chain development as well as requiring efforts to enter into project labor agreements and provide a supply chain statement of goals. In the Carolina Long Bay, which was our most recent auction, we actually included bidding credits to support workforce training and domestic supply chain development.

And again, in the proposed sale notice for the California lease sale, again, we have similar bidding credits proposed and again, that comment window is open as well. So if you see ways to support that, please feel free to comment on the PSN. And perhaps

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Stakeholder Workshop-v1

really encompassing the all of government approach that this effort will take, the administration just this week announced, in conjunction with several states, a partnership to grow American made clean energy. So if you have not seen that, please also take a look at that one. Next slide, please.

So another thing was to ensure that tribal nation engagement and offshore wind projects and the associated cable routing was thorough. And so a thing that we did there is we did modify some of the language in our most recent leases for lease stipulations. For example, we now require a Native American tribal engagement plan with progress reporting requirements and we also require lessees to consult with tribal nations on transmission routing prior to proposing a route in a construction operations plan that would come to BOEM. Next slide, please.

So with that in mind, I hope we've been able to highlight that we are taking what we hear very

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Stakeholder Workshop-v1

seriously and really trying to make efforts to address these things and would really appreciate the feedback that we've gotten thus far. So we're continuing to work on these issues and we would hope that the continued input and collaboration with everyone here will help us to continue to advance these efforts. So again, please use today's workshop to give us feedback and share your thoughts. I've been enjoying the mentee sessions and seeing what comes there as well, but also feel free to use the features of the web platform and also the email address there, once again, will remain able to take information from you well after the workshop. And again, keep an eye out for upcoming convening workshop series, as we highlighted, and look forward to the discussion today.

MEREDITH BRASELMAN: Josh and Alissa, thank you so much.

We do have time for questions. So please continue to submit them in the chat and send to the host. So the first question is, is there a study plan for the Gulf Coast?

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Stakeholder Workshop-v1

ALISSA BAKER: That is a great question. There is no national study going on for transmission in the Gulf Coast as of this moment. We are hoping to move this effort and duplicate the Atlantic plan into the Gulf Coast. It will be coming in the next couple of years, really just pending funding from Congress and kind of the results and how useful this is in the Atlantic.

MEREDITH BRASELMAN: Okay. How is the analysis effort grounded in the practicalities of ongoing interconnection and ISO transmission planning efforts?

ALISSA BAKER: That's a really good question. I think we all know that modeling is one of those sciences where it's only as good as the input that you put into it. And so that's one of the reasons why the technical review committee for the study is so very important. We've got folks from the RTOs, the utilities, the developers, coastal communities, we've got folks from tribal nations all there looking at the inputs to the

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Stakeholder Workshop-v1

study as it's being designed and setup through every iteration, through every initial result that comes out of it to kind of fact check it and make sure it is grounded in reality and it makes sense with the systems that those folks know so much better than we do as the federal government.

MEREDITH BRASELMAN: Josh, this question is for you. How will BOEM use the lease payments for the offshore wind industry, for example, regional transmission upgrades? My current understanding is that the lease payment can go anywhere in the federal treasury.

JOSH GANGE: Yeah. So for the lease sales, BOEM does not control the funds that come in from auctions, for example, that does go to the federal treasury. As much as I would like to say that it comes to me and I get to direct where it goes, it does not, unfortunately.

MEREDITH BRASELMAN: Okay, next question. The Atlantic Offshore Wind Study's plan to be finished in Q4 of

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Stakeholder Workshop-v1

'23, this shall be the basis for future plans, however, New Jersey, New York, and New England are already today working on plans. Will the study come too late?

ALISSA BAKER: Yeah. I mean, they say the best time to plant a tree is ten years ago, right, and the best time to do a study is five years ago. So I mean, that's obviously a concern is that we wish we already had the results in-hand. You know, but part of what we're really doing here and with those milestones that we laid out every quarter, we're pulling every drop of information that we have to share with those who are making those decisions at the states, at the RTOs so that we can - We can't rush some things, we're going as fast as we can to still have quality results, but yes, we know that some of those results are needed before the two year timeframe and that's why we add these convenings, that's why we have TRC setup the way we do.

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Stakeholder Workshop-v1

MEREDITH BRASELMAN: A clarifying question from one of our attendees today. You mentioned the DOE Offshore Study, is this the same as the Atlantic Offshore Wind Study or are we talking about some other study? If other, what is the status?

ALISSA BAKER: Ah, yes, I apologize. The Atlantic Offshore Wind Transmission Study is a mouthful and it comes out of my mouth quite frequently, so sometimes I do abbreviate and I apologize, I do mean the same study that's going on, and you can find details of that on NRAL's page.

MEREDITH BRASELMAN: Alright. Are North Carolina and South Carolina included in the study?

ALISSA BAKER: Yes, they are.

MEREDITH BRASELMAN: Okay. Let's see here. Is BOEM working with regional transmission organizations on the study?

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Stakeholder Workshop-v1

JOSH GANGE: Yes, we are also a part of that and continue to engage with RTOs in planning, so, yeah.

MEREDITH BRASELMAN: Very good, alright. Give us just a moment to catch up, make sure we're going through, okay. How does state jurisdiction impact offshore transmission planning efforts?

JOSH GANGE: Well, lots of ways. I can throw in a few then Alissa, you can also take over. Most obviously, you know, it is the states that are purchasing this power through their various state goals. So they have an enormous control over and influence over where the power is going. Dr. Cruickshank highlighted some of those goals earlier today. And so you can kind of use that to put together where that power does need to go as things develop. In addition, BOEM doesn't have jurisdiction over state waters or land-based issues. So really working with the states to optimize these plans is integral.

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Stakeholder Workshop-v1

MEREDITH BRASELMAN: Okay. Is it a plan to have a workshop between ISOs, RTOs, and BOEM?

ALISSA BAKER: Yeah, absolutely. That is one of several workshops. We've already had one of those and we plan to have several more. So it really just depends on the specific topics that's in play, who's the decision maker on those topics, who do we really need to bring around the table so that we can really foster a collaborative working space. So absolutely, that's in the plan, absolutely. We see that those partnerships are so critical.

JOSH GANGE: I would just add, not just one I would say, almost every topic there will likely be some sort of involvement of ICOs and BOEM.

MEREDITH BRASELMAN: Very good. Alright, Alissa and Josh, thank you so much. We appreciate it. We are going to keep ourselves on time here today, so we are going to move onto our next panel. I want to introduce Melissa Pauley, Program Analyst for the Office of Electricity

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on assignment to the Wind Energy Technologies Office at DOE, to introduce our next panel. Melissa?

MELISSA PAULEY: Hi, thanks, Meredith, hi, everyone. Next on the agenda is a panel session on offshore wind transmission development. Transmission infrastructure plays a fundamental role in delivering the benefits of offshore wind energy. Over the next 45 minutes we will have a guided discussion followed by Q&A. Our panel will provide a federal agency, transmission operator, state, and project developer perspective on the major phases of transmission development including siting and permitting, interconnection, procurement, and design and construction.

These phases, aspects of which occur in parallel, present both challenges and opportunities. Public education and engagement opportunities will also be highlighted. So first, let me introduce our panelists. Josh Gange has been a Renewable Energy Program Specialist with the Bureau of Ocean Energy Management since 2017. In this role, he's a project

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coordinator for the federal review of offshore wind projects in New England, New York, and the mid Atlantic. He also works to develop bureau policy on offshore wind transmission issues. And we just heard from Josh, so he'll be back.

Suzanne Glatz is the Director of Strategic Initiatives in Interregional Planning for PJM. She leads strategy development and implementation of key initiatives of the System Planning Division. These initiatives include public policy planning for the integration of offshore wind, the expansion of distributed energy resources, and the transition to a decarbonized grid as well as providing guidance on FERC matter relating to planning policy.

Laila El-Ashmawy is a Project Manager at NYSERDA working on offshore wind procurements and also achieving New York State's renewable energy goals. And last, John Vu is the Executive Director of NextEra Transmission where he is responsible for transmission development in the northeast region. So

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to get started today, we will first turn to Josh Gange for an overview of the steps involved in the siting and permitting of offshore wind transmission and how public engagement is integrated into that process.

JOSH GANGE: Thank you, happy to be back. Let me go to the first slide. Great. As mentioned, I'm just going to give a quick overview of the process for the permitting of transmission from BOEM's perspective, anyway. So I won't read the regulatory language here, but essentially what OCSLA, the Outer Continental Shelf Land's Act, allows the Bureau of Ocean Energy Management to issue leases or right of ways for renewable energy purposes. In fact, it is required to obtain a lease or a grant for siting of offshore wind or the associated transmission. Next slide.

So there's essentially two paths for this. And that is transmission is part of an offshore wind lease or transmission under a separate Right of Way Grant. So any of the leases that we issue, per our regulations,

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confer the right to one or more project easements without further competition for transmission. So to connect the offshore wind resource to a point of interconnection and again, that comes with the lease authority. The other option is through a Right of Way Grant and this is where someone would come in, a second party, and say I would like to connect an offshore wind resource to land via a cable or a backbone system or regional system. Next slide, please.

So the way this works, perhaps a little easier is to start off with the transmission as part of the lease. So the way this works is a lessee goes to the various appropriate state entities and utilities to determine where they could potentially connect and where they could make landfall. It's important to note that BOEM doesn't have jurisdiction over the landfall sites or the state waters. So typically they go to the states to discuss possible options. So once this sort of point of interconnection is determined and this also would involve a grid connection study, which I'm sure

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the folks speaking for the ISOs today will talk about, but the easement to shore is then granted with the lease and the details of this easement are provided as part of the construction and operations plan, which details exactly what they're proposing for both the offshore wind project and the associated transmission. And this easement can be presented in the COP as project design envelopes or a few options could be considered. And it's not until that COP is approved that the easement is granted, so that's kind of towards the end of the process.

The other option is the Right of Way Grant. Go ahead, next slide. So the other option there is through the Right of Way Grant process. The first step here is that we actually are required to determine if there is a competitive interest in doing this. So we have to issue a request for competitive interest that solicits information about the area and the project that's being proposed and determine whether there are others that would like to build sort of the exact same project and that the two wouldn't be mutually

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exclusive. So if there is no competitive interest, or if there is competitive interest, we would have to utilize a competitive process similar to our auctions that we use for leasing. And then we would conduct an environmental analysis and assess the multiple use conflicts prior to making a decision on whether to issue the Right of Way Grant. Next slide, please.

So the Grant holder then would propose the project within one year and this is in form of a General Activities Plan which is analogous to our COP that gives, again, the details and discusses the methods and equipment that would be utilized. And this would also trigger additional NEPA processes. So an EA or an environmental assessment and associated consultations prior to any approval installation or denial. And again, any of these NEPA processes also come with opportunities for public comment. Next slide.

I think that's it. I just wanted to give a quick overview of our permitting process and how we take a

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look at transmission solutions. And happy to have discussion later. Thanks.

MELISSA PAULEY: Thanks, Josh. And next Suzanne Glatz will provide an overview of electrical interconnection for generation and transmission projects. Laila will discuss some of the models for state procurement that enable offshore wind transmission development.

LAILA EL-ASHMAWY: Alright, thank you so much. So I'm Laila, I'm a Project Manager on the Offshore Wind team at the New York State Energy Research and Development Authority or NYSERDA. I actually manage our offshore and procurement process, so the OREC RFP. And I'm joining you today from our office in New York City. I'd like to focus on the state's role in offshore wind transmission from the planning and studying capacity, but before diving in on how our work influence offshore wind transmission, I'd like to talk a little bit about what is driving all of this work at New York State, elaborating more on Congressman Paul Tonko's remarks and very nice to see

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the congressmen championing our work at the national level. Next slide, please.

So the work we do is guided by the Climate Leadership and Community Protection Act or the Climate Act. The Climate Act calls for the most aggressive energy transition and decarbonization goals in the country. This includes 100% carbon-free electricity generation by the year 2040 and an 85% economy-wide reduction in emissions by 2050. Next slide, please.

In support of these long arcing goals, the Climate Act lays out some resource specific targets and we're currently mandated to procure nine gigawatts of offshore wind by 2035, as Dr. Cruickshank mentioned earlier, and New York is roughly halfway through this current target. However, when we look to the longer term, and these goals of decarbonizing the grid and then expanding the electrical system to electrify other sectors of the economy looking to 2050 and beyond, it becomes very clear that much more than nine gigawatts is needed for New York.

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When it comes to offshore wind transmission planning, that's the first question we have to answer, how much offshore wind will we be needing transmission for, how big is the challenge? The pathway to integrating nine gigawatts looks very different than say 15 or 20 gigawatts. Next slide, please.

So then we move on to the next question we need to answer, where will it go? When we talk about the state's role in building transmission, our work really involves doing a lot of studying to understand the system, where are the points of interconnection onshore, and what is that local system around those points look like? So where's the power going and how can it flow from there? What upgrades may be needed? So this slide is what I would call sort of a real time example of how the state plans offshore transmission.

In January 2021, the Department of Public Service released a power grid study that, in part, took a

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very critical look at our poles and wires in New York and came up with some recommendations for how we can reach the nine gigawatt offshore wind target and then how we might expand beyond that in the Offshore Wind Study, part of that Power Grid Study. And in short, the study found that our current target of nine gigawatts is possible to inject in the current system provided it's done strategically and with priority on getting most of that nine gigawatts of power into New York City.

This then introduces another key question we aim to answer, how? What is the pathway to lay all of those cables needed through a very busy and congested maritime area that's ecologically sensitive and really a physically narrow space to access into New York City. It's actually called the Narrows, this space between Staten Island and Brooklyn. So we spent a lot of time studying cables and have undertaken a cable corridor study to identify those best pathways and technologies, like HVDC for the ability to carry more power longer distances with a smaller ocean

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footprint. Also on the how, the Power Grid Study does call out the importance of complimentary technology and enhanced grid solutions such as storage to help us achieve a higher penetration of renewables on the grid. Next slide, please.

So I'm going to zoom in here a little bit and talk about the state procurement and how we advance offshore wind transmission through the RFP process. Some of you may know, NYSERDA is currently preparing to launch the third Offshore Wind Solicitation that's looking to add at least two gigawatts of projects to our pipeline. This RFP process procures projects on a radial basis where transmission is part of the offshore wind lease. So that's the first pathway that Josh described at the top of his presentation. So our RFP includes the generation asset or the offshore wind facility and the transmission assets including the offshore substation and the radial export cable all the way to the onshore point of interconnection.

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Currently, New York State has authorization to procure offshore wind on this radial basis and then with some added specificity given to us through the Public Service Commission orders on the Power Grid Study recommendations which came out in January of this year. This order prescribes the design of our next procurement, it really signals an important shift for New York where we will consider the value and the entire portfolio effect, what's good for our overall system rather than what's best on an individual project basis. So we're considering our key challenges of getting beyond nine gigawatts of offshore wind, possibly even double that amount as suggested in the latest Climate Action Council Draft Scoping Plan.

And then there's the need to expand or repurpose existing onshore points of interconnection and upgrade the local transmission system. We need to get as much power as we can into New York City and then considering those constrained cable routes. So we have authorization to now procure projects preferring

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HVDC technology. We're procuring projects and mandating they must be meshed-ready, which is essentially a project with a plug and play setup on that offshore substation, so it allows for in the future the offshore substations to connect to each other. So the idea here is to put a modest upfront cost that will save us the cost later of needing to go back and build it again. It's very difficult to build something retroactively. So if we procure now and take into account this future optionality or flexibility for those offshore substations to connect to each other, that's something that the Commission has allowed us to undertake now to preserve that option in the future.

So through all of this process, how can stakeholders be involved? The Power Grid Study and all of these studies which inform the Commission and the Commission makes rulings on or orders on are published on New York State's Department of Public Service Matter Master, the number is 18-E0071 in the matter of offshore wind. So public comments can be

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filed there, can be viewed there on all of these state-wide planning processes. And at NYSERDA specifically, we undertake a public comment period before many of our procurements. So just as an example, in preparation for this upcoming third Offshore Wind Solicitation, we undertook two public comment periods, we released a draft of the RFP, and we received over a 1,300 comments from over 60 different stakeholders through this process.

And we take it very seriously. I personally read through all of those comments and take them into account and put pen to paper on the solicitation. I'll also mention that New York is quite special as a single state ISO. And even though we find the work we're doing to integrate offshore wind and the other goals laid out in the Climate Act to be extremely challenging and new, we do benefit from being very nimble in this regard as we can look at our system somewhat in isolation. So that's my time, thank you so much.

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MELISSA PAULEY: Thank you, Laila. So we will move to John next and then circle back to Suzanne. So John Vu will discuss how a transmission project is planned and executed from a developer perspective including how designs are tailored to the specifics of a procurement action. John?

JOHN VU: Hey, good morning or good afternoon. I have to apologize in advance, I think there's a little bit of construction going on outside my office so you might get some inadvertent noise every now and then. So I'm John Vu, I'm with NextEra Energy Transmission and we're very much involved, along with the rest of the industry, on trying to develop the most efficient and effective way to integrate offshore wind. And as a developer, I think we offer a unique perspective because we touch all of the aspects of a project from planning to permitting, design, execution, coordination with other developers, state and federal agencies, and even the host communities. And so these are all considerations we have to take into account before the project has even been fleshed out.

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As a former transmission planner, I've seen firsthand how coordinating an approach to transmission planning is more efficient and effective overall. This is true whether it's for onshore or offshore transmission facilities because it allows you to avoid a costly band-aid approach to upgrading the transmission system. And this is one of the reasons why the FERC NOPR process, that I think Alissa was mentioning earlier, is putting an emphasis on long range transmission planning to address renewable energy goals and it's really the same process or same concept that we're trying to achieve here with offshore coordination and transmission planning.

A great example of this. Sorry, next slide. A great example of this is the New Jersey State Agreements approach, which really highlights the benefits of a competitive coordinated approach. The figures you see here are based on actual proposals with the ability to inject 6,000 megawatts on both pictures that you see there. On the right you see a project that delivers offshore wind energy into a single location

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through a transmission super highway. And compared to the proposals on the left, you can see that the project delivers the same amount of offshore wind but reduces environmental and community impacts by about 75% and reduces the cost by half.

Conversely, if you didn't take a coordinated approach and you really only sized your highway not as a super highway and you wanted to come back and try to inject the same amount of power into the same location as before, you would either have to tear down that highway using that same analogy or build multiple highways to get to that same point of interconnection. And that's why it's important to really coordinate early on with the end game in mind. Next slide.

Now, offshore transmission development is complex and it's got some unique interactions that do need to be considered. We have to consider the different onshore upgrades that are needed, the transmission facilities themselves, and how the generators will need to

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connect to the platform. For example, siting the offshore platform location closer to the lease areas will reduce platform locations, platforms, and cables needed to interact to the project which in turn reduces the overall costs and impacts of the project. So there is an optimization that has to go on between what happens offshore, onshore, and with what the generators have to do. In addition to that, I think when designing and sole IPing [phonetic] routes and points of interconnection it's important that as we engage with host communities to allow both sides to identify and address any potential concerns. And it's important for a developer to make that connection with the communities early on.

Now, because offshore wind has to interconnect to the coordinated transmission line, there are potential impacts on how the states might procure offshore wind therefore having added flexibility for optimizations with the offshore wind procurement processes can help align both generation and transmission facilities. The states also need to account for the timing of

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such offshore wind procurement and how that aligns with the construction of the transmission facilities. So in addition, the states might consider leveraging federal programs to help procure offshore wind, such as DOE Transmission Facilitation Program, which could potentially be used to procure or part of an offshore transmission highway.

Finally, kind of the third gear here that kind of links this all together is the permitting processes that Josh kind of touched on through the BOEM permitting processes being, you know, any state permitting processes that really affect how you site and permit offshore transmission and generation. The BOEM permitting processes could be streamlined to be more aligned with a coordinated transmission approach. And another consideration is that the need for competitive process to grant a right of way or rise of use easement versus at the state is already conducting its own competitive processes. Maybe there's a need to kind of rethink how that is being utilized or needs to be done today.

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So, in conclusion, I think we all share a common goal here to develop offshore transmission more effectively and efficiently and that does require a lot of coordination between the developers, state and federal agencies, with the communities, the RTOs and ISOs. And I think there's a lot to be learned from the existing processes today and potentially improvements upon that because I think we all share a common interest in achieving 30 by 30 as effectively and efficiently as possible. Thanks for your time.

MELISSA PAULEY: Thank you, John. And next, Suzanne Glatz will provide an overview of electrical interconnection for generation and transmission projects. Suzanne?

SUZANNE GLATZ: Yes, good afternoon everyone and thanks so much for accommodating my little internet skip just as I was about to speak, great timing, as usual. So thank you very much for allowing me to speak to you about this topic. I'm happy to provide the RTO or

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regional transmission organization perspective on the interconnection process and what it takes to get transmission built for generation. If we could go to the next slide, please.

So I'm going to talk about two phases. So primarily I'm going to talk more about the study phase and that is a really critical step in the interconnection process that happens long before any construction begins, but the construction phase is also an important phase and we should spend some time to talk about what it takes to get a project built. And I know certainly John and others have already spoken a little bit about that and I'll talk about how that factors into the role of PJM. So if we could go to the next slide, please.

Alright. So what we often like to say at PJM is reliability is job number one and that is why in order to ensure that the system is going to be reliable for every generator, not only offshore wind, but every generator that seeks to connect whether

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it's solar, natural gas, nuclear, any power plants, they all have to be studied, put through a rigorous battery of tests that ensure that they will be reliable and can operate reliably and safely under a wide range of operating conditions.

And while I am talking about, these are PJM study processes, I will say that any regional grid operator is going to be applying the same level of rigor to ensure that the grid can operate safely and apply not only their local criteria, but NERC mandatory Reliability Standards. And the purpose of this analysis, there's a number of steps of it, so I think somebody already mentioned earlier in the discussion today about modeling. So that's a big part of the process. Each generator that wishes to interconnect to the PJM grid will submit a very detailed application with all the information about their project so that PJM transmission planning engineers can then build all the analytic models that are needed to study what happens under certain conditions such as the loss of a transmission line that might

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fail or other parts of the transmission infrastructure. Where does that power flow and will it exceed the limits or do we need to build new transmission?

And so that's one of the key outcomes from all this analysis that is to identify if new transmission is needed or expansions or upgrades to the existing power grid in order to accommodate all this energy that would now be flowing on to the system from these offshore wind generators. We can move to the next slide, please.

So what I'd like to talk about or illustrate here is the amount of time and the steps that it takes. So all this study work, that's fairly rigorous, it doesn't happen just in one shot but actually happens in multiple steps. Some of the initial phases are allowed just a very high level view or almost like an initial screening of what are the impacts to the transmission's grid. And then as the study process progresses, it'll identify much more robust analysis

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that will identify with more accuracy and more precision around what the expected impacts and costs as well as the schedule to build all the transmission should that generator want to continue to move forward with the process to the stage, at which point it would be issued an interconnection service agreement. Now, this phase, if you look at the days up above, will take approximately, well, more than two years to complete the full study process.

I also want to highlight that what I'm illustrating here is actually the new process that PJM just filed at the Federal Energy Regulatory Commission to implement. The changes are largely around the timing and the procedure of how to process all these generators that are seeking to interconnect to the PJM region. The technical analysis is the same. It's what we do today and what we will do tomorrow. It'll be the same rigor that is applied to all of the generators, again, not only offshore wind, but all generators that are looking to interconnect to the grid.

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And I want to explain the reason we're making these changes is that in the recent years, as a result or in response to the various public policy initiatives that many of the PJM states are addressing, we've received a huge number of requests. When we first started our interconnection queue, we would have been on the order of hundreds of requests, now we are in the order of thousands. It's a significant amount of work that has really challenged our processes and our tools in order to get all these projects studied in a timely fashion. And so we are moving towards this new process that will help us essentially remove the backlog of generator projects, lessen the speculation, and get to more real projects that will be ready to move forward. And so this transition we feel is really critical to continue, not only the interconnection of offshore wind but, all the generation that's seeking to interconnect to the grid to achieve the various state public policies. I'd like to go to the next slide, please.

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So we've talked about the interconnection process and I want to emphasize that all generators that wish to interconnect must submit an application through the interconnection process and this is the primary means by which PJM determines what transmission is needed to accommodate these new generators. However, there's also another path that can be utilized, it's a complimentary path, it doesn't supplant the interconnection process but works together with it, where we can study the system or potential impacts of generation interconnection to accommodate, not only a single generator that would submit its application, but rather an entire program that might be implemented by a state, not only for one generator but for multiple generators over multiple years. And this would allow that opportunity to provide coordinated planning.

And as John just spoke, and for PJM we call this the state agreement approach. In other regions it may, more specifically, be just called the public policy planning process, but essentially, they are serving

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the same purpose and that is to enable states to implement their various public policies. And for those not familiar with PJM, I should note that PJM covers all or parts of 13 states and the District of Columbia, so we are a multistate regional transmission organization. And so there's an opportunity for one state to have a policy that it's ready to advance and other states that may not.

So a critical requirement or element of this process is that we can only build that transmission under this process is if that state agrees to the cost responsibility to develop the transmission. But, it does provide a number of opportunities. One, obviously, it provides a coordinated approach in which case we can potentially identify more efficient or more optimal design to meet not only the first project, but the second, third, fourth, and however many projects are envisioned to meet the entire public policy goal.

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This process also allows us to use our competitive transmission planning process where in which we can solicit innovative solutions or cost-effective solutions from many transmission developers in the industry. And as I mentioned, we are currently implementing this process right now in collaboration with the state of New Jersey to interconnect 7,500 megawatts of offshore wind. We are nearing the end of this process in which we expect that New Jersey will be making a selection or making its decision before the end of this year. And we're very happy to have been able to avail our transmission planning expertise to New Jersey in order to support this very important initiative that they have.

I also would encourage that those who are interested in this very specific process, that you're welcome to visit PJM's Transmission Expansion Advisory Committee page which is on our PJM Planning page and this provides a great deal of information about the window, and if you're looking for updates, they can be found on that page. And this committee, the TEAC,

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as we affectionately call it, is open to all stakeholders to participate and to attend and provide feedback to PJM.

I also want to note that, as we are again collaborating with the state of New Jersey, they are also conducting their own independent review and evaluation of the proposals that we have in front of us and have also conducted a number of public stakeholder meetings and sought input and I would encourage others to also, if they are interested, to visit the New Jersey Board of Public Utilities website for more information about the activities that they're conducting. Okay, if we could go to the next slide.

So I just talked a lot about the study process which is a really, really critical part of developing transmission and sometimes less visible just by virtue of the fact that it's a lot of heavy analytics before you actually see anything built, but then the actual construction is another critical phase and

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Stakeholder Workshop-v1

we've already heard a little bit about some of the challenges with siting. And therefore, even when you have an interconnection agreement in place, which is the culmination of the PJM interconnection study process, which identifies that there may be a new transmission line needed or new substations, all that work will have to go through all the other normal processes that apply for building transmission which may include state siting processes, it may include permitting through either state or federal agencies.

These are all the responsibility of the transmission developers or the generator developer that's constructing those particular facilities and those are all also opportunities where public interested stakeholders can participate in that process. So as I mentioned, PJM does not construct the facilities, we don't own any of the assets, these are all our trans-member transmission owners or generators that participate in PJM's wholesale market and connect to the grid in order to participate.

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Stakeholder Workshop-v1

So I guess there's just a few points that I do want to leave everyone with that probably echo the sentiments that you've already heard today. And that developing the needed transmission to interconnect these resources does require a considerable amount of time, on the order of a number of years, starting with the initial planning studies and further development studies, the detailed engineering and design and construction of the transmission, and it does require a significant collaboration with many entities. As I mentioned, we're collaborating with the state of New Jersey in this particular area with New Jersey offshore wind, but it does really require input and participation from state and federal agencies, from the industry, as well as from the public that are going to essentially make this possible.

So just lastly, I would encourage anybody who is interested in the PJM phase of the planning process to certainly visit the PJM webpage and I did include a link on the last page. Thank you.

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Stakeholder Workshop-v1

MELISSA PAULEY: Great, thank you, Suzanne and thank you to all of the panelists for your insights. So in summary, this panel has shared multiple perspectives on the development of offshore wind transmission and the interlinked siting and permitting, interconnection, procurement, and design, and construction phases. Our speakers have shared their perspectives also on some of the challenges and the opportunities associated with this infrastructure development in the ways in which the public can provide input to shape the benefits of offshore wind energy. So thanks again to everyone.

We'll move to our Q&A session next and we have received quite a number of great questions. So the first question, everyone has touched on this a bit already, but how does the public engage? And maybe Josh, we could start with you, if there are any other comments you'd like to provide and open it up to all of our speakers. And again, you can please submit your questions in the chat box.

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Stakeholder Workshop-v1

JOSH GANGE: Sure, from the BOEM perspective I would say that there's quite a number of ways the public can provide input into any of the transmission decisions. First, in terms of, if we're talking about a transmission associated with a lease, the notice for - the NEPA process involves the environmental impact statement which reviews the construction and operations plan which would detail any sort of proposed routing measures. And that comes with multiple opportunities for comment, often public scoping meetings, often the mandatory public comment periods that are open through the regulations.gov.

In terms of Right of Way Grants, the first step would be, again, the publication of the request for competitive interest. And there, again, would be a comment period. And there may be associated scoping meetings, again, when the environmental assessments are done for any Right of Way Grant. So I think there's quite a few ways, and just more generally, BOEM often has subject matter specific meetings

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Stakeholder Workshop-v1

throughout the country and the East Coast that offer more detailed discussions of specific topics. With that, I'll let anyone else weigh in as well.

MELISSA PAULEY: Thanks, Josh. Any of our other speakers?

SUZANNE GLATZ: This is Suzanne Glatz with PJM. I think I had already mentioned about the Transmission Expansion Advisory Committee and that is probably the key committee at PJM that we conduct monthly meetings that are open to the public that anybody can participate in to learn more about the specific regional planning processes including the state agreement approach. Additionally, I'd like to also add that regarding all generators that are looking to interconnect to the PJM grid, we also post all the information about the study process and about all the generators that are in the queue, what phase they're in, what type of generation, how much, and the different type of field type, as well as all the study reports that are completed. That's all

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Stakeholder Workshop-v1

publically posted on PJM's website under our
interconnection webpage, under the PJM page.

MELISSA PAULEY: Thanks, Sue. John or Laila?

LAILA EL-ASHMAWY: Yeah. I will reiterate the New York
State Department of Public Service docket is an
excellent place to view public comments, file public
comments, and keep track of all the statewide
planning on transmission. I mentioned the offshore
wind matter master was number 0071 and the proceeding
on the transmission planning is 0197.

MELISSA PAULEY: Thank you. John?

JOHN VU: Yeah. I don't really have anything else to
add. I think we really rely on the RTO, the ISOs, the
state and federal processes for the public
engagement, outside of what we would do voluntarily
ourselves prior to a project being formally
conceptualized or designed, if you will. So nothing

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Stakeholder Workshop-v1

else to really add to what Josh and Sue mentioned here.

MELISSA PAULEY: Okay, great, thank you. So we'll move on to some of the additional questions that have been coming in. So the next question will be Laila. Who will own and operate the interconnection between offshore substations?

LAILA EL-ASHMAWY: Great question. So in the draft RFP we released back in March there is also a draft of what is Appendix G, that is the technical requirements to meshed-ready. We describe in here what the substations need to have to be able to support such interconnection, but then we also really recognize that at the time that this interlink between offshore wind farms is established that will require a step change, and public service commission orders, there will be changes to the tariffs. So at this moment, we can only plan technically for them to interconnect, but as far as who will own and operate in the future, that question will be determined at a

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Stakeholder Workshop-v1

future date. So we don't actually know is the short of it.

MELISSA PAULEY: Okay, thank you. The next question is for Sue and possibly other speakers. When projects in the New York offshore wind lease area are being planned, which entity would oversee and develop a potential backbone offshore grid system? And what if the projects are connecting both to New York ISO and PJM territories within that potential backbone system?

SUZANNE GLATZ: Yeah, thanks for that question. So all generators, if they are looking to interconnect to the PJM grid, will be subject to PJM study processes. If the generator is looking to interconnect to the New York grid, then they would submit their application to the New York ISO. That being said, PJM does coordinate interconnection studies with our regional grid neighbors so that if there are impacts to either system then we will identify those impacts and assign that responsibility to ensure that whatever needs to be built, if you check transmission

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that's impacted on PJM to accommodate New York or vice versa, we will coordinate those studies, but it depends on where the generator specifically is going to interconnect its project.

MELISSA PAULEY: Thank you. Would anyone else like to weigh on that particular question? Okay. So I'll move on to another question, I think this one could be for either John or Laila. And it is, how will we ensure today that the interoperability of different HVDC suppliers for the future? And they're suggesting that today there's no modularity between these different HVDC suppliers. So maybe John and then Laila, if you could try to take that one.

JOHN VU: Yeah, I'll take a first stab at that. I think it really depends on how you interconnect the different offshore platforms together. I think NYSERDA has proposed, I think, a design that I think Sue is seeing on the PJM side in the state agreements approach where you can interconnect the offshore platforms on the AC side of the project and you would

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not have the issues with different manufacturers and different technologies being able to connect to each other. If you were to try to interconnect on the HVDC side, there are some, I think, the industry is not there yet and I think there are some additional challenges that need to be overcome first before that's possible, but connecting the platforms together on the AC side is feasible and has been done in Europe before.

MELISSA PAULEY: Thanks, John. Laila?

LAILA EL-ASHMAWY: Yeah, no, that's correct. I was just going to reiterate that same point which is, excuse me, what we proposed in New York is that the offshore links are all AC and then you have a DC connection just for those radials, so separating the AC onshore grid from the AC offshore grid, but otherwise very consistent with John's answer. Thank you.

MELISSA PAULEY: Great, thank you. So the next question will be for Josh. And this is a two-part question.

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Should BOEM regulations be revisited to think about whether leases should default to include transmission rights of way, which contributes to a lot of radial connections and could limit future development? And then the second part of the question is, could the program be structured around lease areas to provide incentives to utilize planned transmission rather than radial lines?

JOSH GANGE: I've got a couple of thoughts on that. And first, I would point out that BOEM is looking towards sort of a more planned approach now, as evidenced by this effort. But, in our last couple of leases we actually, in the final sale notices, we actually sort of gave notice that BOEM has the ability to condition the approval of a construction operations plan use of non-radial solutions where appropriate. So because you are guaranteed an easement, a non-competitive easement with your lease, it does not really specify in that lease where that goes to. So that easement is still sort of needed even if your point of interconnection is offshore.

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So let's say there's an offshore backbone system existing in the water, the lease would still need the easement to connect the wind farm to that point of interconnection even if it's a short distance from the wind farm itself. So I think regulations-wise, we still will need that non-competitive easement process, but there is sort of a lot that can be done with sort of policy on what's the best solution for connecting that wind. And I'd also invite comment from the state as well, in that the states do have the ability or more of an ability to sort of condition what system is being used as part of their power purchase agreement or off [unclear] agreement. That being said, I think it's sort of an all of government approach to figure out these solutions.

MELISSA PAULEY: Thanks, Josh. Our next question is for Sue. How would merchant transmission be considered within existing processes?

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SUZANNE GLATZ: So merchant transmission is handled in a special way in terms of the PJM region. So I should first clarify, when we say a merchant transmission project, what would qualify is a new line that's going to interconnect PJM to one of its neighboring regions and we do have several merchant transmission lines that are in service today that interconnect the PJM grid into the New York ISOs grid. So that process, essentially, would be they would still have to come into the interconnection queue, the same as all the generators, and submit their application for how much energy they wish to either withdrawal from the PJM grid or inject into the grid, as well as provide all the technical details and parameters about their project.

So merchant transmission is really about enabling the flow of energy between PJM and its neighbors. If there is an interest in developing merchant transmission for generation, currently PJM's process does not really support that type of business model. I will say that we did have some interest in that a

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number of years ago, in which case PJM did convene a stakeholder process with all of its members to explore whether or not that was an appropriate model or a viable model to accommodate the different state policies. Ultimately stakeholders did not see it as necessary and so that process was concluded without changing the rules.

So the merchant transmission, at this time, is primarily to interconnect the two regions. It is possible that at some point there may be offshore wind generation that might at some future date interconnect to one of these tie lines, but right now we don't have any such projects that are in the queue to do that today.

MELISSA PAULEY: Thanks so much, Sue. Our next question will be for Laila. You stated that New York can accept nine gigawatts without major upgrades, what does major mean in this context?

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LAILA EL-ASHMAWY: Sure. So that is from the results of the power grid study, I mentioned was published in January of last year. So this study was really undertaken in three main parts. One was the onshore, what are the bulk transmission upgrades needed? So when I say major I mean this bulk transmission upgrades, those are split into phase one projects and phase two projects. Basically it means that we have enough space on our grid to inject nine gigawatts without triggering any of those bulk transmission upgrades. The other parts of that study included an offshore wind study that looked at where those nine gigawatts can go and a 100 by 2040 study, so how do we decarbonize the grid by 2040?

So one of these caveats, we can accept nine gigawatts without triggering bulk transmission upgrades, really depends on the strategic placement of where that nine gigawatts goes. So the power grid study gave a rough estimate that six gigawatts needs to go into Zone J, that's New York City, and three gigawatts into Zone K, which is Long Island. So with that configuration,

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we should be able to connect nine gigawatts on a radial basis without any bulk system upgrades needed.

MELISSA PAULEY: Great, thank you, Laila. And our next question will be for John, it's a technology question. How do you evaluate the maturity of technology when designing a transmission project? And where do you see near-term opportunities for technology maturation to improve the capacity and the flexibility of offshore wind transmission?

JOHN VU: So it's definitely a consideration in terms of how we design a project. I think the main thing is, when is the project needed by? That really drives selection of a technology in terms of whether it's mature enough. And also coordination with the customer in terms of what they're looking for as well. So I think there are several aspects to that area that we have to consider, but I think timing, schedule, the in-service date of the project is probably the most significant factor in terms of how we drive towards a certain design.

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Yeah, that's the primary consideration, I think, but other considerations as well, I guess I'll add onto that, is, again, what is the customer's goal? Are they trying to reduce the number of cables? Do they want flexibility, optionality, and the future, the megawatt amount that you're trying to deliver and inject as well? I think those all play a role as well in terms of technology considerations. So I think a lot goes into that there and I think it really varies by situation.

MELISSA PAULEY: Okay. Thanks, John, for walking us through all of those considerations. So I will ship to Josh. Can BOEM condition non-radial solution for COPs currently under review?

JOSH GANGE: So each COP is sort of analyzed independently. And so it's entirely dependent on sort of what the options are and what's presented in the COP. So I think, for example, if you were trying to condition approval on use of a system that didn't yet exist, I think that would be quite challenging, however, if an

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option is presented to utilize a regional system or if there is part of a large planning effort, you know, there is the ability to condition COP approval on a number of things. So it kind of depends exactly on the specifics of what's there.

MELISSA PAULEY: Okay, thanks, Josh. So next we have a question for Sue which is, what is the role of RTO ISO with regard to the purchase and the distribution of the power? And if each state has a PPA and the project has to be approved and added to the grid, is that quantity of power just sold to the state at the agreed rate or does it go to the bulk power market? And what are the mechanics of the power market in that ISO RTO role? It's a complex question.

SUZANNE GLATZ: That's a very complex question. So I'm going to try to answer it as best I can and I'm going to clarify that I am not a markets expert, but rather I'm representing the planning aspects. So first of all, in terms of the PPAs, those processes are conducted by the states and they may be different for

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each state in how they solicit a power purchase agreement to meet whatever load requirements they have in their state. However, for the planning of the interconnection, that's the part where PJM has a role in terms of studying what are the reliability impacts of the transmission. Additionally, if these generators or these wind turbines or the wind farms wish to participate in the PJM markets, and we have a capacity market as well as an energy market, and so they would be subject to whatever market rules that would be in place to sell their capacity or their energy which can be complimentary to what the state power purchase agreements are in terms of what other compensation they would get for participating in the wholesale market and delivering energy.

And again, they're all a little bit different with each state and so if we had somebody from one of the states to talk about that, they would really be a much better person to talk more about the details of the administration of the solicitation of the energy

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and how that's ultimately compensated for through the state rules.

MELISSA PAULEY: Thanks, Sue, that was a really good overview. I think this next question could be for either Laila or Josh and it is, can a lease granted under the latest New York Bight auction have an offshore wind project that will connect to PJM or would that project have to connect to New York ISO?

JOSH GANGE: I can take this one. No, it could connect to Florida if someone found that economically feasible. All projects in federal water could negotiate with a number of states. So they are not tied to the closest state.

LAILA EL-ASHMAWY: That's correct. And representing NYSERDA, we want them all to come to New York, but I agree, obviously, with Josh, they can go anywhere and that's part of the competitive process that we lay out through these solicitations is that the bids are competing for our contracts and the states are also

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competing for those lease areas. So it's a free,
competitive game.

MELISSA PAULEY: Thanks, Laila. And a follow-up question
for you. If you could go into a little more detail
about what meshed-ready means?

LAILA EL-ASHMAWY: Sure. So our idea here is that a
radial basis, like we described, is you have your
offshore generation, you have one radial line that
connects to shore. You have another project, it has
its radial line, it connects to shore. For these to
connect to each other, meshed-ready is basically,
we'll call it radial plus. So it is everything on
this platform to allow for this connection but
without the cable. So you have, on the platform, the
cable bays, you have transformers that all the
equipment needed, and then at a later time, just the
cable will be laid.

So meshed-ready is this radial plus that renders that
platform plug and play in the future. And then again,

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I'll just add, on our Offshore Wind Solicitation page there is a draft of that technical requirements of meshed-ready. It's under Appendix G on the documents for the RFP.

MELISSA PAULEY: Okay, great, thank you. So we have a few more minutes and it looks like two more questions. So the next one is for John. If you could explain to us a bit about how you determine the maximum capacity in megawatts that you could connect to one point on the onshore grid.

JOHN VU: Yeah, it involves a lot of study work and understanding how the RTO ISOs kind of do their planning studies and being able to replicate their study work. And so there's a point of, you know, at what point do you have diminishing returns as you upgrade the existing system to accommodate more power? And so there's a dollar per megawatt kind of optimization that you have to look at in terms of, well, if I inject 2,000 megawatts into this location, yes, I have to do some upgrades, but we come up with

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those upgrades and kind of make a determination and say, that's only a couple hundred million dollars of upgrades. Versus if I try to get to 3,000 megawatts maybe that triggers a billion dollars in upgrades. And so, it involves a lot of study work and analysis trying to figure out what is the optimal amount.

MELISSA PAULEY: Okay, great, thank you. And I think we'll wrap up with one last question, which will be for Suzanne. Do offshore wind projects for any PJM states need to go through the same interconnection process as all of the other types of generation?

SUZANNE GLATZ: Yes. That is an important point, that I hope I conveyed earlier and I want to doubly emphasize it, and that is PJM's system is an open access planning process that meets FERC regulatory rules for transmission interconnection. And that means that we have to have a non-discriminatory process to study all generation. And so all generation, whether it's onshore wind, offshore wind, solar, battery storage, all projects are subject to

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the interconnection study process and must submit an application to our interconnection queue, and will be studied in the timeframe in which the queue that they are a part of. So yes, they are all subject to the same process, and the same rigor, and the same study analyses.

MELISSA PAULEY: Okay, great, thank you. So we did have a few more questions that have come in, but we are at time for this panel. So we will review all of the questions after the event and try to get answers to everyone whose questions we weren't able to answer right now. So I just wanted to thank all of our panelists again for your really insightful presentations as well as your very detailed answers to all of these complicated questions. It was a great panel and we really appreciate it. And I will turn it back over to Meredith.

MEREDITH BRASELMAN: Thank you, Melissa and thank you to our panelists. We are going to take a quick ten minute break. We encourage everyone to step away,

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stretch your legs, get some water. We will ask you to rejoin and be ready to go at 2:25. And we have a packed afternoon, so we look forward to picking up soon, thanks.

Welcome back, everyone. I hope you had a nice break. Before we get started, a reminder that we are recording this workshop and will be posting the presentations to the Atlantic Offshore Wind Transmission webpage shortly and the video recording of this will be available in about two weeks. So now I want to welcome Sam Salustro, Director of Maryland Coalitions and Partnership Business Network for Offshore Wind, for a presentation on coordinated transmission planning 101. Sam, over to you.

SAM SALUSTRO: Thank you so much. I'm going to confess, I learned a lot in that first session. My purpose here was to sort of give a broad overview of coordinated transmission planning. And we heard a lot about it already, so this will be a little bit of reframing and rephrasing and sort of giving a linear

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trajectory to some of this, but I'm very happy to be here.

I'm Sam Salustro, I'm with the Business Network for Offshore Wind. We are a 501(c)(3) nonprofit educational organization that's headquartered in Baltimore, but we do have a national and international reach. We have over 500 members. We represent - We'd like to say that we represent the whole breadth and width of the supply chain, so from multinational developers to small welding shops in Baltimore. And our focus is on advancing offshore wind and advancing the offshore wind supply chain. And in service of that, we identified early on that transmission and grid work was going to be extremely important, building out a grid that was going to be able to handle the power injected from offshore wind was very important to the overall development of an offshore wind supply chain.

So we created a transmission working group of members. And this presentation is representative of

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our work and our findings. It's supposed to be a snapshot. We got very technical, very fast in the last session, but a quick snapshot. And at the end we're going to talk about a few papers that we've written that go into much more details on this topic and I invite you to read them up.

So to kind of start back in the beginning, this is where the U.S. market is right now. States have procured 17.6 gigawatts of power. The federal government has leased around two dozen areas for deployment with an overall goal of deploying 30 gigawatts by 2030 and that's unlocking a path to 110 gigawatts by 2050.

As I noted, we have a state and national goal of 30 gigawatts, but this chart shows the importance of planning beyond that. State commitments just on the East Coast alone already reached 40 gigawatts, that's a combination of executive orders and legislation. This growth will only increase as states look to

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fully decarbonize their power sectors or their economies whole scale.

A quick overview of a transmission system, again, we got real technical, real fast already. The electrical grid has three principle system components that are involved in moving the electrons from the point at which they are generated to the point at which they are consumed: generation plants, transmission lines, and distribution networks. In the past, these were owned by same entity, creating vertically integrated systems, but as electrification expanded beyond urban areas, utilities began pooling their resources together and a push for a more deregulated market resulted in the formation of RTOs and ISOs.

Regional transmission authorities or organizations, excuse me. This is what that world looks like right now. These RTOs, as Suzanne laid out already, they have a very important role in the overall transmission system. They operate the grid, they create and oversee markets for energy, capacity, and

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they plan regional grid expansion, and this is, in particular, where offshore wind is sort of a paradigm breaking technology, due to the scale of the power that's being injected into the grid and because of the location of where that power is injected. With only a few exceptions, power was generated inland and then moved towards the coastal areas. For instance, the transmission grid has a lower capacity as you move closer to those coastal areas.

To help us get our head around the subject, we have a couple of graphics or cartoons to help think about this. Offshore wind installations can be connected to the grid in one of two major ways, a generator tie line, aka a radial, this first one right here.

Individual offshore wind projects have their own dedicated grid infrastructure and substation export cables, cable landings, onshore transmission works, onshore injection points. As projects grow in size these radial solutions may require multiple landing sites or beach crossings. In a shared network, which is all of these other ones, multiple offshore wind

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projects are connected to the shore via an integrated transmission system or a coordinated transmission system.

To illustrate the generator tie line, here are two projects in New Jersey, they are right next to each other. As you can see, this is pulled from their construction and operations plans. Each of them have multiple export cables moving on to land. The vast majority of offshore wind projects utilize this generator tie line because of the relative simplicity and speed that this option offers. A project picks an optimal connection point, works through the RTO or ISO queue, acquires the permits and builds. In this system, risk is largely confined to a singular developer.

However, this may not be the optimal system for the entire grid. Optimal interconnection points will be utilized by the first in time offshore wind projects, so essentially the first projects that are ready, which is of course great for those individual project

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developers, but creates a real risk of capping the overall offshore wind market, hence why we're having this conversation. This is especially relevant on the East Coast where high capacity power lines do not reach the shore, as this graphic illustrates for us.

The higher capacity lines are in the fuchsia and the next line down is blue. Each grid upgrade will increase in cost. The first projects may face only modest interconnection upgrade costs. The second offshore wind projects may face much higher upgrade costs. Even though it may be more economical to do a full upgrade right at the beginning, the first project developers are not incentivized to perform those more costly and larger grid upgrades. They face their own strict requirements on cost containment and an understandable interest in building a project that is profitable.

Rare assets used by the first projects, whether they be landfall sites or substations, may be better utilized by bigger or multiple projects that may just

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happen to come later on. Finally, a generator tie line system, a radial system, means that the system is missing out on potential benefits including cost reductions, reliability, environmental, and public policy.

So to illustrate the weakness of a radial system, let's turn to state demand. In New Jersey that's 3.7 gigawatts of off-take that has been secured, that's out of a state goal of 7.5 gigawatts and the state could possibly go even higher than that as it gets closer to decarbonizing its power sector. We already talked about how two New Jersey projects already have four interconnection points. There are two more projects that have already been leased and are exploring off take agreement or have secured something. That's more landfalls that's required. And BOEM just leased the New York Bight, leased a couple of these areas, will probably sell power to New Jersey.

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Some analysts and some observers have noted that without an integrated approach on transmission, achieving New Jersey's 7.5 gigawatt goal could require more than 20 different beach crossings. Extrapolating beyond New Jersey, this challenge becomes very apparent. Zooming back out, here's all the current offshore wind projects, there's about 30 gigawatts of power on this map. And here's what the map of interconnection points looks like. Astute transmission observers will note that this is out of date, this is about a year old so many of these red squares have become green triangles in that process.

What you see here is the low-hanging fruit, cheap interconnection points close to the projects allowing for the quick build-out of the first wave of projects. Once we move beyond this first wave, interconnection costs will rise and developers may find themselves connecting to points much further away from their projects.

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So we can also consider it a planned approach. By its nature, a planned transmission system should at least be as efficient as an unplanned system. And in most cases it should allow grid operators to capture additional benefits of reliability, cost savings, and environmental footprint. Through planning, the most efficient use of the assets should lead to billions of dollars of benefits and savings. Studies, I'm going to cite a couple Bradal [phonetic] Group studies here, show this over and over again.

In New England, planned grid would lead to \$500 million dollars in savings and \$300 million dollars in annual savings for rate payers because the grid will be able to deliver power to the higher priced locations. A similar study of New York found a similar \$500 million dollars in savings. A planned grid should lead to fewer landfalls and have less environmental impact as less miles of cable are ultimately required. Finally, a planned grid should reduce power curtailments, essentially power

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congestion which leads to power loss, by routing power to lower congestion areas.

We've been talking all day about the New Jersey state agreement approach. As been noted earlier, the state has already procured about 3.7 gigawatts of the state's 7.5 goal. Now the state is asking private transmission developers to come up with plans to build out an efficient planned system for the remainder of the build out. New Jersey Public Board of Utilities came up with this graphic to show potential options. Those range from either simply performing the onshore upgrades in a planned fashion or having planned to shared landfalls. Or as options two and three show, a planned offshore grid with projects connecting to one another connecting to a backbone and then to landfall.

Looking across the pond. Great Britain's grid operator, National ESO, conducted a recent study of this transmission question and it shows how important advanced planning is. This graphic is hard to see, I

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apologize, but on the left it's utilizing a radial system to do a full build out. The far right image imagines if the UK follows a planned system that's committed to in earnest by 2025. Just doing a visual, you can see there's a lot more lines on the left one than on the right one. If the UK commits to a planned system by 2025, the full build out should cost about 18% less in capital and operating expenditures, that's about \$8 billion dollars U.S. dollars.

If the UK waits just five years to do this build out, so beginning a planned integration in 2030, those savings are reduced to only 8%, so \$4.2 billion, with only a 30% reduction in new electricity infrastructure assets. This shows how serious reductions in cost savings occur as a result of just a five year delay.

Taking a step further, European nations are studying energy islands, literally manmade islands that will collect the power from multiple wind farms and sent

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to shore and potentially to multiple countries around the North Sea too.

So we've talked about some of the benefits, there are risks of a planned grid or a shared grid that must be addressed. First is timing. In a radial system, a singular project could connect to the grid on its own timeline in conjunction with the grid operator. A planned system of just two projects increases complexities. Planners must ensure that the grid upgrades are planned, designed, permitted, and brought online before wind farms are operational. You can see New Jersey in the middle of its long-term procurement goals. Can you design a system and build it in time that allows them to keep to this schedule?

Project developers must also be very aware of planning requirements so they can engineer their projects accordingly and plan resources so they can obtain the financing they needed, this requires lead time. This added complexity will automatically bring higher risk to each project. Second, there are cost

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allocation questions. In a radial system, the project developer is generally responsible for transmission upgrades. A major positive of a planned system is that it should lead to a more holistic grid, sharing benefits widely across the grid. But, then who's responsible for the upgrades if multiple parties are getting benefits? And if benefits are shared across states or RTOs, how do you determine cost allocations?

Looking a little bit further about the timing question, most of the U.S. projects in the queue right now will follow a radial system. This chart shows that offshore wind projects where there are already in the federal permitting timeline, 11 have submitted their engineering plans and that includes where landfalls and transmission interconnections will occur and what kind of cables they'll use.

Complexity. We've just looked at how one state is attempting to plan their grid, widening this coordination to across state lines or to a regional

transmission operator level or to the national level will only increase the complexity of a planned grid and exacerbate the risks that we've already identified, this requires advanced planning, of course.

In reality, an integrated approach has to be balanced against the need to develop current projects on their currently expected timelines which is essential to building confidence and attracting investment in the U.S. supply chain of manufacturers, businesses, and ship builders. This chart that you'll read, this chart you cannot read it, I apologize, but you can find it in one of our transmission papers and it breaks down the benefits and risk of a number of different planned grid options. Today we've only really talked about two here today, the radial approach, generator timeline system, and the state-based plan approach.

In studying the risks and benefits of a planned grid, we published two papers. These have been written by

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Brandon Burke, formerly of the Business Network and now with Ramble, John Dalton of Power Advisory, and Michael Goggin and Rob Gramlich of Grid Strategies. These papers outline planning principles for stakeholders and policymakers to think about and gear their plans towards. In summation, these principles are that integrated transmission should weigh all benefits including economic, reliability, environmental, and public policy benefits.

Again, transmission planning should also incorporate public policy and [unclear] requirements.

Stakeholders will need to plan proactively and with a long-term horizon. Stakeholders should work to quantify all of the benefits that a grid is - grid upgrades and planned shared systems are providing. And finally, better synchronized interregional planning. Our second paper takes more direct policy recommendations and observations, reviews the potential impact of the New Jersey SAA approach, and begins contemplating what the federal role could be in breaking some of these logjams or de-risking

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planned transmission approaches. I'm happy to say that last sentence while we're here in the stakeholder meeting.

So that concludes our presentation here. I invite you to check out some of our written work and connect with us at any time. You could find my email address right up here on stage. And thank you for letting me join with you today.

MEREDITH BRASELMAN: Sam, thank you. Just taking a look at some questions coming in here. Give just us a moment. Alright. Can you speak to how the business networks opinion on recent FERC NOPRs, how do you see that impacting offshore wind developments in the Atlantic?

SAM SALUSTRO: I think the network has generally viewed the - The network has tried to work with all stakeholders regarding making sure that public policy is incorporated into MOPR considerations. I'm going to speak just a little from my Maryland perspective

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and not the wider perspective, but there was a great concern about how MOPR was going to impact the ability to bring on offshore wind in the state of Maryland, very encouraged. The Maryland PSE chairman, Stanek, has taken a lead in working towards amending or changing or creating new regulations that account for a lot of these and very encouraged that those conversations are happening. And that public policy is being taken into consideration in a lot of these future auctions.

MEREDITH BRASELMAN: Okay. I think we've got time for one more question. When we look nationally, how do you see states competing for offshore power purchasing agreements? How does that impact their ability to coordinate?

SAM SALUSTRO: At the White House just last week, President Biden joined 11 governors and most of his cabinet in announcing a new partnership, a federal-state partnership on offshore wind. There's a natural tension between states that they want to secure as

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much benefits from offshore wind as possible. There's a bill going through the Rhode Island legislature right now that, as a fact, will require that the state procure 50% of its power from offshore wind. There's a lot of benefits to leaning on offshore wind as a major future energy mixture, not only for reliability standards, long-term certainty, and price control standards, but also the economic benefits that incur from soliciting offshore wind.

Some states in the Mid-Atlantic have much more stringent local content requirements as part of their power purchase. New York, New Jersey, and Maryland are going to see thousands of jobs created as a result of those agreements. There's an inherent competition between the states. And you can see some of the states are sort of trying to align their solicitation schedules so that they stand alone. But, it's very encouraging that at the same time all of these states also appreciate the fact that they must work together in order to ensure that this industry comes to life. Too much competition between the

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players, or too much competition between the states can ultimately harm the industry and prevent it from reaching its full potential, which is creating - as we heard Director Lefton say this morning, creating 77,000 jobs here in the United States, that's reaching the full potential of the economic benefits that offshore wind provides. And it's very encouraging that this partnership will exist because it creates new areas and new forms for that coordination that can lift all boats.

MEREDITH BRASELMAN: Very good. Well, we are going to wrap up here and move on. Sam, thank you so much for joining us, we really appreciate it.

SAM SALUSTRO: Thank you very much.

MEREDITH BRASELMAN: Alright, now I want to introduce Avalon Bristow, Program Director, Mid-Atlantic Regional Council on the Ocean, for her presentation on environmental benefits and considerations of coordinated offshore wind transmission. Avalon?

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Stakeholder Workshop-v1

AVALON BRISTOW: Thanks so much. And I believe I do have some slides. I don't know if you can pull this up. Perfect, thank you. Okay, so good afternoon and thank you to BOEM and DOE and the meeting organizers for today. This has been a fantastic workshop so far and I'm grateful for the opportunity to be a part of it. I'm Avalon Bristow, Program Director at the Mid-Atlantic Regional Council on the Ocean, affectionately known as MARCO.

We've heard already today about the need for increased coordination across agencies and I'm going to talk a bit about how MARCO helps with just that, intentional coordination across agencies and sectors, fostering early coordination and planning around complex issues like offshore wind transmission which is essential if we want to minimize potential environmental and even socioeconomic impacts. Next slide, please.

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First, I want to talk a little bit about MARCO and its priorities because I think that's relevant to the topic you've asked me to speak about today. As you may know, MARCO was formed in 2009 by the governors of the five Mid-Atlantic coastal states: Virginia, Maryland, Delaware, New Jersey, and New York. MARCO is the recognized regional ocean partnership in the Mid-Atlantic and these four shared priorities, showed on the slide here, for ocean resource use and collaboration continue to form the basis of MARCO's work.

One, coordinating around the protection of marine habitats, including sensitive and unique offshore ecosystems like deep waters corals and canyons. Two, collaborating to ensure the sustainable development of renewable offshore energy. Three, understanding and preparing coastal communities for the impacts of climate change. Four, working to improve the regions coastal and ocean water quality. MARCO approaches work around all of these priorities through the lens of two themes: fostering a sustainable economy with

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Stakeholder Workshop-v1

healthy ocean ecosystems at its core and engaging a broader diversity of people and partners in ocean issues and planning. Next slide, please.

MARCO has developed a number of tools for regional ocean planning, a few of which are relevant for today's discussion. First, as I mentioned before, MARCO is a state-led regional ocean partnership, so its priorities are advanced at the individual state level and also regionally through MARCO's collaborative platform. MARCO is directed by a management board that comprises coastal zone managers from the five Mid-Atlantic coastal states that I mentioned before. MARCO has also established an ocean planning committee called the Mid-Atlantic Committee on the Ocean, also known as MACO, to collaborate on shared priorities with federal agencies, tribal entities, and the Mid-Atlantic Fishery Management Council.

Much of the work that MARCO and MACO does is conducted via collaborative efforts or workgroups.

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Stakeholder Workshop-v1

These work groups are often led in partnership between a state lead and a federal lead. Today I'm going to talk a little bit more about one particular MACO workgroup, the Offshore Wind Regional Collaboration. And last but certainly not least, MARCO also hosts the Mid-Atlantic Ocean Data Portal. The portal has over 5,000 data layers that are used by a multitude of stakeholders for planning, decision-making, and education. So over the next few slides I'm going to detail these tools and give you some more context before talking specifically about our work on regional transmission planning and how that relates to environmental impacts. Next slide.

Okay. So to dive a little deeper into MACO quickly. The goals of MACO are to, one, provide a venue for ongoing regional information sharing and coordination particularly around the Mid-Atlantic's ocean ecosystem and economy. Two, generate a deeper understanding and awareness of state, federal, tribal, and regional fisheries management entities programs and other activities affecting ocean waters

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Stakeholder Workshop-v1

off the Mid-Atlantic. Three, identify and pursue, where appropriate, opportunities for collaboration on regional ocean issues. Four, generate and maintain a list of contacts engaged in ocean planning to facilitate communication across the region. Five, identify ways to enhance federal data sharing and support for the Mid-Atlantic Ocean Data Portal. And six, engage stakeholders in learning about identifying and responding to regional ocean issues.

MACO hosts an annual Public Ocean Forum typically in the spring of each year which functions to receive stakeholder feedback on areas of need or opportunities for regional ocean planning. And I just want to also add that the intentional coordination that MACO provides is a truly critical part of successful and efficient ocean planning, knowing who to call for certain issues, having informal discussions with people that otherwise may be harder to reach, and identifying ways that MACO workgroups can advance the goals of participating entities. I think those on the line today that participate in

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Stakeholder Workshop-v1

MACO including BOEM and DOE and our state partners.

Next slide, please.

Alright. As you can see here, we have a number of active workgroups around topics like ocean acidification, marine debris, ocean mapping and data, recreation, and maritime commerce and navigation, but as I mentioned before, today I want to focus on the Offshore Wind Regional Collaboration. It's important to note that these workgroups are meant to leverage, build upon, and share information about the great work that's being done by individual participants, some of which we've heard today. Every workgroup takes great care not to duplicate efforts. Next slide, please.

Alright. The Offshore Wind Regional Collaboration is a MACO workgroup that is chaired by New York, New Jersey, NOAA, and BOEM. It provides a forum for interested MACO members to share and receive information about meetings and decision points related to offshore wind in the Mid-Atlantic. The

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Stakeholder Workshop-v1

OWRC also works with the ocean mapping and data team to identify data needs and how to obtain those data and identifies issues that would benefit from closer collaboration that are not already being addressed by other offshore wind working groups in the region. I have linked the current work plan for the OWRC which includes the roster. I think these slides are going to be shared after the meeting, so feel free to take a look at that when you have time. Next slide, please.

Alright. Pivoting now to talking a little bit about the Mid-Atlantic Data Portal. This slide just gives a quick kudos to the portal team who you see listed here and a thank you to the support that we received many years ago to stand the portal up. I want to add that BOEM is now providing funding for the portal as of this spring and we are very grateful for that. Next slide, please.

Okay. The Mid-Atlantic Ocean Data Portal is a publically available online toolkit and resource

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Stakeholder Workshop-v1

center that consolidates available data and enables users to visualize and analyze ocean resources and human use information such as fishing grounds, recreational areas, shipping lanes, habitat areas, and energy sites among others. It's a state-of-the-art resource that has become an indispensable tool for public stakeholders and government decision makers at all levels to have access to the same best available spatial information when making decisions about our shared ocean thereby enhancing public engagement, reducing user conflict, and supporting more coordinated and informed decision-making. Next slide, please.

The Data Portal, as with many of the activities that MARCO facilitates, is reliant upon partnerships. So this slide really shows an example of how the Data Portal works together with other state portals, federal data centers, and other regional data portals as well like our partners up in the northeast, NROC. Next slide, please.

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Stakeholder Workshop-v1

Okay. Now that we've set the stage for what the Transmission Subcommittee is going to be doing, I will dive a little deeper into this work itself. So in early 2021, NROC partnered with MARCO to host a series of transmission webinars meant to provide a basic overview of the transmission planning process, stakeholder considerations, environmental and social impacts that need to be considered, and also discussions and recommendations for how to efficiently approach transmission planning.

One of the outcomes - Well, there were several outcomes from those webinars, they were really valuable and I encourage you to click that link and check out the recordings, if you were not in attendance there. But, the education that we received through these webinars led to the creation of this Transmission Subcommittee because many people were talking about the need for early and regional coordination around this topic. Next slide, please.

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So here is a list of the current member agencies that are sitting on the Transmission Subcommittee. We also have coordination support in our presentation from MARCO, also the portal technical team, and Monmouth University. Next slide.

I'm going to kind of breeze through this slide because it reiterates many of the same themes that we've talked about at length today, but these were many of the factors that led to the decision to stand up a Transmission Subcommittee and sort of the identification of MARCO and the OWRC as an appropriate forum for this work. Next slide, please.

Alright. So the Subcommittee is working to identify challenges towards offshore wind energy transmission planning and implementation and cross-reference that list of challenges with spatial data that's available on the MARCO Data Portal. The end of the Subcommittee is to have a curated list of available spatial datasets to inform planning and potentially to eliminate additional data products for the MARCO

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Stakeholder Workshop-v1

Portal that we can work toward developing. In addition to the spatial data products that may result from this effort, the Subcommittee will also be conducting some stakeholder outreach and engagement through the creation of an online story map and potentially some informational webinars meant to inform decision-makers, planners, as well as the general public about the transmission planning process and considerations for the environment, social factors, and physical challenges.

Finally, we are paying careful attention to documenting the process of identifying these challenges which will be important so we can ground truth this with other stakeholders prior to producing a final product. It's important to note that this effort is not going to provide recommendations of which mitigation measures to be implemented or used to address the challenges that we come up with. Many of the mitigation measures discussed in this effort have already been included in U.S. offshore wind projects. Next slide, please.

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Stakeholder Workshop-v1

The Subcommittee just held its first meeting in mid-June where the group agreed upon a study area of interest for this effort. The results of this meeting are still being formally written, but I can give a brief overview and sneak peek here today. Fighting challenges listed by the group were bucketed into three categories: physical challenges, biological challenges, and socioeconomic. Physical challenges included, but were not limited to, hard bottom, unexploited ordinances, and other existing cables. Biological challenges included, but were not limited to, canyon habitats, other conservation areas, protected species, and migration routes, coastal vegetation like sea grasses and wetlands, and essential fish habitat. And finally, socioeconomic challenges included, but were not limited to, sand burrow sites, archeological and cultural resources, anchorage areas, fishing gear, and more. So the next step after this first meeting is to work with the Portal team to cross-reference that list with

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Stakeholder Workshop-v1

existing map layers on the Portal. Next slide,
please.

So I wanted to show you an example, I've talked a lot about what the Portal is and haven't really showed you the wonderful images that you can play around with here if you explore on the Portal. So here is a slide showing some estuary wetlands and also sea grass beds off the coast of Virginia, which are just a couple of the layers that you might be able to look at when thinking about transmission planning. Next slide.

Here's another example of layers on the Portal that could provide some insight on the physical challenges that were identified by the Subcommittee. So you can see here that we've got a layer for recent telecomm cables, unexploded ordinance areas, and danger zones and restricted areas. Next slide, please.

And finally, here's kind of a summary graphic of the Subcommittee's trajectory and meeting schedule. As I

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Stakeholder Workshop-v1

mentioned, we had meeting one already and we're likely going to have meeting two in the next couple of weeks and potentially are going to be scheduling a third meeting to really finalize what the end product will be, which will hopefully be available on the Portal website and the MACO webpage at the MARCO website by the end of this calendar year. Next slide, please.

I encourage you to get in touch with me, if you'd like to get involved with any of the activities that I've talked about today. I'm also happy to answer any questions at this time. Thank you, again.

MEREDITH BRASELMAN: Alright, thank you, Avalon. We do have a number of questions here. First, how can residents in MARCO's footprints share their feedback and opinions on ocean use topics?

AVALON BRISTOW: Yeah, that's a really wonderful question and thank you for asking that. So we do have the annual MACO Ocean Forum which is open to the public

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Stakeholder Workshop-v1

and we've included some language in our sort of guidance for planning that forum that seeks to make it as open and accessible as possible. So we've been holding it virtually for the last couple of years because of COVID, but if and when we transition back to an in-person meeting, we'll make every effort to host it in areas that are publically accessible by public transportation and things like that. So that's one way that you can kind of express your comments on this process is through the forum.

You can also check out the website. On the website is an email address called info@midatlanticocean.org, you can send an email there if you have a particular feedback on a specific subject matter and we'll do our best to relay to the appropriate person within MARCO who can address that question.

MEREDITH BRASELMAN: Okay, great. Can you share some practical examples of how the Offshore Wind Regional Collaborative workgroup is promoting sustainable use of ocean and coastal resources?

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Stakeholder Workshop-v1

AVALON BRISTOW: Yeah. So I think one thing, kind of a theme that I'm hearing from a number of different speakers today is this idea of early coordination around complex issues like transmission. Transmission is incredibly complex, as we've heard. And we actually just heard from Sam that there's sometimes competing interests across state boundaries and MARCO does a really wonderful job of drilling down and addressing those potential conflicts before they become conflicts just because of the relationship building that we foster.

So I think that that is sort of a broad answer to a specific topical question that you have, but really it is applicable to a lot of the different impacts that could result from different ocean uses if just kind of having different agencies and states talk together and get in a room and identify what areas of shared priorities are and how best to address those.

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Stakeholder Workshop-v1

MEREDITH BRASELMAN: Okay. What do you think are the largest concerns around cable siting that MARCO is currently considering?

AVALON BRISTOW: The largest concerns. So on a couple of the slides before, we kind of brainstormed through this Subcommittee some physical, environmental, and socioeconomic challenges for cable siting. And I think the Subcommittee is going to be sort of drilling down into just that, is identifying which of those are - Actually, it's a great question because one step that I didn't mention today is ranking those challenges in terms of the data availability for those challenges and also how widespread and - Important is not the word I'm looking for. But, again, like I said, we're documenting the process to make sure it's as transparent as possible and we're hoping to vet this process with the wider stakeholder community before coming up with the final product.

MEREDITH BRASELMAN: Okay. Thank you. One last question. Can you speak to how the Offshore Wind Regional

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Stakeholder Workshop-v1

Collaboration Subcommittee efforts are being coordinated with DOE's Atlantic Offshore Wind Transmission Study?

AVALON BRISTOW: Yeah. So DOE does sit on the Subcommittee which is great and DOE has been kind enough also to come and present about this work to the full Offshore Wind Regional Collaboration leadership, and we are convening, we are in the process of setting a time for them to come and speak with the full OWRC membership as well which extends beyond those four organizations that I believe listed in one of my slides before. So we are doing our very best to make sure that DOE is as looped into this process as possible and certainly not duplicating any efforts.

MEREDITH BRASELMAN: Wonderful. Well, Avalon, thank you so much for joining us today and speaking with us.

AVALON BRISTOW: Thank you for having me.

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Stakeholder Workshop-v1

MEREDITH BRASELMAN: Yep. Alright. I want to now introduce Kris Ohleth, Executive Director, Special Initiative on Offshore Wind, for her presentation on social benefits and considerations of coordinated offshore wind transmission. Kris?

KRIS OHLETH: Hello. Good afternoon, good morning. Welcome, thanks so much for joining us today. I'm really excited to be here to talk about the social benefits and considerations of coordinated offshore wind transmission. Awkward, I think I'm wearing the same shirt as the picture you just showed of me, but that's okay, I think I wear this shirt almost every day. So that makes sense. But, thanks so much for having me. I'm the Director of the Special Initiative on Offshore Wind and if you move to the first slide, it just gives you a little bit of background on the Special Initiative.

We are an organization who relies on fact-based research and multi-sectoral collaboration to provide expertise, analysis, information sharing, and

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Stakeholder Workshop-v1

strategic solutions to advance the responsible and sustainable development of U.S. offshore wind. We are guided by a Steering Committee of diverse interests. We are not a trade organization. We are funded by private foundations and that really supports our objectivity and the unique approach to our work.

I will say, particularly relevant to this conversation, it was back in of 2011, so what year is this? So more than ten years ago I accepted a position working for the Atlantic Wind Connection, which for those of you OG offshore wind people, you will remember the Google Backbone Transmission System and I worked there for three years as the Director of Permitting. And perhaps it was a project before its time, I love where we've come to in really thinking about a more coordinated and collaboration around developing transmission systems for offshore wind. So my heartfelt thoughts always go out to the Atlantic Wind Connection team. And so glad to see so much interest in the space now for connecting these 30 gigawatts of offshore wind to our nation's

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Stakeholder Workshop-v1

transmission system. So if you could move to the next slide, we'll talk a little bit about the goals of this session.

We just have a few minutes together, but on such an important issue. A deeper dive into the social impacts, the benefits, and the opportunities of coordinated offshore wind transmission systems including local community benefits and challenges, and some of those energy justice and environmental justice opportunities, because I know how important equity is to so many of the stakeholders and this just transmission, and really getting it right as we kind of really accelerate through the climate crisis. If you could move to the next slide, we'll start to discuss some of the benefits of offshore wind to stakeholders.

And a concept that I wanted to share about and something that I've been doing a deeper dive into lately is this announce and defend model. Essentially this is a process whereby and pretty typical, in

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Stakeholder Workshop-v1

fact, of many offshore wind projects or infrastructure projects in general where the process is that a developer enters the scene and kind of announces where and what their project will be, and then spends time defending what that project is, and defending it to stakeholders. But, really, if we look at the opportunity with increase coordination planning and increased coordination around transmission, if it's done well, we could offer stakeholders the opportunity to help shape the system from the beginning as opposed to just announcing and defending a system. We have the opportunity to bring them perhaps at an earlier stage, this is something that could be coordinated through agencies, through developers, and certainly through workshops as we're doing today, to really get buy-in early on because really that helps I think to increase the speed at which these projects need to be developed and connected to the grid in light of the climate crisis. Please move to the next slide.

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Stakeholder Workshop-v1

Continuing on the benefits. One thing we hear from stakeholders who are interested in offshore wind are concerns about the cost of electricity and impacts to their rates. And so really what we see is that the cost of offshore wind have been falling across all markets and whether that's looking at Europe, Asia, and here in the United States. Now, of course, we don't have any utility scale offshore wind yet, but essentially every bid that we've seen come in and accepted by different states for procurement have a shown trend of a decrease in cost for those offshore wind projects. Shared transmission can further contribute to reducing costs in that there are substantial supply chain constraints around submarine cables.

There are only three factories in the world overall that build offshore wind submarine transmission cables. Right now, we're looking at about 800 gigawatts, and I'll say it again, 800 gigawatts of global offshore wind demand, okay. We are 30 of those gigawatts here in the United States, so how are we

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Stakeholder Workshop-v1

making the most of the supply chain opportunities that exist in the world market in those three factories that are producing cables? And if you're out there listening, you should invest in offshore wind submarine cable factories. But, in addition, those raw materials that are expensive and could also be a bottleneck in really getting the actual projects built. So if we are combining resources and we are coordinating, we're using less of those raw materials and submarine cables overall which I think can help reduce costs and potentially speed projects. Next slide, please.

Continuing to talk about the benefits, this is part of my favorite topics, is reducing conflict for existing ocean users and increasing coexistence in that space. One of the key users of the ocean space traditionally and currently are fishermen. And all submarine cables are buried in offshore wind projects, four to six feet typically is a target burial depth, but additionally, sometimes they're buried more deeply. However, that does not mean that

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Stakeholder Workshop-v1

the cables cannot become unburied, be less buried than four to six feet, can also be snagged by clam dredges or other things that may be penetrating deeper into the seabed.

And so the fewer cables that are on the sea floor and buried in the sea floor is more attractive to existing ocean users like fishermen, like shipping and navigation interests who have very heavy anchors and are dropping those. I mean, certainly offshore wind developers want to protect their assets. These offshore wind farms are multibillion dollar assets and if they do not have a proper export cable to deliver that power to shore they lose a lot of money because they can't deliver on the contracts to the utilities. So having less conflicts for existing ocean users, you could imagine the far fewer cables that Sam showed in his illustration, right, if there are fewer cables there's less opportunity for conflict, more opportunity for coordination, and really just funneling resources to a fewer amount of projects and cables on the OCS. Next slide, please.

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Stakeholder Workshop-v1

Moving on to a few challenges. On the Atlantic Coast, and this has been talked about quite a bit, is that there are really bottlenecks at the coastal areas. The way I like to think about it is that the way that transmission has been designed and powered systems on the East Coast is that the power plants are like a beating heart and that beating heart has been typically situated inland from the Atlantic Ocean. And the further away you get from that beating heart through the veins, through the capillaries, and those tiny little capillaries all the way out in the coastal communities, those are the most fragile parts of that electrical system, the least compatible to accepting large injections, 30 gigawatts, for example, of any type of power into the grid.

And so there are really limited spaces in that grid and how does that impact stakeholders? Well, it becomes really challenging when there are stakeholders who are objecting to landfall locations in their communities. And in addition, there are so

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Stakeholder Workshop-v1

many limited points of interconnection. So just to give you an example, from my most recent position as Director of Stakeholder Engagement for Orsted, we were working on the ocean wind project. We identified a cable location landfall in the city of Ocean City, New Jersey. There were really limited opportunities to bring that cable to shore from a technical perspective and we were looking at a retired coal fired power plant that was called BL England that was just about 10 miles from the coast.

So a really perfect hardened portion of the grid that was ideal for being recycled into an offshore wind system. However, the community of Ocean City has been objecting to bringing that cable through their community. And so all of these limited points of interconnection are now meeting the additional layer of that stakeholder concern. So if we have fewer cables and fewer opportunities for that conflict with local coastal communities, those points of interconnect become essentially less constrained if

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Stakeholder Workshop-v1

there's fewer of them we need overall. Next slide, please.

Which I think just riffs a little bit more on this local opposition. You know, typically every landfall location to date for offshore wind has had some type of opposition, even the Block Island wind farm was delayed by over a year because of local landfall opposition. So reducing those opportunities for that opposition can only help speed the development of offshore wind. So that's something that I really see as a huge benefit. That last mile, as offshore wind developers often say, that last mile of getting the cable to shore and getting it across the beach is one of the most challenging in all of the offshore wind project development. Next slide, please.

I think we're near the end of my slides, but I just want to say that stakeholder fatigue is a real thing. You know, full stop. And so with so many projects in the pipeline, being able to alleviate some of those landfall challenges and bringing the conversation to

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Stakeholder Workshop-v1

a coordinated transmission system I think really could support the concept that stakeholders time and resources are finite. And so I strongly support the concept of a shared transmission system to help alleviate some of that stakeholder fatigue and potentially that delay in offshore wind development because if stakeholders are not given the voice in the beginning of the process or they don't perceive they have been then they certainly will take the opportunity later in the process, which could create delays in deployment. Next slide, please.

We could do a whole session on energy and environmental justice. And I just want to make sure that we give some voice to this important topic. I think I just have one minute left here. But, when you think about deploying offshore wind, we have the opportunity with this technology to turn the environmental justice story on its head because for too long environmental justice communities have been subject to energy development directly in their communities and those projects have been ones that

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Stakeholder Workshop-v1

have been spewing greenhouse gas and other harmful emissions into their communities.

So we're taking the entire model and turning it around where not only are we changing the resource, but in addition, we're building it off the coast of the most, sometimes, wealthy and most resource rich communities in the nation, right off the coastal communities. So there's very interesting dynamics at play with stakeholders, transmission, and environmental justice. In addition to that, overall reduction in any type of coastal construction, let's say these cables are coming to environmental justice communities, as some are, the extent to which we can reduce disruption and reduce construction and impacts in coastal communities can only be a benefit.

And my final slide just has my contact information. I would love to keep in touch with you. That is my cell phone number. I do love to get random text messages. If someone wants to send me a text message right now that would be amazing. 201-850-3690. And yeah, I'm

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Stakeholder Workshop-v1

happy to take any questions in the couple minutes we have.

MEREDITH BRASELMAN: Alright, Kris, thank you. You are the first person to ever ask for a text message on of our webinars, I love it. Alright. You talked a lot about stakeholders here. So what is it going to take move us from announce and defend, which you talked about at the very beginning, to a stakeholder-informed system, as we were talking about?

KRIS OHLETH: Yeah. It really takes I think leadership and what I'm delighted to see here is leadership from federal agencies, and to an extent state agencies, because really BOEM and DOE are the ones leading on the opportunity and leading on the conversation. So seeing this early engagement, seeing this planning, I think it's a real balancing act, and I think Sam alluded to this earlier, between keeping projects on schedule, making sure we get these projects deployed, such an imperative, and at the same time being able to bring those stakeholders in. It's a delicate

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Stakeholder Workshop-v1

balance, but I think overall it provides a more efficient timeline and one that brings stakeholders along for the conversation instead of just asking for a reaction to something that we here have all planned with the best intentions, inevitably creating conflict and consternation in the community.

MEREDITH BRASELMAN: Okay. Related, how can we address competitive concerns if a project comes into a community early without a plan to discuss? Offshore wind is a new paradigm, but to do, as you suggest, onshore could make acquiring property needed for a viable project unavailable or cost prohibitive. How do we balance robust public engagement with such commercial issues?

KRIS OHLETH: Well, I think, you know, I just had the opportunity to spend a week in Germany and meeting with their TSOs and talking about ways that we could really learn from some of the models. They have an integrated planning approach where the developer of the offshore wind project is not the one who is

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Stakeholder Workshop-v1

securing landfall locations or real estate corridors on land, that is not left to a developer to do. And so when a right is assigned by the federal government for an offshore wind project, the right of way and all easements associated with that project are also granted.

So I think if we're trying to superimpose these concepts on the current paradigm, we will not be able to do it. But, thinking more creatively in a new paradigm, which I know BOEM and DOE are very interested in doing, I think will help us accelerate some of those models. I can also give another New Jersey example, Jersey girl, on how New Jersey has passed public policy around the Board of Public Utilities helping the developers find their way to shore and then easing that resistance in the local community by kind of facilitating the approach. And once a developer is no longer able to kind of come to terms with that local community, stepping in and as the state, as the one who have these clean energy goals, saying we need to be an intermediary here, we

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Stakeholder Workshop-v1

need to step in because if we all have this 30 gigawatt goal that's so much bigger than all of us, that is so important to our environment, to our climate, to our economy. We can't let a vocal minority stand in the way of what we need to accomplish for energy security for our nation.

MEREDITH BRASELMAN: Okay. Are there potential benefits to coastal communities where offshore wind cables make landfall? Is public education needed?

KRIS OHLETH: Well, it's very interesting. I think if you look at the existing cables that have been permitted and are in construction now for utility scale, and that is the South Port Project and Vineyard Wind Project, there are quite generous community benefit agreements that have been signed between the developer and the local community that flow resources directly into those landfall communities. Those communities can then use those funds for coastal resilience projects, for

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Stakeholder Workshop-v1

sustainability, for whatever they choose in their
local communities.

So I think coastal communities could be creative in
thinking about ways that they actually reach out and
say, we are the ones where we want to make landfall.
This is a cable that will never be seen. It will
never be known to be in our community. However, we
can reap the benefits of a community benefit
agreement with the developer by welcoming that cable
in their community.

MEREDITH BRASELMAN: Okay. Have you observed differences
in social or political advocacy, i.e. the ability to
engage or participate meaningfully in regulatory
processes amongst various stakeholders? And if there
are gaps, how could they be closed?

KRIS OHLETH: Could you repeat the question? I think I
missed the beginning.

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MEREDITH BRASELMAN: Sure. Have you observed differences in social or political advocacy amongst various stakeholders? Their ability to engage or participate meaningfully in the regulatory process.

KRIS OHLETH: I think what I've seen primarily is capacity. Capacity has been dictating stakeholder's ability to engage. So typically what we find is those who have more resources have more capacity to engage and they do engage. And so that is the primary driver of ability to engage and at SIOW we have been working on projects to provide additional capacity to those stakeholders who do not have capacity to, because we think really all should be able to come to the table and engage in a full way. And I think the other key issue that has been inciting to engage is that if you just think about the human condition, folks who oppose something are more typically engaged.

Think of if you were living in your town and someone said, oh, we're building a cell phone tower. It's 10 miles from your house, but it's in your town. And if

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Stakeholder Workshop-v1

you live directly next to it and you don't want it there, you're going to be really motivated to engage in that process. However, if you live 10 miles away and you know, hey, worst case scenario I get another bar on my cell phone, you're probably never going to go to a public hearing, you're not going to be particularly interested in participating. So it's this combination of resources and motivation are typically the two top things.

MEREDITH BRASELMAN: Very good. Well, thank you, Kris, so much for joining us today. We appreciate the conversation and I hope you got some text messages while we've been chatting here. Thank you very much. We are going to move on to our next presentation. I want to introduce Michelle Manary, Acting Deputy Assistant Secretary, the Electricity Delivery Division in the Office of Electricity at DOE, along with Jigar Shah, Director of the Loan Programs Office also at DOE, for their presentation on DOE funding. Michelle?

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Stakeholder Workshop-v1

MICHELLE MANARY: Thank you, Meredith. So we've heard from a lot of very knowledgeable experts in the communities, in different forums. And you can see, it's the same message: collaboration, planning forward, working together benefits everybody. So kind of that win-win. And so with that, I want to talk a little bit about opportunities for funding from the DOE and especially focused on the bipartisan infrastructure law.

So this first one: Building a Better Grid. We launched, earlier this year, an initiative in the Department of Energy looking at all the different areas in how we actually get transmission built. In order to get those electrons from the generator to the users it's a multi-faceted approach here. And so you're seeing the byproduct of one of these today is the collaboration, the engagement, pulling folks together, paying for studies, pulling everybody together, that's one area.

As well as some of the planning, but today I want to talk about that middle column, the federal financing tools, the 20 plus billion. And so I've given this spiel in a lot of areas. So for some of those you could probably give it for me, but hang on, you never know what you're going to pick up. But, I did want to hit the four main areas in the wires or the transmission distribution because that's why there are wires area of financing. So with that, next slide.

This slide is the table of the four main areas that the bipartisan infrastructure law dedicated money to, your transmission, your distribution, or your storage areas. And I want to hit that highlights here. The first three on this list are really focused on your existing grid getting more out of it, or hardening it, or making sure that what we have today is really ready for the future and can withstand the new demands on it, has better visibility for the operators, basically getting more out of your wires while also making sure it's more resilient. That it

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could withstand and handle storms, or fires, or anything that's being thrown at it.

So let's hit the first one. The first one, Preventing Outages and Enhancing the Resilience of the Electric Grid, that is a \$5 billion dollar pot of money. Now, with that, it's really divided into two areas. Half of it goes to in formula grants to states, territories, and tribes. We already released the notice of intent, request for information. You saw in mid-April, that's closed. We're looking at that. We're expecting for that second half which is a competitive grant to the industry. We're expecting to release that notice of intent and RFI coming up in the summer.

But, what you'll see is a theme. Through all of these kind of areas you'll see a theme of DOE comes out with a notice of intent, request for information, lays out what we think the program should be, solicits feedback to make sure we didn't miss anything, or we didn't address something. Takes those

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comments, folds them back in, and then releases a notice for solicitation. And so you're going to see that cadence for all four of these programs. And that's why we see the next milestones. Those notice of intents RFI signal that this is, kind of to folks, pay attention, we need your input because after that comment period and we address it, we're going to go out with a solicitation.

And so this is one that is very important to know and follow the money. Half of it goes to states, territories, and tribes through formula grants and half of it goes to competitive. Now, with that, there's certain cost-sharing and requirements that go with it, but those states and tribes and territories can pass it through to the folks that are implementing these programs. It also calls, especially for the states, the territories, and the tribes, it calls for what they need to do, what they need to submit, kind of their plan. And so it's very important to know where your states are going, and the U.S. territories, and the tribes in order to

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Stakeholder Workshop-v1

also, if the state is signaling a certain direction, then it's really going to set the tone and the pace for that program.

But, that's \$5 billion over five years, one billion a year, and so that's an area that really is focused on, what I was talking about, the storms, the wildfires, that resiliency piece. I would make sure that every time a storm comes through that we're not losing power to folks. And really getting the hardware, and the software, and maybe the poles, or anything like that for the grid in order to make sure it can withstand a lot of the climate change and other things going on.

The second program we're talking about, the Program for Upgrading Our Electric Grid and Ensuring Reliability and Resilience, so it's that second item, that's another \$5 billion over five years, so a billion a year. And this is one that's really focused on the state entities. And so that can be your PUCs, it can be your governor's offices, it can be your

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Stakeholder Workshop-v1

local state type entity, but this money is really focused to them. Again, resiliency, making sure that they can cost share and fund some of those technologies, those advancements, the materials needed to really make your grid more resilient.

And so this is one that only goes to the state type entities and the tribes, so both of those. And so this is one, don't forget, especially if you are a state entity or not a state entity, this is one specifically focused there. It's also very broad. It could be anything from transmission, to distribution, to storage. It's why it's resiliency demos, it's very broad in its application.

The third item here, Deployment of Technologies to Advance Grid Flexibilities. A lot of you guys know this as the Smart Grid Program that's been around since the ARA, days of the American Recovery Act. What Congress did is take that program and expand some of the things that you can use it for, especially on the transmission side, really looking

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at your cyber, your communications. There's a number of things that Congress did to expand the use of this and then added \$3 billion to it.

And so this is \$3 billion over the five years and that notice of intent, request for information, as you can see, is going to be released this summer, pay attention to that. That will help give folks an idea of what we're thinking the program looks like, what the requirements are, asking for feedback, asking for comment, but that one is coming as well. That's one that, since it's through the Smart Grid, it's an existing program and for modifications now on the transmission distribution side and requirements to apply for that, but be looking for that as well.

The last item here, the Transmission Facilitation Program, which you heard earlier in this event, way earlier, is another area that tends to come up in these offshore wind conversations. So this actually has a different, unique aspect to it. One, it doesn't go away after five years. This is now an ongoing

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Stakeholder Workshop-v1

program that is borrowing authority. And so that is something that lives on past just this five years. It also has some certain requirements. That program is really focused on the transmission, if you're existing transmission, grid upgrades that gets you 500 megawatts or more of capacity, so it's large upgrades on your current system or new builds. I think that's why you hear it a lot with offshore wind is, whether it be the platforms or that meshed-ready they were talking about, this is also for new builds that allow a 1,000 megawatts or more of new capacity on the system.

So this one also is really focused on - And also, this also not only has that for the contiguous U.S., but it also can access if you are Hawaii, Alaska, or U.S. territories. This also has a provision that you can use it if you're trying to hook up microgrids to a transmission system. So that's where this program really is focused on. We've already released our notice of intent, looking at a phased release, that closed. And we're sifting through all the comments.

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Stakeholder Workshop-v1

Thank you very much to those who have commented. And really looking at getting a solicitation out later this summer on that approach, taking the feedback, and seeing if we need to change or tweak based on the feedback that we received.

But, that one is one I'd say that, as you're looking forward, that Transmission Facilitation Program, be worth taking a look at what the details are around that and who can qualify, how they qualify, and that will also be competitive solicitation. Two folks that are building it. This actually, the requirements are on the project itself, not on the entity. So it's available to all entities based on the qualifications of the project.

So with that, did a quick flyover, but these are four areas that are new to DOE, pots of money that can help the industry come alongside to really advance the transmission infrastructure. With that, I'll turn it back to you, Meredith.

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MEREDITH BRASELMAN: Alright, Michelle, thank you very much. I'd like to now welcome, oh, Jigar, you are here. Sorry, I did not realize you were on. Go ahead, sorry about that.

JIGAR SHAH: No, not a problem. I just wanted to thank everybody for their time and just maybe Michelle covered most of this, so I don't know that I have to add a lot here. But, the role of the Loan Programs Office is really as a deployment arm for the Department of Energy and really establishing a bridge to bankability for the private sector. The Title 17 authority that we have is the main mechanism by which we're financing transmission, including for offshore wind. And we're also using Title 17 to support the broader offshore wind supply chain including vessels and cables and things like that.

LPO operates at a scale that can allow us to play an integrating role within regions and inter-regionally for transmission deployment, aggregating the needs of individual projects. You can imagine moving from

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Stakeholder Workshop-v1

radial lines to an HVDC backbone with mesh is difficult because no one project can fund that entire conversion, but we can cover the entire project waiting for the rest of the projects with auction results to tap into the same shared infrastructure.

I think the goal for us is really to work to get offshore wind transmission into the water. I think as we agree, time is running out for us to position these assets to scale to meet the 30 gigawatt goal. You can see in the red boxes that we already have over \$10 billion dollars of transmission in onshore and offshore wind applications that have come into the Loan Programs Office. We also recognize that we need to balance the urgency of getting steel in the water with radial lines with integrating the full 30 gigawatts into the eastern grids, which will require this HVDC backbone and mesh. So that's a lot of the work that we're doing to help integrate these two together.

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Stakeholder Workshop-v1

There's an Innovative Clean Energy title with \$2.5 billion dollars of eligibility for offshore wind supply chain which includes transmission. And we have active and preliminary applications in onshore transmission and across the offshore wind supply chain within all those categories. So with that, really want to thank everybody for their attention and please come to us if you have questions about the Loan Programs Office's role in offshore wind.

MEREDITH BRASELMAN: Alright, Jigar, thank you very much and thank you to Michelle as well for discussing this with us today. Well, I now to welcome back Chris Lawrence to facilitate an interactive discussion using Menti, again. Chris is going to have the link on the screen, but we will also put it in the chat. Chris?

CHRIS LAWRENCE: Alright. Well, first off, I want to give a rousing round of applause to all of the panelists and the discussions today. And I can say that I thought they were informative and I think we can all

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Stakeholder Workshop-v1

agree, many of us probably took away a lot of things. And speaking of taking away, as I mentioned before, we are going to once again go back to Menti and we are going to seek feedback from you. In this case, as I mentioned before, we are going to, the next few questions, we will not share any of the results publicly in real time as we did earlier.

So let me just share my screen and then we will get started. Again, here is the link and the QR code if you want to, if you have not yet been able to log on to Menti or you're just joining us and missed the first Menti session. So for those of you that may have missed the first Menti session, this is a tool that we're using to gather feedback from our sessions today to gauge from the audience your takeaways, perceptions of the panels today. Again, the next few questions the results will not be shared. Broadly, they'll be shared with our team here at DOE.

So, again, if I advance and you're not ready to advance, you can stay on the slide that you're on,

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Stakeholder Workshop-v1

provide your answer, and then we'll move on. So as I said, we're not looking for consensus here, these are just feedback questions. So here is, again, these answers that you're giving are private.

So the first question: how can we foster stakeholder engagement and ensure mutually beneficially outcomes when developing offshore wind transmission? So, again, just as a possible example to an answer to this question is meetings with specific stakeholder groups, sharing specific information on research publicly with the broad stakeholder group, or providing technical training such as 101 trainings to provide education on issues. So, again, this is not going to be shared broadly, so you might be typing in your answer right now and you're not seeing anything and that's because we're getting it on our end. And it's an open-ended question. You could type as much or as little as you want to into this and that applies to the next three questions afterward.

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Stakeholder Workshop-v1

So I am seeing people logging in their responses. I believe we have well over a hundred, I think we have 200 [unclear] attendees currently and, again, I think that that shows that there's a lot of interest in these topics. So we do appreciate everyone hanging on. We know that sometimes these Zoom calls can be quite a journey to sit through, but I think all of the presentations today were exciting and a lot was discussed. So I appreciate everyone, we appreciate everyone. Alright, I'll give it about another minute.

And, again, if I advance, you can stay on this slide to finish up and then you could move on at your leisure. Awesome, alright, we are going to move on to the next question. So this is the beginning of a two-part question, so this is part one and then we'll get into part two. So the first part of this is, what additional benefits and opportunities does coordinated offshore wind transmission development provide to our coastal and state communities and the nation?

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Stakeholder Workshop-v1

And as you can see at the top here, if you're still just joining us, you can go to Menti.com and use the code 20461407 or you can also do that from your phone as well. It's like one of those - What was the show that the audience voted on the back of their seats? I think it was *America's Funniest Home Videos* that they would do that, so that's what this kind of reminds me of a little bit.

Meredith, if at any point I'm not tracking on time, you tell me if I need to advance a little faster.

MEREDITH BRASELMAN: Will do. You're doing great.

CHRISTOPHER LAWRENCE: Alright, thank you. Big, big round of applause for Meredith and the whole team for keeping us on track as far as time is concerned. Because, as I mentioned, this is part one of a two part question, so the next question coming up is flowing from this, discussing the additional benefits and opportunities. So we'll hang on this for about 30 more seconds and we'll go to the next one.

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Stakeholder Workshop-v1

Okay. So this is part two of this question. So we're talking about benefits and opportunities. Now, how do we ensure that those benefits are delivered in a just and equitable manner? So as we discussed before, earlier on about environmental justice, energy equity, how can we ensure that these benefits are carried over in a just and equitable manner?

Okay, we're going to move on in about 30 seconds from this question, but again, your feedback is greatly appreciated on all of these questions.

Alright. So the next question. What types of impacts of offshore wind transmission development may need to be avoided, minimized, or mitigated? We talked a lot about siting today, we talked a lot about permitting and the environmental considerations with that. So please let us know what types of impacts may need to be avoided, minimized, or mitigated.

We'll spend about another minute and a half on this question. And yes, we do realize that some of these

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Stakeholder Workshop-v1

questions are pretty broad and you could write paragraphs and paragraphs on them, so we appreciate that they are in-depth questions and very complex, so again, try to summarize, but again, this is a continuous dialogue that we're having with the public on these topics. So any feedback that you have is greatly appreciated.

Alright, I'll move on in about 30 seconds. And then this next question is going to be the last of the open-ended private questions and then we'll have one more word cloud and then we'll be done.

The final open-ended question here. What feedback do you have regarding the proposed efforts you have heard today? And again, this goes into any feedback and any government action that you heard discussed today and anything that we could be doing more or less of. So, again, feel free to opine on anything you've heard. What could we do better, what are you satisfied with, etc.?

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Stakeholder Workshop-v1

Okay. So we're going to go ahead and move to the last question. This is an open-ended word cloud question right here. What are you significant takeaways from this event? So these will be shown on the screen. So, again, put these up, type it in, and they'll show up in the word cloud. So what are you significant takeaways from this event? Don't be shy.

Alright, facilitation, planned approach, collaboration is key, efficiency, progress, insightful, risk, inclusive, planned approach is king, cost, teamwork, shared, complex, good people, thank you. Non-radial. Alright, we will wrap this up, the little hand is telling me it's time for me to get off the stage. So, again, you can still input this even when I'm not sharing my screen anymore and I will now turn it back over to Meredith. Thank you.

MEREDITH BRASELMAN: Thank you, Chris. I want to welcome back Josh Gange for some final remarks and next steps. Josh?

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Stakeholder Workshop-v1

JOSH GANGE: Sure. Thank you, again, especially a thank you to all of you who have been here with us all day. I think this was a really valuable workshop and I hope we did a lot of things today. First, I think we provided some information on the efforts and helped identify some of the resources available for those wishing to be more involved in this process. And I think we also, at least I learned quite a bit about all of the thought and hard work that's really gone into the transmission planning effort, outside of this process as well from the states, and the ISOs, and NGOs, everyone else, the utilities, and industry that have really put a lot of thought into this.

So we really are looking to capture all of that great effort and thought as we move forward. So I think it does show that this really does require an all of government approach, but not just government, so your feedback is enormously important. So, again, I'd like to welcome everybody to provide additional feedback to us at the email on the screen now and also help us make it better. And in addition, we mentioned some of

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Stakeholder Workshop-v1

the open comment periods that many of us have here at BOEM, I know I mentioned one, DOE and FERC also, again, please feel free to reach out to us through this and continue to provide us with the way forward. So with that, thank you to all, again, and we will certainly have more to share as these efforts progress. So thank you.

MEREDITH BRASELMAN: Thanks, Josh. Thank you to everyone for joining us today. Our next public stakeholder workshop will be held in December and we'll be sharing more information about that in the fall. A copy of today's presentation will be posted on the Atlantic Offshore Wind Transmission webpage by Friday and a recording will be available in about two weeks. Thank you, again, to our speakers, participants for joining us today. We look forward to working with you in the coming months. Have a wonderful day.

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