

ECONOMIC DEVELOPMENT AND ENERGY COMMITTEE
OF THE
SUFFOLK COUNTY LEGISLATURE
MINUTES

A meeting of the Economic Development and Energy Committee of the Suffolk County Legislature was held in the Rose Y. Caracappa Legislative Auditorium of the William H. Rogers Legislature Building, 725 Veterans Memorial Highway, Smithtown, New York, on Wednesday, September 5, 2012.

Members Present:

Deputy Presiding Officer Wayne Horsley - Chairman
Legislator Stern - Vice-Chair
Legislator Cilmi
Legislator Gregory
Legislator Nowick

Also In Attendance:

Michael Pitcher - Aide to Presiding Officer Lindsay
Debbie Harris - Aide to Legislator Stern
Paul Perillie - Aide to Legislator Gregory
Greg Moran - Aide to Legislator Nowick
Maria Barbara - Aide to Legislator Tom Cilmi
Matthew Cardaro - LIPA Oversight Committee
Joe Schroeder - BRO/Energy Specialist
Laura Halloran - Budget Review Office
Javed Ashraf - Energy Engineer
Maureen Dolan Murphy - Citizens Campaign for the Environment
Tim Daniels - Senior VP/ Market Development
William Moore - CEO / Market Development
All Other Interested Parties

Minutes Taken By:

Alison Mahoney - Court Stenographer

Minutes Transcribed By:

Alison Mahoney and Gabrielle Skolom - Court Stenographers

*(*The meeting was called to order at 2:00 P.M. *)*

CHAIRMAN HORSLEY:

Welcome to the Economic Development and Energy Committee meeting of September 5. May we all stand for the Pledge of Allegiance.

(Salutation)

May we all stand for a moment of silence for those men and women who protect our freedoms, both home and abroad.

(Moment of Silence Observed)

All right. Good afternoon, everybody. We do not have a -- any resolutions to be handled today but we do have an exciting presentation by Deepwater Wind which is -- Deepwater Wind is interested in placing windmills off of Montauk Point. It is much more than that, but I think -- I think I'll let them -- let them express, you know, what they're interested in doing. As far as I know, I think this is the first time that the public has had any access to this project. It comes about from LIPA looking to increase the amount of energy of 2,500 megawatts of energy to the grid on Long Island, and they're asking for proposals, particularly proposals that have sustainable components. And so with that, I'd like to bring up Deepwater Wind, both William Moore, CEO, and Tim Daniels, senior vice-president of marketing and development.

MR. MOORE:

Thank you very much for that kind introduction. Members of the Committee, thank you for allowing us to visit with you this afternoon to tell you more about our project. I would like to say at the outset, of course, that, as the Chairman just mentioned, this is a proposal we have made as part of LIPA's ongoing competition, and as such, it would not be appropriate for us to talk about any aspects of that proposal to LIPA per se. But this is a project we have been developing for several years now, and it's very much in the public realm, and so we thought it would be appropriate for us to come in and tell you more about it. You know, I think, as a general overview, this is a project of a sort that's not been proposed for Long Island before.

I mean, what we're proposing to do here is combine a large-rated submarine cable, also known as transmission line, that would connect LIPA to southeastern Massachusetts and much the same way as the Neptune cable connects LIPA to New Jersey. And out in the middle of this high voltage of submarine cable, we would propose to install a very large offshore wind farm using the latest and much larger and much more efficient offshore wind generators that are being developed in Europe as we speak. So this is a project that offers things that have not been integrated before in a generating project for Long Island. Not only do we have the largest clean power project that's been proposed for New York State in the 50 years since the Power Authority built the hydro facilities up on the Saint Lawrence River, but we have, for the first time, a transmission connection that will make it possible for LIPA to import firming power from the single utility market in the region that has the lowest cost energy available, and that is southeastern Massachusetts, where there's a surplus of gas fire generation.

And so, in sum, what we propose to do here is supply LIPA with 600 megawatts of firm power, which was the requirement of this competition, interconnecting at the Shoreham Nuclear Power Plant where there is electrical infrastructure large enough to accommodate our generation, and this firm power would be a blend of output from the wind farm when it's generating and then, when necessary, imports from Massachusetts providing LIPA with firm generation.

So with that overview -- and please do interrupt with any questions, if you would like, if I lapse into jargon. Deepwater is a small but very experienced development company. I think we're the only offshore development company that combines both experience in the commercial wind business along with deep experience in building offshore structures. For example, I have been developing wind farms in Upstate New York for the last 15 years; developed the first three wind farms upstate, including the State's largest wind farm in Lewis County, the Maple Ridge Wind Farm, which is the largest in the eastern U.S. Our president is the former chief operating officer of the world's largest offshore construction company out of the Netherlands called Hareema, and he's worked on a variety of very large offshore structures. In fact, when he joined us, he kind of reminded us that calling ourselves "Deepwater" is a bit of a joke because in the oil and gas business, they build in waters that are a thousand feet deep, and all we're proposing to build in here is water that are a hundred feet deep, so I guess that's small peanuts from his perspective. So but it's very important to emphasize at the outset this is a company that can actually build this project. We have been involved in thousands of megawatts of wind projects, our management team and our owners, and we've got the wherewithal to both develop and build this project.

Some of you are probably aware that the offshore wind business has been underway in Europe for 20 years, and so we are very much drafting, if you will, on the experience of companies in northern Europe especially in Britain and in Germany as well, companies like GE, Siemens and Arriva, as well as ABB, some of the largest industrial corporations in the world, are the primary vendors of equipment to this market. And so, while this is yet to become a business in the U.S., it's very much a big business, a very fast-growing business, with several tens of billions of dollars of projects on the drawing boards in Europe.

You know, I think what's really important to emphasize at the outset here is that the technology in offshore wind has moved along fast enough now that we can now refer to our proposal very much as a second generation offshore wind plant as distinct from the proposal that was made now nearly 10 years ago for the Jones Beach project, which would have involved generators, I think initially at two megawatts; we're looking at installing six or seven megawatt generators. We propose to build much further offshore. I think, if nothing else, the experience in the last 10 years in the U.S. with offshore wind development is a reminder that it'll be difficult to build these projects close to shore because the turbines are so large. Most people seem to like the view of our turbines, but I understand not everybody likes them. And so the core of our business plan is to build larger projects farther offshore so that they aren't visible at the shoreline. This is entirely possible with today's technology, and, in fact, that's very much what's happening off of the UK and Germany as well, as they are moving into larger projects that are farther offshore.

One of the advantages of being farther offshore is that the wind is stronger. You get higher capacity factors, which helps offset the cost of building in deeper water. The other thing that we're looking to do here is employ transmission concepts that are very much -- or more efficient. We call them networks. That notion is to connect the wind farm to more than one market. With a larger generating project, as we propose to build here, it's really a good idea to interconnect it into multiple markets, and so in our case, it would be both Long Island and Massachusetts. So one of the things it allows us to do is increase the utilization rate of the electrical infrastructures, so for a project this size, we may have to -- we may have to invest up to a billion to a billion and a half dollars just in the electrical infrastructure that will connect the wind farm to Long Island and to Massachusetts. And it's really sensible from an economic perspective to have as high a load factor on that infrastructure as possible that allows you to use that investment more widely and help lower your cost of delivered energy.

So you see, our estimated first year net cost of energy is probably a third of what it was from the Jones beach project, and again this is a blend of system power we would propose to import from Massachusetts to combine with the output of the wind plant. And so we're down in cost levels that

are competitive, we think, with the costs of new gas for our generation on Long Island, and one of the important things that's not widely appreciated is that, due solely to the meteorological conditions offshore of Long Island, what we know as the sea breeze, much of our output actually will coincide with the peak load on the LIPA system in a way that's not true for onshore wind, which typically drops off when you have these high pressure, high temperature frontal systems that come through the northeast on very hot days. Long Island LIPA, like other northeast utilities, experiences its peak load on very hot days. People go home and turn their air conditioners on at 4:00, 5:00, and at that time, actually, solar systems are dropping off as the sun is going down in the sky. It turns out two-thirds of those hot days on Long Island, our offshore wind farm will be reaching its peak generation right when the utility has its peak loads, so that's a very important consideration, which means that much more of our energy will have value to the utility because we're delivering it when it needs it the most.

You know, elsewhere in the northeast, other states including New Jersey and New York are looking at where offshore wind can be generated. You can see the yellow shape there off of New Jersey is the wind energy area that's been established by the Interior Department for projects off of New Jersey. We have a partnership in place with PSEG of New Jersey to develop a project down there. In New York, that very large rectangle, more or less, is the area that's being actively studied by the Department of State right now for offshore wind potential, but it's a little farther down the road just yet. That purple shape is the Rhode Island special area management plan that's been underway now for close to four years, and, believe it or not, little Rhode Island is several years ahead of both New Jersey and Long Island -- I'm sorry, New Jersey and New York in terms of evaluating the potential of offshore wind in the federal waters off of Rhode Island. And so we are actively developing these two projects in this body of water south of Rhode Island, east of Montauk. This larger project, which we bid into LIPA -- and just so you know, we're also moving ahead with a smaller project off of Block Island, which could well be the first offshore wind project in the U.S., which we hope to have under construction towards the end of next year, five turbines of the same scale that we would propose to install east of Montauk. These are six megawatt turbines, which are the largest available in the world right now. They're rotor diameters, just for the sake of reference, could be as much as a 540 feet in diameter. In other words, the rotor would not fit into Yankee Stadium if it were turned sideways. These are very large machines, and this is an indication of the kind of scale we have to get to be competitive.

Going back to our federal waters project, it's completely distinct from that Block Island project I just mentioned. This employs -- this will employ technologies that are off the shelf now, including the generators I just described from Siemens. GE is also working on a very large generator. It could be 10 megawatts that we would look to deploy in this project if it's available. The transmission system that we've laid out here would use high voltage direct current, which is the same kind of technology that the Neptune Line uses, and so it's -- nothing about this is experimental. This is a commercial project. It will be privately financed. No taxpayer funds will be used to develop this project. No taxpayer funds will be used to build it. It will be a take-and-pay project, which is to say we only get paid -- we will only get paid for energy we deliver. If for some reason there's a problem with this project and on day one, we turn on the key and nothing happens, we have no recourse, either to the ratepayers of LIPA or to the taxpayers of New York for that matter. So this is how deregulation has changed the utility business in states like New York that have gone through a restructuring of the utility business, which is to say all the responsibility for building new generation as well as all the risks are on the shoulders of private companies like us and our owners and investors. So, I mean, it's very important to understand that even a large project like this will be privately financed. It will not go into a rate base anywhere as happened with earlier utility-sponsored projects. In today's restructured utility market, that's just not the way the business works.

But I think I had a chance to describe earlier our basic concept here. We have been selected by the

State of Rhode Island after a competition three years ago of all the leading developers in the offshore business; as well as New Jersey, for that matter, four years ago, we were selected along with PSEG to be their preferred developer. So we are the most experienced development company in the area. This representation of the wind farm is in an area known as the AMI area of mutual interest. Both Rhode Island and Massachusetts have administrative rights to this area even though it is in federal waters. The Department of Interior is responsible for permitting and overseeing the development of energy projects in federal waters and other continental shelf. And so we are going through the process now with the Bureau of Offshore Energy Management, which is part of Interior, to secure a lease on this site and develop the wind farm. Generally speaking, we're looking at a -- probably a five-to-six year development timeframe. We'll need to go through an entire federal environmental impact statement analysis and -- which is obviously entirely appropriate for a development project of this size. And I think, based on our experience elsewhere, you know, the things that we'll be looking at most closely as part of permitting the project will be impacts on marine mammals in the area, in particular the North Atlantic right whale, which is an endangered species that transits the area, and they will also be looking at impact on commercial and recreational fishing, which is, of course, going on this area. And one of the advantages of using larger turbines is that the machines are so big, they have to be separated by a mile, and so our footprint within the project area will be less than one quarter of one percent of the total surface area of the wind farm; that's in order that the upwind turbines don't interfere with the operation of the downwind turbines. So we're hopeful that our operations, both the construction and operation of the wind plant will have minimal and insignificant impacts on commercial fishing, but that's one of the things that has to be examined as part of our environmental impact statement process. And, you know, we're hopeful, based on the experience in Europe, where they've had 20 years of experience, both in the environmental impacts as well as the fishing impacts of offshore wind that we'll come to a settlement with the fishermen.

LEG. GREGORY:

If I may, I have a question for you. Since you're talking about -- I represent the 15th Legislative District, and part of my district is -- affronts the Great South Bay, communities Amityville and Copiague. You mentioned the Jones Beach project. There was much community opposition for various reasons for that project. You just mentioned the impact study that it may -- will determine whether or not it will impact the fishing industry. And these wind turbines are tremendous; I mean, 500 -- I think somewhere it says the blades are 625 plus feet above water and a diameter of 540 feet.

MR. MOORE:

That's right.

LEG. GREGORY:

But they're spaced a mile apart.

MR. MOORE:

That's correct.

LEG. GREGORY:

And you're going to have 150 of them?

MR. MOORE:

250-square-mile area.

LEG. GREGORY:

Now, with blades and a turbine this large, is there -- I don't know the correct term; maybe a safety area that you can't come within a certain amount of feet to each turbine.

MR. MOORE:

No, I wouldn't expect there would be. You know, I think the -- depending on the kind of fishing gear we're talking about, I think the fishermen might themselves employ what they call a safety setback of, depending on whether it's mobile gear or fixed gear, of up to several hundred yards set back from the structure that our turbines will sit on. I don't have a picture of it, but we'll be installing steel lattice so-called jacket foundations that look like four-legged barstools. Those will sit on the sea floor, and the wind turbines sits on top of that. So the footprint, actually, is fairly small. Those jacket foundations are probably only 80 to 100 feet on a side, and those --

LEG. GREGORY:

The foundation but not the --

MR. MOORE:

It's not a solid foundation. It's -- and the legs of the jacket structure are probably four feet in diameter, so we've got four of these that go into the sea floor. That's the extent of our disturbance at the sea-floor level.

LEG. GREGORY:

Right, right, right. No, I understand that. I'm just thinking, just navigating the waters, you have a huge, you know, turbine. You know, common sense would say you don't want to get too close to it. There should be some type of setback, but you can have these spaced out a mile apart, and this is, I guess, displayed in the graphic here. This was -- I guess the original projects or proposal was to do it for Massachusetts, the plan that they have?

MR. MOORE:

You know, the idea has been evolving over the last several years, but from the very beginning, we had Long Island in mind as an export market because it makes lots of sense to sell in the multiple markets. Massachusetts, Rhode Island, Connecticut, and New York are all of interest to us. This is not meant to be an accurate depiction of what the project will be designed to be. But to respond to your point, actually, we haven't gotten very far in terms of designing the actual layout of the turbines, and so we hope in working with the commercial fishing industry, we'll come up with a design that creates corridors, long corridors with no, you know, no obstructions that they continue to use as fishing corridors. So we won't impose any kind of prohibition on fishing. The Coast Guard has already said they will not impose any prohibition on fishing, so I think, you know, there's reason to believe that we can coexist or not impact their operations.

LEG. GREGORY:

I haven't heard of this project until now. How far along are you in the process?

MR. MOORE:

Well, so the Interior Department right now is in the midst of conducting a lease auction for this site, and under the regulations that were adopted by Interior a couple of years ago, the neighboring states have a lot of input into the decision-making about the winner of the lease auction, and so we had been designated by Rhode Island in a selection that was endorsed by Massachusetts as the preferred bidder for that site. And so even if we were to get the lease tomorrow, we would face, probably, a five-to-six-year development timeframe before we can start construction, which is, in keeping in with LIPA's RFP schedule, they don't need new generation tomorrow or next week. They need it in five to six years, generally speaking.

LEG. GREGORY:

Right. It's just that we still have to go through the environmental impacts and all that stuff.

MR. MOORE:

That's right.

LEG. GREGORY:

That takes a while. And how far offshore are you planning to be?

MR. MOORE:

So this is 30 miles east of Montauk and probably in the range of 15 to 18 miles southwest of the vineyard, but we haven't finalized our project design just yet.

LEG. GREGORY:

And then there's a separate project that you referred to off of Block Island.

MR. MOORE:

Yes, an entirely separate project. We think of it as a demonstration scale project, just five turbines. That's just three miles off of Block Island.

LEG. GREGORY:

All right. Thank you.

MR. MOORE:

Sure. But in its fuller size, this project would supply the equivalent of 300,000 residential customers in Long Island. I mentioned, of course, this will have terrific environmental benefits, which is probably obvious but I think there are also economic benefits that aren't obvious that I would like to touch on very briefly in passing. You know, I think although people aren't used to thinking with this way, it's very helpful for utility systems to have a fixed cost supply of energy. It's not helpful for utilities to buy all of their electricity in the open market with prices that are volatile in keeping with the volatility of the cost of wetland or gas, and so one of the few advantages of -- economic advantages of wind and solar is that we can actually lock in our price for 20 years, and, you know, that will have an important advantage for the utility going forward. You know, it's the same kind of distinction between short-term variable-rate debt and long-term fixed-rate debt. There's a reason why all of LIPA's \$6 billion of debt is not in 90-day variable rate paper, and the same way that the power authority itself -- LIPA itself cannot rely on purchases in the open market based on wholesale prices that vary by the day. You need to lock in some of your electricity supply, and that's what our contract proposal can do.

What's also not widely appreciated is that when we deliver a good part of energy on-peak, we have the effect of displacing more expensive generation that normally would have been brought online to supply LIPA's peak loads. This is known as price oppression. It's a widely-understood phenomenon in the utility business. For every kilowatt hour we deliver to the utility, we'll end up reducing the average wholesale cost of electricity at that time by two-and-a-half cents, which is an important benefit for all ratepayers. I didn't mention at the outset that our power line submarine transmission line proposes to go through -- is proposed to go through three different Long Island towns, including Southold, Riverhead, and Brookhaven, on its way to Shoreham, the Shoreham site, and it's my --

MR. DANIELS:

(Inaudible)

MR. MOORE:

Yes, thank you. That's an important distinction. The submarine cable will be in the waters north of those three towns and within the taxing jurisdictions of those towns. I understand there's schoolboards as long -- along with Suffolk County.

LEG. NOWICK:

Just a quick question. So when the cables go underneath in the water, the school -- the taxing authority still assesses you for that?

MR. MOORE:

That's my understanding. Now, I haven't actually done an undersea cable yet in New York State. I have done a number of wind farms, as I mentioned, along with their affiliated transmission lines and negotiated a number of pilots for those but it's my understanding that the tax jurisdiction -- the authority to tax extends off to the boundary with Connecticut control in the middle of the sound so that we will be subject to --

LEG. NOWICK:

So the cables you are talking about would go to --

MR. MOORE:

Let's go back to that map.

LEG. NOWICK:

I'm not sure I understand. You say it goes underground, so you don't see them, and I know that was the point you were making but --

MR. MOORE:

It's under the sea floor.

LEG. NOWICK:

Under the sea floor. But you feel that the Town assessors will assess you for tax purposes.

MR. MOORE:

Well, we have been advised that that's the case.

LEG. NOWICK:

Really?

MR. MOORE:

As part of New York State.

LEG. NOWICK:

I did not know that.

MR. MOORE:

Well, we didn't know it, either, until relatively recently. And I hope I'm wrong about that, but that's what one local assessor has told us, and so we haven't had a chance to spend a lot of time looking at this just yet.

CHAIRMAN HORSLEY:

That might have been wishful thinking on their part (**Laughter**).

LEG. NOWICK:

Do you remember -- did you ever hear that?

CHAIRMAN HORSLEY:

No, I don't think --

MR. MOORE:

You don't think that's the case?

CHAIRMAN HORSLEY:

By the way, Lynne is a former tax collector.

LEG. NOWICK:

Receiver, 10 years ago.

CHAIRMAN HORSLEY:

Receiver of taxes. I'm sorry.

LEG. NOWICK:

I just don't remember that. You could be right, I hope you are.

MR. MOORE:

This is a first-of-its-kind proposal, and so there are some issues, of course, we're still sorting out like that. My experience has been that any time you build --

CHAIRMAN HORSLEY:

Does Neptune pay to any localities? I can see where the hook-up is that would --

MR. MOORE:

Mr. Chairman, it's my understanding --

CHAIRMAN HORSLEY:

It's usually State lands. Some of them have Town underground -- it depends what the rights are. They go back to the kings and stuff like that. Who was it? But I remember Robert Moses fought over these issues for years on where -- who owns what in which jurisdiction, but taxing authority would be interesting, though. I think you've got a case there, one way or the other, but interesting topic.

MR. MOORE:

Yeah. We'll have to -- perhaps we do additional research and get back to you on that point, and I think, actually, Neptune, of course, doesn't come through these waters per se. But I think it really is an old standing grant to those towns on the north shore of the North Fork -- I'm sorry, the North Fork that retain the right to tax facilities that are offshore. That's what we have been told, so we'll find out.

LEG. NOWICK:

Very interesting.

MR. MOORE:

But, you know, back to the economic benefits, just very quickly. One of the others we haven't talked about is the improvement to the reliability of the system. There are generation requirements that are imposed on LIPA because of its existence as an Island utility and to the extent that LIPA relies more on transmission cables that link it to generation off-Island, the amount of megawatts that they're required to maintain on-Island is reduced, and that will have an identifiable cost savings to the utility that we actually had a hard time specifying, but it's a savings just the same. In addition to the fact that we'll be reducing the average cost of wholesale electricity for every hour that we're generating power from the wind farm, we'll have a similar benefit in terms of reducing the cost of natural gas, which, of course, is the fuel that would otherwise be used to generate the power

used on Long Island during those peak periods in the wintertime. And so when our wind farm is operating in the wintertime, less natural gas will be used for generating electricity from gas-fired power plants which are the preferred method of generating power, and that will reduce the cost of natural gas during those periods as well.

And so, you know, a project of this scale will probably employ as many as a thousand people during construction. We think of it as a regional project. A good many of those jobs will be based out of the former Navy base at Quonset and Narragansett Bay, which is the largest deep water port that's within reasonable shipping distance of the project site. But we think that both construction and the long-term O&M jobs, which could be as many as 200 could easily be split up amongst the different states that choose to participate in this project, so there could be a definite near-term employment benefit from this kind of large project.

And I think it goes without saying that a clean power project of this size would satisfy LIPA's entire renewable portfolio goal of increasing the reliance on renewable power. We estimate that it will reduce by over one third the admission of the NOX nitrogen oxide gases that are the primary driver of local ozone pollution, which, of course, is a huge problem for a place like Long Island that's a non-attainment zone for ozone pollution. So this is probably the single largest investment decision that either Long Island, the State of New York could take that would have this substantial improvement of local air quality by building this larger wind farm, and so I wanted to remind you all of that as well.

You know, I think that as you consider the cost of offshore wind versus the cost of new gas plants, today, of course, we have the lowest cost of natural gas that we've seen in years, looking forward, it's anybody's guess what'll happen with natural gas prices. I think this chart just shows you a variety of the proposals that the Federal government has come up with. And needless to say, compared to today's rock-bottom price of two-and-a-half million dollars -- I'm sorry, two-and-a-half dollars per million BTU, we're looking at much higher gas prices in the future inevitably. And so going back to one of my initial points, this is one of the advantages of relying on either solar or wind power that can lock in its cost to generation because we can fix that part of the supply for the utility. And I think, as a reminder, even though today's cost in the U.S. are at rock-bottom levels, utilities in the far east and Europe are paying a price for natural gas that is, you know, four to five times higher than what we're paying now, which I think is a -- which is a differential that just can't persist indefinitely, So I think they're a good reason to believe that natural gas prices will be going back up.

So I think that's the bulk of what I would like to cover today.

Mr. Chairman, this is a picture of the kind of station that we would need to build at Shoreham at our interconnect point, which would allow us to convert from direct current to the alternating current that goes into LIPA's service -- into LIPA's system. And this is a -- I'm not actually sure where this facility is located. Tim, do you know is that someplace in your -- or is that the Neptune yard down in --

MR. DANIELS:

I'm not sure. I'm actually not sure where it says representative.

MR. MOORE:

This is one large, solid-state plant, if you will. No moving parts, no sound, no smokestack, no emission. All it does is use a very large bank of -- I think they're called integrated gate bipolar transistors with some flux capacitors rolled in as well that do nothing more than just convert the direct current into alternating current.

LEG. NOWICK:

No sound?

MR. MOORE:

No sound whatsoever, no. No hum. It's not like a transformer. And so we need to -- this is one of the facilities we would have to install on shore for the transmission line to connect to the LIPA system.

CHAIRMAN HORSLEY:

Lynne says, *Yeah, now there's a taxable* (*laughter*).

MR. MOORE:

Absolutely.

MR. DANIELS:

There definitely is.

LEG. GREGORY:

Just another question.

CHAIRMAN HORSLEY:

Sure. Legislator, why don't you, and then I have a couple myself.

LEG. GREGORY:

Okay. Thank you for your presentation. I just have another environmental question because I think that, from my recollection, that was a great deal of the concerns particularly as it relates to the Jones Beach project. Has there been any studies to evaluate the effects of wind turbines on bird migration patterns? And how do you compensate for that?

MR. MOORE:

Well, there have been, especially in Europe; now, they've got 20 years of experience. I also participated in the three-year post-construction study of the Maple Ridge Wind Farm, which is the largest in the eastern U.S. and its impact on migrating birds as well, so this is an area where we have a lot of experience. As it turns out, migrating birds fly at higher elevations than even these wind turbines, even at 600 feet. Migrating birds, to generalize, across North America tend to migrate at much higher elevations. It's not when they're migrating, they're at risk. It's actually when inclement weather might force them down to lower elevations and force them to land, you know, at a sanctuary somewhere that they come into the elevations we're looking at here. Most of the migration that takes place in North America is what's known as broad-front migration, where the birds just fly right across the northeast, and it's sort of a dispersed fashion. They don't tend to concentrate right along specific pathways, although you hear oftentimes the "flyway" referred to.

Off of Block Island, we have three years of avian data looking at this very question. We hope to have a DOE grant that will be used to study the impacts of that wind farm on migratory birds. I think the bigger bird impact actually has to do with not migratory birds but residents birds -- sea birds, and shore birds -- that will be flying and foraging in and around these project areas at elevations that could be a problem. That's one of the advantages of being farther offshore. So if you look at the two birds species in southeastern Massachusetts that are endangered, the roseate tern and the piping plover, those both forage closer to shore and don't forage so far offshore as we're proposing here. But we'll have to do another three years of radar data, radar studies, collecting data on the bird activity in this area to make sure the impacts will be as low as we expect them to be.

The bigger concern, actually, as expressed by the Federal wildlife agencies right now, is the acoustic impact on the migrating right whale as well as acoustic impacts on resident porpoises and sea turtles

who are very sensitive to acoustic impacts. And so we have just negotiated a protocol with the Department of Interior that specifies exactly when and when we cannot work in these areas to minimize acoustic impacts on the whales. When we install our foundations on the sea floor, we have to drive a pile through the hollow leg of the jacket foundation and that hammering creates quite an acoustic impact, so we have to make sure we do that when the whale is not around. I think the whale impacts are proving a bigger issue than the avian impacts.

LEG. GREGORY:

Okay. Just another issue on the height. 625 feet above --

MR. MOORE:

Sea level.

LEG. GREGORY:

-- sea level, okay. Now, does that include the tip of the --

MR. MOORE:

Yes, it does.

LEG. GREGORY:

Or is it where the access or the point -- you know, where there's been a connection?

MR. MOORE:

That's right. It's the highest point of blade travel.

LEG. GREGORY:

Okay.

MR. MOORE:

Yeah. So the hub itself will be about, roughly, 250 feet lower than that depending on the size of the turbine we use. Some are in the range of 350 feet above sea level.

LEG. GREGORY:

Okay. Thank you.

MR. MOORE:

You're very welcome.

LEG. NOWICK:

Could you put that picture back on?

MR. MOORE:

Picture of --

LEG. NOWICK:

What did you call it, wind turbine?

MR. MOORE:

Wind turbine, that's right. There you go. There's a jacket foundation. That's the top of what a jacket looks like. Simple ladder structure. They have been used in the oil and gas business for 40 to 50 years. It sits on the sea floor. It's a well-established technology. And so the wind turbine sits on top of a transition piece, which itself is on top of the jacket foundation. So these are -- the jacket foundation probably weighs 500 tons. The box at the top, which is called a nacelle, which

has generator in it, that probably weighs 250 and 300 tons. You can think of it as a locomotive. It's really the size of a locomotive, which is sitting on top of a tower that's 300 feet high. So this is definitely not one of your grandfather's backyard wind turbines.

LEG. NOWICK:

No, it isn't.

MR. MOORE:

The blades, as I mentioned, can be up to 250 feet long. Each one weighs 30 tons. So it's very much like three very large fiberglass sailing boat holes that are attached to the hub 330 feet above sea level rotating at about 14 RPM. It's really quite something.

CHAIRMAN HORSLEY:

Yes, it is. Legislator Stern.

LEG. STERN:

Thank you, Mr. Chairman. Thank you for being here.

MR. MOORE:

Sure.

LEG. STERN:

If you can go back to the -- yes, thank you. So there's the construction of the turbines, and then there is the -- it's cable that goes around to the North Shore through Long Island Sound ultimately to the North Shore of Long Island. Did you say that the cable is buried underground?

MR. MOORE:

Under the sea floor.

LEG. STERN:

Under the sea floor. So it doesn't lay on top of the sea floor; it's actually buried under the sea floor.

MR. MOORE:

Where conditions permit. We recognize that in eastern Long Island, of course, in and around the race, there may be insufficient sediment on the sea floor for us to get on to six-foot objective -- six-foot depth. That's the objective of the installers. So in conditions where you don't have sediment in the sea floor where it's rocky, there are other methods of protecting the cable. You can use concrete mesh. I forget what they call them -- devices. You know, our engineering hasn't had a chance to really look at this just yet. We've got to make it a little farther down the road with the permitting for us to evaluate our design alternatives. One of the advantages of offshore wind as well as this kind of transmission system is we have a lot of flexibility in locating the position of the -- of the component, so that if there's a part of the race that's identified as being especially problematic, or if there are, for example, you know, eel grass beds off of Shoreham that need to be avoided, we can simply just change the position of our transmission line, or, for that matter, one of the wind turbines to avoid areas of special concern.

LEG. STERN:

I recall a few years ago the debate over broad water and some of the concerns that were brought up then. I'm wondering if you anticipate any similar issues that were raised then in the construction of the under the sea bed cable. Do you anticipate any similar issues, any similar roadblocks?

MR. MOORE:

No, I wouldn't think so. I mean, we're looking at a kind of technology that's been around for

decades. There are already multiple cables of a very similar design in Long Island Sound. There are telecommunications cables. There are cable -- electrical cable. Again, it's a solid-state kind of device. It doesn't -- it does produce EMF, and there will be localized EMF effects, you know, right around the sea floor where it's installed, but those are very modest EMF effects. They don't travel a long distance. And so it's very different than an LNG import terminal which has all other kinds of issues associated with it. They're different kinds of pieces of infrastructure.

LEG. STERN:

Thank you.

CHAIRMAN HORSLEY:

Sure. Legislator Nowick.

LEG. NOWICK:

When you -- if this does occur and you go through the Long Island Sound, you said the cable would be buried six foot?

MR. MOORE:

Six feet below the sea floor, yes.

LEG. NOWICK:

So do you put -- this is a stupid question, but I'm thinking in terms of sailboats out there with the deep --

MR. MOORE:

Anchors.

MS. NOWICK:

Is that a hull? Or whatever that is underneath --

MR. MOORE:

A keel.

LEG. NOWICK:

That's what I said (**laughter**). Do you market so they know -- is that what's going to happen, that you'd be marking the waters, almost like a channel marker, so these boats with the keel know not to go in that area. Is that what would happen? Is that how you see that?

MR. MOORE:

I think we would only do that close to the point where it's coming ashore, and, in fact, it's commonplace to see these kinds of warnings for mariners when you're looking to either sail in a given area or lay anchor for that matter. It'll say, you know, "cable in this area, do not anchor." But farther offshore, I don't think there will be any problem. From time to time, you do hear about here about cables that are snagged by anchors. It'll happen. And these kinds of submarine cables can be repaired offshore. It's not a fatal problem if they are damaged by an anchor. They should not ever be run into by the keel of a sailboat if they're installed correctly. That'll never happen.

LEG. NOWICK:

Okay. Because that is such a narrow area, the Long Island Sound, and I know there are a lot of sailboats. There's not a lot of room. It's not like being in the ocean.

MR. MOORE:

That's right. There are, of course, armored cables, and they're designed to withstand a certain

amount of physical violence, you could say, in terms of being clipped by some other kind of structure --

LEG. NOWICK:

I was actually more worried about the boater hitting than the cable --

MR. MOORE:

I thought you were headed in that direction, yeah. Yeah. And, you know, I think if -- I'm not familiar with what happens with an HVDC cable that is shorted out by an anchor. I suspect that it gets grounded out by the water itself and that there would be no shock exposure to the boater. I can verify that, though, with the engineers. That question has never come up before, Legislator. I'll find out.

LEG. NOWICK:

Because it is the sound, and because of the makeup of the sound and it's -- there's not a lot of room out there.

MR. MOORE:

That's right. Of course, there is a cable now that runs from Shoreham to Connecticut. In fact, there are three that cross Long Island Sound; aren't there, Tim? I can't remember the numbers.

MR. DANIELS:

A lot more telecom.

MR. MOORE:

Lots of telecom as well.

LEG. NOWICK:

I understand cable, but it was just when you said six feet, I didn't think that was that deep.

CHAIRMAN HORSLEY:

Yeah. You know, it's an interesting concept of what Legislator Nowick is concerned about. I recall a couple of years ago when, I think it was, National Grid was looking at putting a natural gas pipeline across right around that area and Connecticut, howl to the heavens, particularly the new -- our senator from Connecticut there. I remember him. He came down here, and he was just adamant. You're not going to do this to our environment. You don't anticipate that that's going to be part of the process.

MR. MOORE:

I wouldn't think so. The environmental benefits of this kind of project are so enormous that they overwhelm -- you know, they're very minor and localized impacts of the cable, the EMF from the cable, for example, or the prospect of, you know, impacting whales during construction which we can work around. You know, I think we see enormous support for the environmental community for these kind of projects for obvious reasons. And, who knows? Mr. Chairman, We may end up selling some of those power in Connecticut as well so they can take advantage of --

CHAIRMAN HORSLEY:

There you go. I like that concept. You know, it's interesting. As you know, I was not a big fan of the Jones Beach project, and most of my concerns -- well, one, I used to work for Parks and putting it off of the jewel of the state park system was, I thought, offensive, but besides that, the cost per unit, kilowatt, or whatever it may be, was just so large. Do you feel that because of the scale of

this that you're going to bring this down to portions that we're all going to be able to swallow as ratepayers? Because ratepayers are always under the gun here on Long Island.

MR. MOORE:

Very much so, and there really is -- one of the advantages of scale, three things have changed. It's the size of the project, it's the efficiency of the generating machinery itself, and it's, you know, the amount of wind available so, you know -- it's hard to tell exactly what the cost of the proposal was from Jones Beach, but, you know, I think in combination with our transmission of cheaper power from Massachusetts, we're looking at underpricing them by up to 60 percent.

CHAIRMAN HORSLEY:

60 percent? Wow, that's substantial. So you feel you're in the ballpark as far as cost factor to the consumer.

MR. MOORE:

Certainly within the ballpark. You know, electricity of natural gas is at historic lows, and I'm not sure it makes sense to compare a 20-year price with, you know, a price that's available now for six months because that's still always going to be cheaper, but compared to the cost of a new gas plant on Long Island --

CHAIRMAN HORSLEY:

Right, because there is talk of, you know -- part of the competition, I guess, out there --

MR. MOORE:

Certainly is.

CHAIRMAN HORSLEY:

-- with the new plan.

MR. MOORE:

We can't match their cost per cent, but we're in the ball park when you add up all the benefits.

CHAIRMAN HORSLEY:

Okay. Let me ask you a question on your proposal. Your proposal is that you're going to give LIPA -- they're going to have to buy 600 megawatts of electricity, and then at that point, the rest of anything over and above the 600 megawatts will be sent to Rhode Island to Providence or wherever it may be that that transmission line is going to, and then it would be bought by who? The Rhode Island -- and does this fall apart -- if LIPA doesn't agree to buy the power from you, is this a done deal; we're no longer interested in this? What do you see, I mean, if you don't win this contest?

MR. MOORE:

Well, that's a very good question. I do think that there are other buyers in the region that could also participate. Connecticut is one example. The LIPA RFP is the single best opportunity on the table right now as it were just because the utility needs to retire some of its existing generation, and it's a high-cost area, and it's difficult to build new plants, so we can compete with that cost. We do have the opportunity to sell in Rhode Island under the laws that established their long-term contracting for offshore wind. Massachusetts also has a very large green energy program that is supporting the -- National Grid's contract for the cape wind project in Nantucket Sound that we can compete with -- or compete for, rather. And so there are multiple buyers in the area. And no, the project would not fall apart if any one of them were to walk away from the table, but it would take longer to develop the project, certainly. These multi-state projects are very complicated. I mean, there's a reason why we don't see too many of them undertaken.

CHAIRMAN HORSLEY:

I can imagine. It sounds mind-boggling. We have enough issues just here in our own Legislature trying to get -- stay together on one issue. I can appreciate your issues. The -- I recall several years ago there was -- there was a company that was looking to put windows at deeper waters, and they were talking about the technology that they use to put oil rigs and things like that. This, you know, and it goes back a couple of years now: oil rigs-type of technology of how to sync, how to deal with deeper waters so they wouldn't be just off Jones Beach, that type of question. Do you feel that the deep water -- I see your name and your title here -- is now just standard fair? You can go as deep as you want with these things without them becoming hurricane problems and all that kind of stuff?

MR. MOORE:

Hurricanes shouldn't be a problem. These kinds of structures have been used in the Gulf for 40 years. They have withstood head-on impacts.

CHAIRMAN HORSLEY:

They were almost like barges, is I think my recollection, how they put them out there.

MR. MOORE:

Well, that's for the installation. The structure itself -- again, the four-legged barstool is nailed to the sea floor, essentially, and those have withstood head-on impacts, if you will, of a hurricane, so that shouldn't be a problem. The wind turbine has a design life of about -- I'm sorry, a survival wind speed of about 150 miles an hour. None of these wind turbines have ever gone through a direct hit from a hurricane. What happens, though, is that, of course, the pitch of the blade is variable and so as -- though average is a 10-minute wind speed, exceeds 55 miles an hour. You just shut the machine down. You feather the blade in. There's no more lift, and they just stop. We're not too worried about hurricanes at this site, and I think that -- what was your other question?

MR. DANIELS:

Deep water.

MR. MOORE:

Yeah, the deep water. In theory, these structures can be installed at much deeper water. They have installed 1,000-foot-tall towers for oil and gas developments, but that's a different business. I think for our business the 150-foot water depth is probably the limiting factor right now. We're probably not going to go too much deeper than 150, 175 feet just because you look at a larger structure, a bigger lift, more material, and a limited size generator on the top. So you start to eat into your economics with bigger and deeper platforms. So we have plenty of area.

CHAIRMAN HORSLEY:

One last thing, and you know this is something I harp on. When we met earlier, we have a Long Island Jobs First program in Suffolk County, and we're very interested in promoting our economics here, and I realize that your located out of Providence, is it?

MR. MOORE:

That's our headquarters; that's correct.

CHAIRMAN HORSLEY:

And, you know, you touched on it before. How do we get a piece -- if this becomes a LIPA project and monies are coming from LIPA ratepayers, how do we get a piece of the action as far as the construction costs and the like? And I know you've got to go into the deep water and the like, and I understand your issues, but how do you help us?

MR. MOORE:

Well, I think there's a way we can do that. Let us come back to you with a proposal. You know, 'cause it requires an actual analysis of availability of shipyards of a substantial size and things of that nature, but I think if it becomes a regional project, it would only make sense to make sure that the jobs are also shared in a regional way, either during construction or during operations, and I think we can get there.

CHAIRMAN HORSLEY:

Thank you. I appreciate that. Legislator Cilmi, do you have any questions?

LEG. CILMI:

Yes, thank you. You talked about LIPA's portfolio, renewable energy portfolio, and how this could potentially supply a hundred percent of that goal. What does that do to our local solar energy industry? And by the same token, you talked about downward pressure on natural gas prices, in particular. I wonder if there's also downward pressure on solar project -- the cost of solar projects and maybe even oil. If you could talk a little bit about that.

MR. MOORE:

Sure. I wouldn't think there would be any impact on the solar industry at all. I mean, I think they have done a terrific job of bringing their cost down by 75 percent in the last four years. I still think that, as we sit here today, we're less expensive on a net basis than new solar on Long Island, but it has lots of advantages, and it's great to see so many solar systems being installed across the Island. I just think that when you look at the utilities, overall power requirements, offshore wind is really the only one that's in a position to have a substantial impact on its generation mix going forward. The project at Brookhaven is 35 megawatts, largest in the east coast.

MR. DANIELS:

32.

MR. MOORE:

32 megawatts, largest in the east coast, I think, which is a terrific example of what can be done onshore, but there aren't a whole lot of places on Long Island I think you can install a 32-megawatt solar plant and their limiting factors.

LEG. CILMI:

What's the proposed output for this plant?

MR. MOORE:

We propose to sell 600 Megawatts to LIPA. The wind farm itself could be as big as 900 megawatts, although we could also build a smaller size project. So in -- there's no reason why we should be competing with each other. Solar photovoltaic systems are terrific for residential applications. They work very nicely. The rooftop solar systems can help, you know, meet a large part of the requirements of homes on Long Island, and they work well on top of large, you know, big box flat-roofed, you know, source. I mean, those are nice applications, but I think as you look at getting to an industrial level of output that can really start to meet some of New York State's energy planning requirements, offshore wind is the only renewable that can really have a, you know, an impact on the 500 to 1,000 megawatt level.

LEG. CILMI:

Because of the differences in market, then, is it unfair to compare the cost per kilowatt of solar versus wind, at least in this case?

MR. MOORE:

I don't think it's unfair. I think that's a reasonable question. I just think, for example, they can benefit from being inside the meter, if you will, or they can benefit from reverse metering, which I think is appropriate at the residential level. That's a form of subsidy that we can't take advantage of. But, you know, when you generate electricity behind the meter right at the distribution level, that has some supply benefits that, by virtue of it being very centralized and being, you know, introduced at the grid right at the point of end-use, that's good; we should encourage that. But we need a mix, and so I think no reason why solar and offshore wind can't co-exist.

LEG. CILMI:

What about the comparison between the cost per kilowatt, if that's how you measure it, of the wind-generated power versus the cost per kilowatt of power generated with more conventional, you know, means, whatever, oil, gas, coal, whatever.

MR. MOORE:

So as you look at the cost of a new gas fire generator on Long Island, it will be in the range of 8 to 10 cents depending on how much you assume they'll have to pay to buy new natural gas as a fuel. And so, you know, we're looking at a blended cost of power that's not much more than that for our proposal here, partly because we can take advantage of imports from Massachusetts where they have both surplus generated capacity and cheaper gas. And so right now, the wholesale price of electricity in Massachusetts is always lower than it is on Long Island. Our transmission line can take advantage of that in a way that's otherwise would not be accessible to ratepayers in Long Island. So that's one of the advantages of integrating a transmission line with a wind farm. So the lower cost of the gas-fired imports in Massachusetts can offset, to some extent, the higher cost of the offshore wind.

LEG. CILMI:

What if you didn't have that available; how big a difference would it be?

MR. MOORE:

Well, I think, depending on the scale of the project, we're probably still looking at a differential of several cents a kilowatt hour between a new gas plant and a new offshore wind plant. Certainly close enough to be within the ballpark. Again, you're making an apples-and-orange comparison. I'm thinking of a price that's fixed for 20 years with a gas-fired price that could vary within six months, so it's hard to make a comparison.

LEG. CILMI:

Okay. Thank you.

MR. MOORE:

You're very welcome.

CHAIRMAN HORSLEY:

All right. Is there any further questions? Well, we thank you very much for coming down here today. It's something that -- you know, we get around, we talk in different circles and stuff like that. I think it's important for us to have heard about the project, and I'm -- it's unfortunate my colleague from off of Montauk wasn't here today. I would like to have heard what he had to -- his comments on it, but this is -- it's a first start. Do you know when the LIPA award is going to be? I'm hearing October, but now I hear the Governor is involved. I don't know what to think. Do you guys have any -- you're just holding your breath too?

MR. MOORE:

No, it's -- of course, beyond our ability --

CHAIRMAN HORSLEY:

Yeah, I'm not looking for inside information. I just wanted to know if there's anything --

MR. MOORE:

Haven't heard anything directly from LIPA.

CHAIRMAN HORSLEY:

Okay. Because in talking to some of the folks over there, it sounds like, *Well, you know, the Governor is going to let us know when we can move forward.* That's kind of the impression I got. I don't know if that's true or not.

MR. MOORE:

Well, I mean, there's a lot of issues at play here, and, of course, you know as a State-chartered entity, LIPA needs to be -- their structure needs to be revisited from time to time, and I think that's what the Governor is proposing to do now, and we'll see where it comes out.

CHAIRMAN HORSLEY:

Yeah. That's what it sounds like to me too, which is all interesting stuff.

MR. MOORE:

It is.

CHAIRMAN HORSLEY:

And you guys are in a, like, you know -- it holds you up in some ways.

MR. MOORE:

Well, of course, but we're looking at investments in new generating capacity that will be long-lived. These are 20-year investments, if not longer. You should take as much time as necessary to do appropriate review. Couple more months is fine.

CHAIRMAN HORSLEY:

Okay. All right, guys. We appreciate you being here today, and thank you and, we'll talk it up.

LEG. NOWICK:

Thank you.

MR. MOORE:

You're very welcome.

CHAIRMAN HORSLEY:

Okay. Thanks.

*(*The meeting was adjourned at 3:01 PM*)*