
Committee Meeting

of

ASSEMBLY ENVIRONMENT AND SOLID WASTE COMMITTEE

“The Committee will meet to receive testimony from invited guests concerning offshore wind as a renewable energy source and the economic and environmental benefits offshore wind can provide to the State”

LOCATION: Committee Room 12
State House Annex
Trenton, New Jersey

DATE: October 18, 2018
2:00 p.m.

MEMBERS OF COMMITTEE PRESENT:

Assemblywoman Nancy J. Pinkin, Chair
Assemblywoman Yvonne Lopez, Vice Chair
Assemblyman John F. McKeon
Assemblywoman Lisa Swain
Assemblyman Kevin J. Rooney
Assemblyman David W. Wolfe



ALSO PRESENT:

Carrie Anne Calvo-Hahn
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Committee Aide

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Committee Aide

Thea M. Sheridan
Assembly Republican
Committee Aide

Meeting Recorded and Transcribed by
The Office of Legislative Services, Public Information Office,
Hearing Unit, State House Annex, PO 068, Trenton, New Jersey



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COMMITTEE NOTICE

TO: MEMBERS OF THE ASSEMBLY ENVIRONMENT AND SOLID WASTE COMMITTEE

FROM: ASSEMBLYWOMAN NANCY J. PINKIN, CHAIR

SUBJECT: COMMITTEE MEETING - OCTOBER 18, 2018

The public may address comments and questions to Carrie Anne Calvo-Hahn, Committee Aide, or make bill status and scheduling inquiries to Christine L. Hamilton, Secretary, at (609)847-3855, fax (609)292-0561, or e-mail: OLSAideAEN@njleg.org. Written and electronic comments, questions and testimony submitted to the committee by the public, as well as recordings and transcripts, if any, of oral testimony, are government records and will be available to the public upon request.

The Assembly Environment and Solid Waste Committee will meet on Thursday, October 18, 2018 at 2:00 PM in Committee Room 12, 4th Floor, State House Annex, Trenton, New Jersey.

The committee will meet to receive testimony from invited guests concerning offshore wind as a renewable energy source and the economic and environmental benefits offshore wind can provide to the State.

The following bill(s) will be considered:

A-3784 Eustace/Pinkin/McKeon	Prohibits intentional release of balloons inflated with lighter-than air gases.
A-4007 Pinkin	Requires environmental sustainability plan for State House Complex.
A-4011 Pinkin S-601 (1R) Smith, B/Greenstein	Requires end-of-life recycling of solar and photovoltaic energy generation facilities and structures.

(OVER)

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FOR DISCUSSION ONLY:

A-3108 Requires evaluation for, and abatement of, mold hazards in school
Benson buildings.

Issued 10/12/18

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ASSEMBLYWOMAN NANCY J. PINKIN (Chair):

Welcome, everybody, to the Assembly Environment and Solid Waste Committee.

We'll have everybody rise for the Pledge of Allegiance. (all recite Pledge)

Thank you; please be seated.

So today we're going to have a discussion; we're going to start off with a discussion on offshore wind and talk about all the great things that we've been doing, moving forward, to make sure that New Jersey strengthens our health, our environment, and our economy.

The Governor, actually, is currently in Germany, working on discussing some of the wind issues. It's a very exciting time; we're so excited to see all of the things that we're doing on environmental issues, and wind is a very big part of that.

I could go off into a lot of my own comments, but we have a lot of experts here who are so much better able to speak on this issue.

But before we do that, I just want to say that A-3784, a Bill which prohibits the intentional release of balloons inflated with lighter-than-air gasses, is going to be held today. That Bill needs a little bit more work; so before we go forward, we're going to proceed with that work.

I would like to start out-- I want to mention that we're going to try to hear everybody's testimony, but we want to keep our comments to about five minutes.

And I want to start with President Joseph Fiordaliso, who is the President of the Board of Public Utilities.

So, President, please come forward.

J O S E P H L. F I O R D A L I S O: Thank you very much, Chairwoman, and Vice Chair Lopez, and members of the Committee. Thank you so much for having me here today.

I'm going to try to keep it to five minutes; but I have a lot to talk about. (laughter)

ASSEMBLYWOMAN PINKIN: Okay, of course we will extend you as much time as you would like. I'm sure everybody would love to--

MR. FIORDALISO: Well, thank you.

As a state, we face unprecedented challenges in the coming years as we deal with climate change and its repercussions.

Climate change is real, and it is going to change our way of life, one way or another; and in many instances, it already has.

We will either continue to operate business as usual until it is too late to save our planet, or we will act now. And I'm sure many of you read the report from the United Nations indicating that maybe we have 20 years before the dramatic effects of climate change actually hit us.

Under Governor Murphy's leadership, and the leadership of the Legislature, New Jersey has chosen to act now regarding climate change. And I submit the time for bold action-- And under this Governor, we are beginning a new chapter for offshore wind in the State of New Jersey.

As you are well aware, Executive Order 8, signed by the Governor just two weeks after taking office, designates the New Jersey Board of Public Utilities as the lead agency on offshore wind, and to work with other state agencies to move New Jersey towards the Governor's goal of 1,100 megawatts of offshore wind capacity initially, and 3,500

megawatts of capacity by 2030. The Governor's plans for offshore wind are the most ambitious in the entire country.

New Jersey has the largest and most competitive offshore wind lease area in the United States. One of the reasons for this is early actions of the Legislature in passing the Offshore Wind Development Act (*sic*), also known as *OWEDA*. When passed in 2010, *OWEDA*'s goal was to encourage offshore wind development in New Jersey. And unfortunately, very little was done until now.

The New Jersey Board of Public Utilities is taking a number of steps to implement Executive Order 8 and *OWEDA*.

And as you know, the New Jersey Board of Public Utilities is a regulatory body. So in addition to our job as a regulatory body -- making sure the Public Services of the world and the JCP&Ls of the world are doing the right thing by their ratepayers of New Jersey -- in 1999, the Legislature designated the Board of Public Utilities as the Clean Energy Office for the State. So all of these initiatives, in one way or another, are coming through our agency.

We are developing, as we speak, an offshore wind strategic plan together with the Department of Environmental Protection, the Economic Development Authority, the Department of Labor, and expert consultants. We have initiated a rulemaking process to establish Offshore Renewable Energy Credit, or *OREC*, a funding mechanism which was proposed in July. This rule defines the process by which an offshore wind project receives funds, and how those funds will flow between all of the parties, including the ratepayers.

Last month we opened a solicitation for the generation of 1,100 megawatts of offshore wind capacity, the largest single solicitation of offshore wind in the country to date. The solicitation process closes in December, and the Board will take action in May of next year.

The Governor, at the Global Climate Action Summit last month in San Francisco, called on the BPU to evaluate two additional 1,200 megawatt solicitations of offshore wind capacity -- one in 2020, and one in 2022.

And we are having discussions with our sister states, in the Northeast and Mid-Atlantic regions, to explore the potential benefits of a regional collaboration on offshore wind and other opportunities to combat climate change.

I am happy to be here today before you, and report that the Board is moving expeditiously, yet prudently, with these tasks; always keeping in mind that you and I, as ratepayers, ultimately are involved. The ultimate goal is to achieve the lowest cost for New Jersey ratepayers and the best value for the State of New Jersey.

As we have seen by recent examples in other states, the price of offshore wind is more economical than originally anticipated. The prices have dropped from triple to double digits per megawatt hour. The strength of OWEDA provides New Jersey with the ability to procure offshore wind in a similar competitive environment, which ultimately pays the ratepayer.

And if I can draw an analogy: When we started back in the early 2000s on the solar adventure, if you will, and literally gave birth to a new industry here in New Jersey -- which now employs over 7,000 people -- it was very expensive. Over the years what has happened is, due to

competition in particular, the price has dramatically dropped. And very shortly, we will be celebrating the 100,000th solar installation in the State of New Jersey. We are number 5 in the nation. And we used to be higher, but Florida and Arizona discovered they had sun. (laughter) So we're number 5 -- for a state that doesn't nearly get as much as sun as many other parts of our country. So we're very proud of that.

Offshore wind will create new generating capacity and ultimately lower the cost of energy throughout the entire state.

The Administration's focus on offshore wind power is helping to lead the way in the fight against global climate change. And in doing so, New Jersey will also become a leader in the emerging offshore wind economy; and we have become the focus, not only nationally, but internationally. As you are well aware, our European friends are much ahead of us in many of the renewable and clean energy initiatives. They are very interested, particularly some German companies and some Danish companies, in our offshore wind initiatives. And as a matter of fact, one has opened up offices right here in Atlantic City.

Offshore wind will create construction, operation, and maintenance jobs, which will trickle out and create thousands more jobs in New Jersey. And if I may, the one thing we fail to mention frequently enough is that when we introduce new industries that may initially be expensive, we fail to mention the economic opportunities associated with those industries -- the jobs created. Not only temporary jobs, but sustaining jobs, like in the solar industry. It will have, just as solar has, an economic benefit in jobs, and in other ancillary industries that will benefit our state.

And I submit, every dollar we invest in clean energy today will provide us with tremendous returns in new economic activity.

The benefits offshore wind will provide to our society cannot be overstated. Not only will it help us fight climate change, but it will also spark new innovation, new industries, and the jobs that they bring. And New Jersey has always been in the forefront of initiatives that were well ahead of their time. We just look to Thomas Edison and his initiatives; New Jersey has been in the forefront. Not only will it help us fight climate change, but it will also spark new innovation -- I want to repeat that -- and new industries that will bring new jobs into our state.

I am truly excited to see all of the great benefits offshore wind brings to our state.

As I have said many times before, the time to plan for a clean energy future is now. And with its economic and environmental benefits, offshore wind truly, in my opinion, is a win-win for New Jersey. And we are ready and willing to lead the nation in the clean energy movement.

And I submit, also, from my perspective, that we -- collectively *we* -- have a moral obligation to do everything that we possibly can, humanly possibly can, to mitigate the effects of climate change.

Someone was very kind the other day to point out to me that my runway is getting shorter; and I think that means I'm getting old. (laughter) But we all know young folks; some of us may have children, some of us may have grandchildren, some of us may be thinking about future generations. And I believe we have a moral obligation to do everything that we possibly can to reduce the dramatic effects, and traumatic effects, that climate change potentially will have on our planet.

I want to thank you, Chairwoman; and I want to thank each and every one of you for inviting me here today to talk about offshore wind.

And I am happy to answer any questions, at any time. If you want me back, all you have to do is call. Because I'll go anywhere to talk about what we have to do relative to climate change.

So again, thank you.

ASSEMBLYWOMAN PINKIN: Thank you, President.

Well, I think it's interesting, as you've been mentioning the climate change-- And New Jersey -- our coastline -- we've been so affected by climate change already, with the superstorms. First, it was Irene, and then it was Sandy; so we've lived it firsthand. And as you said, time is of the essence. And with the last U.N. report that came out, it's just so crucial that we address this.

But I'll just ask if any members of the Committee have any questions for President Fiordaliso.

ASSEMBLYMAN McKEON: Through the Chair?

ASSEMBLYWOMAN PINKIN: Assemblyman.

ASSEMBLYMAN McKEON: Mr. President, thank you.

I'm sorry I missed your thoughtful presentation. I'm sure it's in writing, and I'll be happy to review it. You know how much I respect the great work that you do.

MR. FIORDALISO: Well, thank you.

ASSEMBLYMAN McKEON: Just curious, as it relates to the issue on transmission -- as to whether or not the individual providers of wind power should be left or kept to dealing with their transmission; or is

that better aggregated through one specific provider? I was wondering your opinion on that.

MR. FIORDALISO: That's one of the areas we're currently looking into, Assemblyman.

And thank you for your kind words, first of all.

I can send you a CD on the presentation, if you want.

ASSEMBLYMAN McKEON: Yes; I'm going to make certain I-- I stepped in front of your picture. (laughter)

MR. FIORDALISO: But that is one of the areas that we are currently looking at to see what is economically more beneficial. And that is one of the areas where our consultants are going to be of great assistance. There are pros and cons to having the developer initiate the transmission onshore. There are pros and cons to having one backbone kind of transmission, where you have everyone connecting, and then one line into the shore to bring the energy to us.

So we want to make sure that, one, what is the most economical? Two, what would benefit the State more? Now, of course you're going to get conflicting ideas, depending on who you talk to. If you talk to the transmission folks, of course they're going to say, "No, you should have the backbone; you should have one, and we should be the ones to do it." And if you talk to the individual developers, they're going to say, "No, we should do our own."

So we have to review that; we have to examine it. And as I said in my presentation, every step of the way we're going to be prudent in the decisions we have to make, because it affects the ratepayer. So that's where we're at, as far as that's concerned.

ASSEMBLYMAN McKEON: Thank you.

Just to follow up, through the Chair.

You know, is it related to our renewable energy package that this Legislature had passed? Those who are building the systems had indicated that without them controlling the transmission, they wouldn't make the investment; they couldn't attract capital. And again, you said you're looking into it. Is it really just the point of reference -- who gets to make the most money? Or is it--

MR. FIORDALISO: Well, certainly that's a consideration on their part. And it doesn't surprise me that they would say that.

And we have to make sure, before we decide which approach to take, that we're comfortable with it, it's the most economical and the most beneficial.

I am sure -- and I only say this from talking to many, many, many of these developers and just transmission folks -- that they will find a way to make it economical if they really want the job. And that's what the solicitation is all about. That we're going to-- And I believe it closes December 28. Then we are going to sit down -- the Committee is going to sit down and evaluate each one of those submissions from the various developers and see which is the best avenue. And we're going to sit down and talk to the transmission people too; and the consultant is going to help us make those kinds of decisions.

ASSEMBLYMAN McKEON: Well, again, thank you for your service.

Thank you, Madam Chairperson. And we're counting on you.

MR. FIORDALISO: We're going to do it.

ASSEMBLYWOMAN PINKIN: Well, President, on that note, I know -- and we think of it as a new industry, because it's new to us. But it's certainly proven to be very effective in other areas. And one of the issues in Europe that they have talked about is the fact that they can generate such capacity now that -- probably more than is coming through, through the grid. And so it's something, certainly, as you said, to review as we're going forward.

But it's not a new industry; it is proven in many areas. And we're--

MR. FIORDALISO: It is. Some countries in Europe -- I mean, they started this 15 years ago. And a country like Denmark, as an example -- 50 percent of its energy is generated by wind power. And, I mean, you can even go out to the Midwest here in our own country and drive through the fields of Iowa and see one wind farm after another, because they have that kind of wind capacity.

Our best wind capacity here in New Jersey is off the shore. And these wind turbines are going to be 17 to 20 miles off the coast, and so on. So they're going to be -- it's going to be very difficult to see them.

ASSEMBLYMAN ROONEY: I do have a question.

ASSEMBLYWOMAN PINKIN: Assemblyman.

ASSEMBLYMAN ROONEY: So first off, thank you, Mr. President. Thank you for your leadership at the BPU, and recognizing the critical needs of the residents of New Jersey.

So I have two simple questions.

MR. FIORDALISO: Sure.

ASSEMBLYMAN ROONEY: In your analysis -- and I know you have done, sort of, a global analysis on surcharges and the cost -- but do we know, at this point, what the impact, from a surcharge perspective, will be for the ratepayers? That's the first question.

And then the follow-up: Following up on the Chairwoman's comment on the grid, I know we're number 5, as you said, in the country, with respect to solar. Our current grid's capacity -- where are we with that? Can it handle not only the solar capabilities we have now -- and obviously we'll have more as time goes on -- but the additional impact of the wind? And if so, if it can't handle it, then what do you anticipate we have to do and, then again, those costs?

MR. FIORDALISO: Your first question first.

Thank you. Assemblyman.

That's one of the things we're exploring -- obviously, the costs. And that's one of the answers we have to get from our consultants; and that's one of the things we're going to see once the solicitations come back to us.

I will tell you that the state of Massachusetts just got a solicitation of \$65 a megawatt hour. I don't expect that number here; however, the cost, from coming down from triple digit numbers, down to even double digits, has been quite a dramatic change.

The grid is something that we're constantly working on; and it's something that PJM -- in conjunction with the states within the PJM footprint, and there are 13 of us -- are working on that capacity, and working on how much the grid can take and how we can transmit that

energy into the grid. And there will be changes made, if it's necessary, to increase the capacity of the grid.

And that's a concern; and that's something that has to be worked out, but on a regional basis.

ASSEMBLYMAN ROONEY: So what is the overall health of our grid right now, in your opinion? Does it have the capability today?

MR. FIORDALISO: In my opinion, yes.

ASSEMBLYMAN ROONEY: Okay.

MR. FIORDALISO: I believe it does.

ASSEMBLYMAN ROONEY: Okay; all right. Thank you.

MR. FIORDALISO: I believe it does.

And you know, one of the things -- if I may -- Sandy was a wakeup call for us. You know, sometimes out of tragedy you learn an awful lot of lessons. And we saw many weaknesses in our infrastructure, in our grid. And the BPU, at that time, put up well over 100 recommendations and orders for the various energy companies to abide by for future storms.

We're never going to eliminate blackouts, outages -- we're never going to eliminate them. Our goal is to minimize the number of outages, and the duration of those outages, where people aren't without energy for weeks at a time. And I look at what just the most recent one, Hurricane Michael, has done. They're talking about months for parts of the Florida Panhandle before they get energy; months. We have to ensure the fact that that doesn't happen in New Jersey.

And we have to prepare for the worst, unfortunately, as these storms -- as these 500-year storms, or 100-year storms come every--

ASSEMBLYMAN ROONEY: Two years.

MR. FIORDALISO: --five or ten years. So it's something that we have to constantly be on top of.

ASSEMBLYMAN ROONEY: Well, I'm glad you brought that up because, you know, we've spoken about my concerns over the last set of storms that we had here in New Jersey--

MR. FIORDALISO: Yes.

ASSEMBLYMAN ROONEY: --and the outages that-- We had a significant reduced response, in our opinion, from certain power companies. And I know that the thought is now to clear further back, from a line clearance perspective. Is there any thought, if we do need to improve the grid, to start really looking at more underground transmission? And I know it's prevalent in new development--

MR. FIORDALISO: Right.

ASSEMBLYMAN ROONEY: --but a lot of the outages were consistent with old developments, old transmission lines--

MR. FIORDALISO: Yes.

ASSEMBLYMAN ROONEY: --that constantly are impacted by storms.

MR. FIORDALISO: That certainly is an option. And one of the things I think that has deterred that is the cost of it.

New construction is relatively simple in comparison, because as you're doing it -- I mean, you just put it underground. Where the problem exists, as you rightfully indicate, are the older areas, and so on.

Realizing that, and realizing the fact that the ratepayer, ultimately, is going to pay the cost of that, it's a constant balancing act; it really is. And every time an energy company comes before us for a rate

increase, or something of that sort, that's constantly what we're doing. We're balancing it. We want the company to be solvent, we want the company to do well, we want the company to provide the best possible and most reliable service they can at the best possible price.

One of the things we're always concerned about is how much can the ratepayer absorb, as far as costs; and how much does it -- or how detrimental is it to attracting businesses or retaining businesses in the State of New Jersey? Because that is one of the major expenses.

But I think -- where it's possible, I think we should give more serious consideration to it, and not just dismiss it off the top and say it's not worth even exploring.

ASSEMBLYMAN ROONEY: Thank you.

MR. FIORDALISO: Thank you, sir.

ASSEMBLYWOMAN PINKIN: Thank you.

Assemblyman Wolfe.

ASSEMBLYMAN WOLFE: Yes.

Thank you, Chairwoman.

President, thank you very much; it was a very enlightening presentation.

And I really want to speak to you, and the people who are here, about the dilemma of a legislator. Do you represent your own feelings, or do you represent the feelings of the people who you represent? And that's not unique to me, but it's to all of us.

About 10 years ago, my wife and I went to Palm Springs, California; Indian Wells. For the first time in my life I saw the farms that are out there for the windmills. I was very impressed by that. I am very

impressed by wind energy, alternate energy. However, as a legislator in Ocean County -- Ocean County leads the state in registered recreational boats. Brick Township, where I live, is the municipality with the largest number of registered recreational boats; that's number one -- recreational boating.

Number two, commercial fishing. I represent a large pocket of generations of commercial fishermen who have some true issues involving the offshore wind farms.

And last -- and I'm probably going to hear from the environmentalists who are here today -- about birds. So, I mean, personally, I support the proposition. I know we have a lot of speakers here today, but I think there's a lot of deliberation that we have to consider, and we need a lot of answers.

So I appreciate your testimony, and I am looking forward to the other people who are here.

But, so -- recreational boats, commercial fishing, and birdwatchers are on my list.

So thank you.

MR. FIORDALISO: And Assemblyman, they are on ours, too.

ASSEMBLYMAN WOLFE: Okay, thank you.

MR. FIORDALISO: And no final decisions are going to be made-- And we've held stakeholder hearings.

ASSEMBLYMAN WOLFE: Right.

MR. FIORDALISO: And that's a normal practice for the BPU to do -- having stakeholder meetings to get input from a wide variety of

different stakeholders, whether they're the boating industry, whether it's environmentalists as far as birds are concerned--

ASSEMBLYMAN WOLFE: Right.

MR. FIORDALISO: --and so on. All of this will be taken into consideration before a turbine is put in the water.

ASSEMBLYMAN WOLFE: Thank you.

ASSEMBLYWOMAN PINKIN: Thank you for those comments, Assemblyman Wolfe.

President, would you-- Shall we have Grace Power, your Chief of Staff, and Ken Sheehan, the Director of the Office of Clean Energy, come up while you're there?

MR. FIORDALISO: Sure.

ASSEMBLYWOMAN PINKIN: Do you want to--

MR. FIORDALISO: Sure.

ASSEMBLYWOMAN PINKIN: --come up?

Thank you.

You can bring your chair up, Grace. Just bring it up.

Please proceed, Grace; or whoever-- Do you have any comments that you want to add, or--

G R A C E S T R O M P O W E R: Oh, no. I apologize if there's any confusion. No; we we're just here to support the President today. And of course, if you or any of the members of the Committee need anything from myself or Ken Sheehan, our Director of the Division of Clean Energy; by all means, please reach out at any time

ASSEMBLYWOMAN PINKIN: Ken, do you want to--

K E N S H E E H A N: Certainly not. I'm here to provide any assistance necessary, and I look forward to continuing to work with you.

ASSEMBLYWOMAN PINKIN: Okay; well, we thank you so much.

Any other questions? (no response)

Okay, well thank you, President. Are you planning on staying, or--

MR. FIORDALISO: Unfortunately, I have meetings back at the office; so I ask to be excused.

And again, thank you for the opportunity to be here.

ASSEMBLYWOMAN PINKIN: Thank you so much for all this important work. It's a very exciting time, and we look forward to moving forward.

Thank you.

MR. FIORDALISO: Good; thank you. And thank you all.

ASSEMBLYWOMAN PINKIN: Next, we have the Center for Ocean Observing Leadership, Department of Marine and Coastal Sciences at Rutgers, Josh Kohut, Associate Professor.

Josh.

J O S H T. K O H U T, Ph.D.: Good afternoon.

Thank you, Chairwoman Pinkin, Vice Chair Lopez, and the Committee for the opportunity to come and speak to you this afternoon.

My name is Josh Kohut; I'm an oceanographer. I'm at Rutgers University. I'm an Associate Professor; I've been there for 20 years.

I grew up in Ocean and Monmouth counties; my first experience with offshore wind was actually on a small sailboat. I

competitively raced sailboats in Barnegat Bay for most of my young life, and that's what really sparked me into this career to be an oceanographer.

And one of the things that I wanted to bring today was to talk more on the resource that's there -- the wind resource that's available, and the work that we've been doing in that space.

The ocean off New Jersey is very unique. It undergoes a huge temperature change from summer to winter unlike anywhere else on the planet. That drives a very different atmospheric connection to the ocean than you might see in other places. We've seen it in sea breezes. If you have ever been on the beach in the summer, you feel that nice cool breeze; it comes in the afternoon. That's driven by the fact that the Pine Barrens are really hot, the ocean is fairly cold.

Sometimes you might go to the beach and the water temperatures are comfortable in the mid-70s. Other times you might go, a couple of days later, and all of a sudden the temperature has dropped down to 58, 65 degrees -- something like that. That's because there's this very cold pool of water offshore that occasionally comes all the way to the beach. That has a big impact on the winds.

And so the uniqueness of the ocean off our coast is important to consider when we're looking at what winds are available to offshore facilities that are planned to be developed off the coast.

And we were-- With the support of New Jersey BPU, we have been running an atmospheric model that, unlike other resources that have been available to this community, actually incorporates those specific details that are very local to the State of New Jersey and the waters off our coast. And we used that model for the past seven years to understand what

winds are available; how the winds change from hour of day or month of year, from year to year. All of those things we can look at with this model.

And to summarize, briefly today -- recognizing that it's a busy schedule -- there's a good wind resource offshore. The wind is, on average, 20 miles an hour. There are frequently times when the winds are stronger and a bit weaker, but that resource is there.

Another point that I'd like to raise, that we've seen in this, is that we all know that there are many benefits that the ocean brings to the state. Assemblyman, you mentioned some of those benefits. I've been a recreational boater along the coast for a while. Commercial fishing is very important to the State; transport is very important to the State. And I think there's a very unique opportunity to have all of these continue in a way that benefits the State, and that's really important. And I congratulate the State and the agencies -- the public sector as well as the private sector -- for the work that has been done to date on trying to make sure that everything progresses in a way that ensures that all of these different industries can thrive.

The one thing that I will raise is that one of the key pieces to ensuring that that happens is that everyone speaks a common language; that engagement happens that speaks a common language. As a scientist, an ocean scientist, my common language is data. And there is a wealth of data that is available to the State; there's a wealth of expertise; there's an incredible capacity that New Jersey has.

The ocean off our coast is one of the best measured and predicted oceans on the planet. We're working with National Weather Service to better predict intensities of storms as they come to the coast.

That expertise is here, and it's available; and I'd like to-- And in my written testimony I go into some of the details of the data sets that are available to the State, on both timescales appropriate for planning and policy, and also timescales that would be appropriate to understand what's happening at the individual time a turbine is getting installed offshore. That all exists; it's summarized in this document.

And the last thing that I'll raise, in terms of data, is to let the Committee know that we have been in discussions; and there are opportunities as these offshore structures get developed. There are ways to put additional sensors on those structures. We have a very difficult problem of measuring the ocean; it's not easy to just go out and make a measurement in the ocean. So some of the other sectors, that may be impacted by these offshore facilities, could potentially benefit from additional data that's provided by those structures. And again, that just would require more discussion between all those different stakeholders to understand what those impacts are.

And so I'll close by thanking the Committee for your time and all the great work that you do. And I welcome any questions that you may have.

ASSEMBLYWOMAN PINKIN: Well, thank you so much, Josh, for your input -- Professor, for your input. I'm sure we'll need your expertise as we go forward.

Are there--

Assemblyman McKeon.

ASSEMBLYMAN McKEON: Yes; very briefly, Professor, thank you.

Assemblyman Wolfe mentioned the Coachella Valley before; and I am familiar with around Modesto, a similar kind of wind farm. Where does 20 miles an hour rate, as it relates to the kinds of wind conditions for those places that are quite successful?

DR. KOHUT: So I'm not familiar with the wind resource that's available to those. I would have to check and get back to you on that, but--

ASSEMBLYMAN McKEON: How about -- I don't know if Massachusetts or, like, if some of the other coastal--

DR. KOHUT: The Mid-- One of the things that makes the Mid-Atlantic Bight -- which is the region of the ocean that we consider between Cape Cod and Cape Hatteras -- so appealing, are two main things. There is a very reliable and robust wind resource that's available; there's also a shallow continental shelf. And so by having a shallow continental shelf -- it's easier in terms of construction. Some of the offshore systems that we would consider for the East Coast, for example, are floating systems, because the water depths get so deep so quickly.

And so those are the things that make the appeal for having those offshore facilities here off our coast.

ASSEMBLYMAN McKEON: Thank you; thank you, Madam Chair.

ASSEMBLYWOMAN PINKIN: Thank you.

Any other questions? (no response)

Thank you so much.

DR. KOHUT: Thank you very much.

ASSEMBLYWOMAN PINKIN: We're going to take a little break for a second from the hearing on wind, in deference to Assemblyman Benson. We will hear A-3018, which requires -- and this is for discussion only -- it requires evaluation for an abatement of mold hazards in school buildings.

(Committee discusses A-3018)

(Committee resumes hearing)

ASSEMBLYWOMAN PINKIN: All right; now we'll return to our normal programming. (laughter)

We'll go back to our wind hearing.

And we have Ramboll -- Alan Shimada, Principal, and Richard Baldwin, Principal Consultant.

RICHARD J. BALDWIN: Good afternoon.

Hello; thank you for inviting us here, Chairwoman and the Committee.

My name is Richard Baldwin; I'm a Principal Consultant with the firm of Ramboll. And along with my colleague, Alan Shimada, we are the principals in charge of the development of the Offshore Wind Strategic Plan for the BPU.

And we're very excited to be here, and also very honored with the trust that the State and the BPU has put in our team.

I have provided just a brief, kind of -- some notes for me to keep going, and some pictures. You can see some of the scale of things of the issues that we're working with.

We are-- The strategic plan -- the BPU team is made up of several firms, including Ramboll, Stantec, Rutgers -- Josh is back there; he's on our team -- BVG Associates, the Business Network for Offshore Wind, InGroup, and Endeavor. We all have very specific and specialized experience in the development of offshore wind.

One thing about Ramboll -- we are a large Danish company, so we're one of these international companies that are coming in. But several years ago, Ramboll acquired the firm of Environ, which is a very strong New Jersey-based company. We have had two offices over 25 years in New Jersey.

And I did want to say about the-- We'll talk about job growth and job creation. This is one of those that we have several residents of New Jersey who are working on the project, including Alan.

One of the things that is really great about the BPU -- and it's something that is very important -- is they understand the developing U.S. market. While it is an existing market in Europe, it's a mature market in Europe, it is a new developing market in the U.S. So one of the advantages we bring with several of our team members, including Ramboll, is the lessons learned from the European model. But we also are very good at -- we understand the U.S. Often I feel like one of my jobs is to translate from Danish -- which I don't actually speak -- into American businesses. "This is the way we do it in Europe." Well, you're in the United States now.

As we say, offshore wind is coming. It started several years ago with Cape Wind. One of my colleagues and I had actually done a lot of work up in Massachusetts with some of the port facilities; and then Cape Wind died, and that really killed the industry for several years.

It is now alive and it is growing. The BPU's recent solicitation for 1,100 megawatts of offshore wind, followed by the promise of two additional 1,200 megawatt tranches, is very important for the development of the offshore wind industry bringing the supply chain. That is, you have to get all the big chunks over here; you have to build all the big chunks; you have to send all the big chunks offshore.

And so we have a couple of maps in here -- they're just trying to illustrate that New Jersey is in the center, the absolute center. And I think this is a very good one of the offshore wind development and the offshore wind market on the East Coast. We've all heard about up in Massachusetts and in Rhode Island, where there also have been projects. But you can also see that there's -- off of the New Jersey-New York Bight there are projects, and then also going to the south.

Again, I just want to really point out -- and our colleague, Liz, from the Business Network for Offshore Wind will speak more about this -- but the promise of 3,500 megawatts is what is going to drive the initial market and also bring the initial market to New Jersey.

And again, to develop this new market, to bring manufacturing, to bring jobs, we also have to depend on other states and their promise of up to 10 gigawatts, or 10,000 megawatts of power. Everybody is going to need-- The nacelles are going to need parts, they're going to need blades. There's not going to be six blade manufacturing facilities in every state. We think, and we are confident, that New Jersey will get more than its fair share because of the workforce, the economic benefits, etc.

To now go into one of the specialty areas that is very critical, and it's something that I think people are starting to understand now. So

far, in the United States, because it's a developing market, there hasn't been a lot of money spent on the development of the infrastructure that's going to be required to build these and maintain these wind turbines. We do not, now, have enough specialized port facilities. Once these ORECs and the PPAs are signed, the developers have five years to officially start spinning. And there's a huge process for permitting and consenting; but also we have to have the supply, we have to have the infrastructure that's going to be required. Initial tranches -- honestly, most of the materials are going to be coming from Europe; but they have to be staged. They have to, then, be erected; it's called a marshalling port. And one of the things that's very important in the concept of that is these marshalling ports can't have a bridge in the way. The Verrazano Bridge is too low for these vessels to go out to the offshore.

And then, the capturing as much of the operations and maintenance. So these are the boats that go out; they have to have staging yards. It's very important; so that's a 25-year tale.

So why New Jersey? We have a lot of port facilities, existing port facilities. We have the Port Authority of New York-New Jersey that knows how to run ports. Everything is logistics, logistics, logistics. When we start building these things, it's going to be the dance of the elephants. And they're not going to -- the developers are going to just-- They don't want any down time.

We're also right in the middle of where all these things are going to be built. We can work off of New York; we can work in the New Jersey-New York Bight; we can work down in Delaware.

We also-- We do have several port facilities that are appropriate. But another thing is we have brownfield sites. We don't need existing port facilities; we can actually take an old power plant and repurpose it. And then with the DEP, that's actually a funding mechanism for brownfields redevelopments.

One of the things that I think is a most important part right now -- and this is something that's very important in the industry -- is New Jersey has made a commitment to invest in the infrastructure. In Europe, all these big ports -- they do a model. They have these mega ports; they're 1,000, 2,000 acres. And the federal government provides those port facilities, all the specialized underpinnings and the like.

Nobody in the supply chain and the developers right now know who's going to pay for that. They honestly don't want to; they're not used to it -- the supply chain, the people who are building the transition pieces, the blades, the nacelles. So what is going to-- And one of the things that is so great about the EDA and the BPU is there's going to be real financial incentives to bring and to develop the port facilities.

And I believe that is -- pretty much, I think-- You know, we also, obviously, have an incredibly educated workforce. We already have extensive experience with warehousing and logistics; it's incredibly important.

And the other thing that I think is important is we're really well wired. This is all going to be-- Again, it's all going to be fiber optics; it's all going to be run by computers. So again, New Jersey is very well set to support the supply chain.

Alan.

A L A N S H I M A D A: I'll talk a little bit about the environmental aspects of what we're doing, in terms of helping develop the Offshore Wind Strategic Plan.

But just to give you an idea of why we're doing this: New Jersey lease areas are ideally suited to offshore wind development. We want to utilize the offshore -- the continental shelf as a renewable energy source. It's relatively close to shore, and in shallow water depths.

We generally have -- as Josh mentioned, we generally have strong winds speeds that we can use to harness to generate electricity.

What we have is designed for utility scale development. And you talk about the existing leases -- Orsted has existing leases; U.S. Wind has existing leases. And you have adjacent facilities. Deepwater Wind down in Delaware and Equinor up in New York could also potentially tie into the New Jersey grid and supply energy to New Jersey.

One of the things that we want to make sure is that we want to develop the valuable ocean resources, but in an economically and environmentally sound basis. So as part of what we're doing, in terms of the New Jersey BPU, is we're doing -- we're looking at the environmental aspects of it. And it's important; as Rich mentioned, there are many lessons learned in Europe that can be applied to U.S. markets. But we need to understand that we have a local environmental and energy generation/usage that we need to incorporate and address.

One thing to understand is that the offshore wind market is not just the developers, okay? It's not just developing the offshore wind, but it's a complex project that stretches from offshore development, to coastal ports, to onshore connection -- interconnections. So it spans the entire --

not only the Federal government, but also the New Jersey State government. And so that's where a big understanding of the State and local impacts, and how the European lessons learned, can be translated to New Jersey.

If I refer to the Executive Order 8 -- it mentions that we need to make sure that "natural resources are protected throughout the development and operational stages of offshore wind energy production." And that's part of what our mandate is, and that's part of what we're doing for purposes of developing the Strategic Plan.

I won't go into details in terms of the environment modeling; but just understand that we're looking at things like fisheries, and fishes, and the impacts on the habitat and biota. We're looking at avian baseline data and how development of offshore wind would impact those species.

We're talking about mammals -- okay? -- things like sea turtles and the white whales, and how we develop responsibly so that we address those requirements.

And all of this is encompassing, as well, the geotechnical atmospheric conditions.

But one thing to understand, as someone mentioned, is that we want to make sure that this is done responsibly and we're doing it with stakeholder input. And we want to hear from those folks who are impacted -- you know, the recreational boaters, the fishermen, and the transportation. So that is part of our activities, in terms of gathering stakeholder input.

The other thing, in terms of renewables -- and it was mentioned -- we need to responsibly develop the infrastructure such that we ascertain and we affect the environment. And we talked about the resiliency --

climate adaptation to address global sea-level rise, storm resiliency. All this will help in terms of addressing climate change and the impacts of climate change. If we talk about global wind -- 3.5 megawatts -- you're talking about over 7 million tons, annually, of CO₂. So it's significant, in terms of the impact on global warming.

The other thing is less reliance on fossil fuels also has health benefits. It improves the air quality and creates local health benefits.

ASSEMBLYWOMAN PINKIN: If you could just summarize, just so we can see if there are any questions from any members of the Committee.

Do you have any questions?

ASSEMBLYMAN ROONEY: I do.

ASSEMBLYWOMAN PINKIN: Oh, Assemblyman

ASSEMBLYMAN ROONEY: I thought he was going to summarize.

ASSEMBLYWOMAN PINKIN: Are you--

MR. SHIMADA: No, no--

ASSEMBLYMAN ROONEY: You're not?

MR. SHIMADA: No, that was it.

ASSEMBLYMAN ROONEY: Okay.

MR. SHIMADA: In essence, what we're doing is making sure that the environment is protected.

ASSEMBLYWOMAN PINKIN: Thank you.

Assemblyman Rooney.

ASSEMBLYMAN ROONEY: Okay; there you go.

In no particular order -- because both of you spoke -- you did make a comment; you said, "Our workforce would get its fair share." What do you mean by that? Because I just hope that's not the same pitch that -- you were in Delaware or Massachusetts -- that you said. What does that exactly mean?

MR. BALDWIN: So the-- As I indicated, there's not going to be seven wind blade manufacturing facilities, one in each state.

ASSEMBLYMAN ROONEY: Right.

MR. BALDWIN: So by offering economic incentives from the EDA, and also the fact that it's a smart place to-- One of the things about all this infrastructure is, it's so big. A single blade, now, is going to be 100 meters long; it never gets very far from the water, whether it's delivered to a port facility and then gets taken out; whether it's manufactured -- so all the bits come--

ASSEMBLYMAN ROONEY: No, I understand that.

MR. BALDWIN: So--

ASSEMBLYMAN ROONEY: I'm just trying to understand, because you-- We're looking at creating jobs, right?

MR. BALDWIN: Yes; and it's--

ASSEMBLYMAN ROONEY: That's part of this. And you also said, though, a lot of the parts and the products would, maybe, be made in Europe. So what do you anticipate actually being made here -- whether it's in the United States or in New Jersey, if anything?

MR. BALDWIN: It's -- so because of the initial, as a first -- as basically a first responder, and similarly with Massachusetts, nobody is making these components in the United States right now. So the early

projects -- like the 1,100 megawatt tranche that's coming out -- then your wind -- most-- There is not local -- there is not a lot of local contact for manufacturing them.

But as we go forward, and there's the next 1,200 megawatt tranche, there's the next, and the following one, it establishes the market and it makes it economically viable for the manufacturers to then place here. So we believe we're going to see more and more local content of the manufacturing as the industry matures with time.

ASSEMBLYMAN ROONEY: So there would be the job creation for the actual assemblance?

MR. BALDWIN: Yes. And Liz has a real-- Yes; and Liz will also speak a little bit more-- She's more of the job expert with us. But it's also trying to get as much of the infrastructure attracted to New Jersey. So the port facilities-- So it's not just the manufacturing; it's the boats, it's vessels, it's--

ASSEMBLYMAN ROONEY: Right; I understand that. And so I'm just touching base on some of the key things that you raised.

MR. BALDWIN: Yes.

ASSEMBLYMAN ROONEY: So back to the ports -- you had mentioned that these units would not fit under the Verrazano Bridge. So what ports do we have that actually would be able to assemble these, and then go out to the ocean?

MR. BALDWIN: There are a couple of power plants that are well suited, in the Perth Amboy area, that are 80 acres; and there are no bridge issues associated with them.

ASSEMBLYMAN ROONEY: But they are not currently a port, right?

MR. BALDWIN: They are not currently a port. It's the erection port, where they bolt all the bits together. And they actually send them out vertically; it's an amazing thing to see.

ASSEMBLYMAN ROONEY: No, I'm familiar with it, because I'm in Europe. I'm just trying to understand, because you did raise Port Authority of New York and New Jersey.

MR. BALDWIN: Right; Paulsboro is another good port, which could be utilized for -- for instance, primary steel production, like the monopoles and things. Because they're going to be fed by feeder barges, and they don't have to go out vertically--

ASSEMBLYMAN ROONEY: Okay.

MR. BALDWIN: --so you you don't have the bridge issue.

ASSEMBLYMAN ROONEY: The next question is, with respect to 1,100 megawatts--

ASSEMBLYWOMAN PINKIN: Assemblyman, can I just--

Perhaps it might be better, if you don't mind, if we could hear the rest of the testimony maybe; and then if we have questions, we could bring them back. Because maybe we'll answer some of the questions in the process.

Otherwise, we might be here longer. And I don't mean to interrupt you--

ASSEMBLYMAN ROONEY: At your pleasure.

ASSEMBLYWOMAN PINKIN: --and I'm not trying-- I just want to try to move it along as quickly as possible.

ASSEMBLYMAN ROONEY: Well, just one question, though.

With respect to the 1,100 megawatts -- since it's been discussed -- how many units do you anticipate that being offshore?

MR. BALDWIN: Right now, people are using 8 to 10 megawatt as the number. So it's 100 units -- 110 units at 10 megawatts.

ASSEMBLYMAN ROONEY: Okay, thank you.

ASSEMBLYWOMAN PINKIN: Do you want to just wait until we hear the--

ASSEMBLYMAN WOLFE: I'll ask a quick question.

ASSEMBLYWOMAN PINKIN: All right.

ASSEMBLYMAN WOLFE: A short question.

ASSEMBLYWOMAN PINKIN: Go ahead, Assemblyman.

ASSEMBLYMAN WOLFE: All right. I'm going to ask a -- I think I'm going to ask a short question, but you have to answer it real quick before she-- Before she gets upset, I have to ask you a question. (laughter)

ASSEMBLYWOMAN PINKIN: You do have a profound impact on the hearings. (laughter)

ASSEMBLYMAN WOLFE: Okay, so here's my question.

You said you could use power plants. Could you use Oyster Creek?

MR. BALDWIN: Sure. We have to look at it, and that is part of the plan -- is to evaluate that efficacy of various facilities.

ASSEMBLYMAN WOLFE: Okay, and then the second half of my first question -- the transmission. Is it fiber optics, or is it lines under the ocean, or lines on the ocean?

MR. BALDWIN: Typically-- So there's going to be 100 of these things out there. So there are inter-array cables--

ASSEMBLYMAN WOLFE: Right.

MR. BALDWIN: -- and there are cables that then go to the part. And they're all buried; yes.

ASSEMBLYMAN WOLFE: Thank you.

ASSEMBLYWOMAN PINKIN: Thank you.

Okay, so we'll move on, then, to the Offshore Wind Business Network (*sic*), which is the largest U.S. offshore wind business alliance.

And we'll hear from Liz Burdock, the Executive Director.

Please proceed.

L I Z B U R D O C K: Thank you, Chairwoman Pinkin, and members of the Committee.

It's a pleasure to be here.

My name is Liz Burdock; I'm actually the President and CEO of the Business Network for Offshore Wind. I got a title change recently, which I--

ASSEMBLYWOMAN PINKIN: Congrats.

MS. BURDOCK: Thank you.

My remarks are going to focus on where New Jersey stands as it relates to the entire U.S. offshore wind market, and economic benefits that are going to be derived from the industry; and how we're using that information in incorporating it into the Offshore Wind Strategic Plan.

So in front of you, you have a few slides. There's a little more than what you probably need. But just a few words about who we are.

We're a nonprofit organization. We are solely focused on offshore wind; that's all we do, every day; I say 24/7/365. So we've really become the offshore wind market experts.

We provide education, information, and, really, partnering. We partner U.S. businesses with European businesses; as you said, Governor Murphy is over in Germany right now. That's really important, because it's important to bring over that expertise that they have in Europe. But it's also important to make sure that those companies don't displace our U.S. businesses, but that they actually partner with them and build up our capacity and expertise.

We're focused on building out the U.S. offshore wind supply chain, and we do that through a variety of ways.

Very quickly, the infographic you have in front of you shows you where we are with the U.S. market right now. We have 13 wind energy areas that have been leased by the U.S. Bureau of Ocean and Energy Management. They are leased from Massachusetts all the way down to North Carolina. That represents 17 gigawatts, or 17,000 megawatts of offshore wind potential.

By the end of 2019 we'll have an additional two leases in Massachusetts auctioned off to developers; and we'll have another four in 2019; that's the New York Bight which, obviously, impacts New Jersey as well.

We have about 4 gigawatts of offshore wind in the pipeline; that includes the 1.8 gigawatts that have already been procured and financed from other states, the 1,100 megawatts solicitation from New Jersey, and another 800 megawatt solicitation from New York.

By 2030 we expect to have 10 gigawatts in the pipeline. This is important because when we get to that magic threshold of about 4 to 6 gigawatts -- which we think we're going to get in 2020 -- that will start attracting manufacturing plants that we all want. And the components will not be manufactured in Europe anymore; and I'll get back to that.

Price point I think is really important. We've seen an over 50 percent drop in prices every year in offshore wind. In 2016, Block Island started generating offshore wind electricity; that's the first offshore wind project that we have in the United States. It's a 30 megawatt project at 24 cents a kilowatt hour. So that was in 2016. In 2017, Maryland financed their projects -- 368 megawatts for 13 cents. So already we cut it.

And then again, the next year later, Massachusetts had a procurement for 800 megawatts at 6.5 cents, which you heard President Fiordaliso talk about.

So that's where we are in a price point. I do think that the price is going to fluctuate over the next 18 to 24 months. Because I think it's really important -- and I really do think that New Jersey is being smart about this and not being just solely focused on price, but actually focused on what's the best value for the ratepayer and the businesses within the State of New Jersey -- looking at potentially having a little higher price than the 6.5, but really focusing on that local job creation. And because of that, if you want local jobs, you are going to have to pay a little bit more, more than likely.

Let me just move on. Very quickly, there's a project timeline in your packet. You'll see all the projects that are slated to be developed through 2024; that does not include the New Jersey 1,100 megawatts yet,

because we don't know when that will be operational. But you get a sense of what this pipeline is looking like. And this is exactly what businesses are looking at right now, and why they're very attracted to the U.S. market.

I want to talk a little bit about some other states that are really taking a role in helping this market develop.

Obviously, Massachusetts is one; in 2016, they passed the first large-scale procurement legislation in the country, for 1,600 megawatts. Last year, they doubled that; actually, I'm sorry, this year they doubled that to 3,200 megawatts.

They also removed, from their legislation, a provision that the next tranche of offshore wind that they procure has to be lower than the 6.5 cents, because they found that what happened was they weren't creating the jobs that they needed to in the state at that price point. So I think that's an important lesson learned.

New York has a solicitation out on the street for 800 megawatts as well, and a commitment for another -- for 2,400 megawatts in total. And I think it's also-- Before I get to New Jersey, California is now -- has four areas of offshore wind where they will be actually going through the Federal process and leasing those sites. And that's a-- And they've also, obviously, just signed into law SB-100, to focus on 100 percent renewable energy by 2050. So that's creating another really large market and potential for offshore wind.

But I have to say New Jersey is leading, absolutely leading; 100 percent, New Jersey is leading, thanks to your leadership, your Governor's leadership, and your BPU President's leadership.

The Governor coming out with the 3,500 megawatt commitment, and clear process and timeline, has sent a strong signal to the industry. They are looking to make investments in this state. I don't think you could have done it any better, to be honest.

So what is happening right now -- and to the Assemblyman's question about what jobs are going to be created -- my member companies-- We are a member organization of Tier 1 suppliers. It does get very complicated in this supply chain, as Alan mentioned. There's Tier 1, and Tier 2, and Tier 3 suppliers. The Tier 1 suppliers are your steel fabricators, your nacelle manufacturers, your cable manufactures. They are all over the state right now looking at your port facilities. I know that they are looking to establish steel fabrication facilities here; they're looking for workers; they're looking for everything from estimators to welders. So there's a lot -- you are going to capture more than your fair share because of how you have approached offshore wind with this solicitation.

So I think that's important to say, as where you are.

I think regional cooperation is key for you all. I mean we're talking 96,000 jobs that we've built at the offshore wind pipeline, that I've just talked about, when we get to that 10 gigawatts in 2030.

That's the number that Europe supports right now at the same gigawatt level. So we absolutely expect to see that here in the United States and on the East Coast. New Jersey -- again, I think it's important for you all to work cooperatively with other states. We call it *coopetition*. You can compete, but you need to cooperate as well. That's important for the supply chain, because it is going to go up and down the East Coast.

I want to just mention just a few, couple, of things, and then I'll wrap it up and take some questions.

We do see some gaps in the supply chain holistically, where I think that there's some great opportunities for New Jersey -- the vessels; specialty vessels -- to do shipbuilding at some of your ports. Cable manufacturing is a great possibility for New Jersey, as well as the O & M workforce training that will occur. And just the O & M workforce as well, because you are centered in between a lot of projects that are going on that will be developed.

We are doing a lot of stakeholder outreach and meetings with the strategic planning process. And one of the novel things that we're bringing to the table is a podcast to keep citizens, and anyone interested in what's happening with the New Jersey process, up-to-date.

We also work with all the environmental groups; we also work with the commercial fishing industry to really make sure that everybody is engaged in that process.

And then, finally, to really get down to those secondary and tertiary levels of the supply chain, my organization runs a supply chain portal. It's a database where any company can register on it, and we will reach out to them by geographical area -- those in New Jersey that want to be part of the supply chain -- and get them connected into this so that jobs will be developed.

And I think that's, in summation, pretty much what we're doing, and where the industry stands, and how well you all are doing.

ASSEMBLYWOMAN PINKIN: Thank you.

Any questions?

Assemblywoman Swain.

ASSEMBLYWOMAN SWAIN: Like my colleague on the other end was talking about jobs, and since it's a relatively new industry and there's going to be a lot of implementation, installation, are your member companies doing on-the-job training for the new employees?

MS. BURDOCK: Yes. So what happens is, there will be some generalized training, like health and safety training, that will be-- Your community colleges will take the curriculum from Europe and do global organization health and safety training, your other OSHA trainings. Those trainings will all be delivered, like, at community college; and some of the welding. But when it gets real specific -- like the rigging and specific welding techniques -- that will all be done with the Tier 1 suppliers and their training programs.

ASSEMBLYMAN ROONEY: So let me just follow up on the jobs.

MS. BURDOCK: Sure.

ASSEMBLYMAN ROONEY: You said Tier 1, Tier 2, Tier 3. Under Tier 1, though, will any of the components for the wind turbines be made in the United States?

MS. BURDOCK: Absolutely; all of them will. So what we will--

ASSEMBLYMAN ROONEY: So what you're saying -- the blades will be made here in the United States under Tier 1?

MS. BURDOCK: Yes, absolutely.

So it is a progression of where-- I mean, obviously, the market has to be in place; but all of the signals are--

ASSEMBLYMAN ROONEY: But that's down the road. I'm talking initially.

MS. BURDOCK: Initially, no. The blades will not be made here initially.

ASSEMBLYMAN ROONEY: Okay.

MS. BURDOCK: What will be made here initially will be your foundations, your towers, your transition pieces. All your steel work will be done here.

I will say, one of the issues that we have right now with that is the steel tariffs. It is impacting the price; so that is a concern that we are seeing. But initially, all the steel work-- And there's a lot of steel work in this that will be done here--

ASSEMBLYMAN ROONEY: But the component itself -- the wind turbine--

MS. BURDOCK: The nacelle--

ASSEMBLYMAN ROONEY: --that's made overseas.

MS. BURDOCK: Right now, it's made overseas--

ASSEMBLYMAN ROONEY: Okay.

MS. BURDOCK: --because what we need -- what the manufacturers need is, they need a pipeline of 4 to 6 gigawatts of offshore wind, and then they need to see a constant -- they'd like to see a constant 1 gigawatt of offshore wind per year after that to make the investment of a manufacturing plant in the United States.

ASSEMBLYMAN ROONEY: Okay.

MS. BURDOCK: And we are getting there.

ASSEMBLYMAN ROONEY: Fair enough; thank you.

ASSEMBLYWOMAN PINKIN: Thank you.

Any other questions from any members of the Committee? (no response)

Okay, all right. Thank you very much for your testimony.

MS. BURDOCK: Thank you.

MR. BALDWIN: Thank you.

ASSEMBLYWOMAN PINKIN: All right.

That closes the testimony on the wind.

I will ask for a roll call for attendance.

ASSEMBLYMAN ROONEY: For attendance -- here. (laughter)

MS. CALVO-HAHN (Committee Aide): Thank you, Assemblyman Rooney. (laughter)

ASSEMBLYMAN ROONEY: You looked at me, (indiscernible). (laughter)

MS. CALVO-HAHN: Assemblyman Wolfe is present.

Assemblywoman Swain.

ASSEMBLYWOMAN SWAIN: Here.

MS. CALVO-HAHN: Assemblyman McKeon.

ASSEMBLYMAN McKEON: Present.

MS. CALVO-HAHN: Assemblywoman Lopez.

ASSEMBLYWOMAN LOPEZ: Present.

MS. CALVO-HAHN: Chairwoman Pinkin.

ASSEMBLYWOMAN PINKIN: Present.

MS. CALVO-HAHN: Thank you.

(END OF EXCERPT)