

Comments and Project Concerns by the Long Beach Island, NJ, Coalition for Wind Without Impact Regarding the Notice of Intent for the Atlantic Shores Offshore Wind Projects, Docket # BOEM-2021- 0057.

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Dear Agency Manager,

This letter is on behalf of the Long Beach Island, New Jersey, Coalition for Wind Without Impact. We represent over a thousand persons and businesses concerned with this project. We are not opposed to offshore wind energy in general and seek only that where it is pursued, it be done in a reasonable and consistent manner.

As requested in the Notice of Intent (NOI), we are providing detailed prescriptive suggestions in Enclosure 2 on the scope, content and timing of release for the EIS, as well as the Biological Assessment (BA) and Opinion (BO) to be prepared under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). The topics covered are listed in Enclosure 1.

Of more immediate concern however is that the proposed federal action itself is unreasonable, because it would:

(1) block the essential migration of the critically endangered North Atlantic right whale, by creating operational turbine-generated noise levels above

the 120-decibel behavior disruption criterion throughout its entire 12-mile wide outer adjacent migration corridor (Exhibit B),

(2) due to that blockage, would seem to violate both the Endangered Species Act and the Marine Mammal Protection Act, requiring, because of the long-term impact, an Incidental Take Rulemaking (ITR) to show otherwise,

(3) force endangered fin and humpback whales frequenting closer-in areas (Exhibit C) to shore to avoid the turbine noise, causing beach stranding,

(4) scar the prized Jersey shore by creating the closest, most visible modern turbine wind complex in the world, significantly reducing tourism, rentals and local employment, and

(5) potentially decimate the threatened piping plover bird population that must now cross the turbine complex to nest on the Island.

Since this involves all of your agencies, we seek your personal attention to this problematic proposal.

The Proposed Action Jeopardizes the North Atlantic right whale (NARW).

- The project proposes turbine placement 9/10 to 20 miles offshore. The North Atlantic right whale's migration corridor here extends from about 20 miles to 32 miles offshore.
- The critically endangered NARW must migrate through that corridor south/north each year between its calving and feeding grounds to survive. Its numbers are already low and recently are declining rapidly (Exhibit A).
- Neither the NOI or the Construction and Operations Plan (COP) state the power, manufacturer, drive type or foundation type of the turbine proposed to be used. But the New Jersey Board of Public utilities (BPU) approval of 1510 megawatts (mw) for Project 1 was based on the use of Vesta-236 13.6 mw turbines and monopile foundations ^(BG1). We assume that Atlantic Shores is adhering to the conditions of the State's approval so our analysis herein is based on the use of those turbines and foundations.
- The use of 13.6-megawatt Vesta-236 gearbox turbines would place multiple, long term operational, continuous, elevated underwater noise sources of 180 decibels ^(W2) ^(W17) along the western side of the whale's migratory corridor (Enclosure 2, II.1 and Exhibit B).
- The noise zone of influence from a single turbine, i.e, the area above 120 decibels(dB) where the whale's behavior would be disturbed, would extend 6 miles ^(W2) or halfway across the whale's 12-mile-wide migratory corridor, using the formula for transmission loss in that study, $15 \log_{10} (r/r_0)$.

- The combined impact of that single turbine and others in the complex would extend the disturbed behavior zone of influence above 120 dB to at least 22 miles, filling the entire 12-mile-wide migratory corridor (II.1).
- Since the distances needed for noise reduction to 120 dB are far greater than the spacing between turbines (about 1 mile), the 120 dB level will also be exceeded everywhere within the wind complex.
- This creates a “wall” of noise across the entire wind complex and the whale’s migration corridor, essentially blocking it.
- It will be extremely difficult for the whales to avoid ^{W18} that expanse of elevated noise and continue its migration. Attempting to do will expose them to high cumulative sound exposures potentially exceeding hearing threshold shift criteria, cause loss of communication between and separation of females from calves, stranding, and loss of echolocation and other navigational abilities (I.3).
- Experiments have shown ^(W5) that one reaction of the right whale to such sound disturbance is to ascend and swim just under the surface where it is vulnerable to vessel strike.
- The proposed use by the Coast Guard ^(BG2) of the right whale’s migration corridor as a new deep draft vessel lane (Exhibit D) would significantly increase the risk of vessel strike once it ascends.
- Subsequent planned turbine placement along the inner part of the Hudson South area would only elevate the noise levels in the migration corridor and worsen the problem.
- Mitigating measures involving detection and turbine shut down are not viable for the large noise influence zones and multi-year operational time frames here, leading to the need for consideration of turbine exclusion zones to avoid disrupting the right whale’s migration.
- However, since the zone of influence above 120 dB (at least 22 miles) from even the innermost turbines at 10 miles extends across the entire 12-mile width of the migration corridor, ***there is no place in this project area for turbine placement that will protect the whale’s migration.***

It will force Endangered Fin and Humpback whales dangerously close to shore.

- A similar problem is encountered on the inner side of the project area to protect the endangered fin and humpback whales that frequent distances out to 11.5 miles (Exhibit C).

- Project area sited turbines would generate elevated noise levels above 120 dB all the way to the shore, and
- would force these whales towards shore to try to avoid it, causing beach stranding.

It will scar the prized New Jersey shore by creating the closest, most visible large turbine wind complex in the world off it.

- Beyond its conflict with the ESA and MMPA, the proposed action is unreasonable in other respects. The explosion in wind turbine size since this area was leased would make this project the closest, most visible modern, turbine wind complex in the entire world (Exhibit E).
- That extraordinary visibility would destroy the natural beauty of an unvarnished ocean vista from an 18 mile long, 5000-year-old barrier island, cause an extreme, adverse economic impact on the Island (I.8), and reduce shore breezes and raise air temperatures as wind energy is extracted (I.12).

It will potentially decimate the threatened Piping Plover population that has nested on the Island and been protected for many years.

- A substantial number of piping plovers, about 86, nest on the Island. They migrate north south beyond the project area and therefore must cross it to get to their nesting grounds. Their ability to avoid wind turbines of this size is unknown, but reasonable estimates predict the death of 31 percent of the population crossing the wind complex each year (I.13).

Conclusions and Recommendations.

This proposed action is arbitrary, extreme, and unreasonable. It would block the essential migration of, and likely seal the fate of, the North Atlantic right whale. It will force fin and humpback whales to shore causing stranding. It will create the world's most visually disturbing modern wind turbine complex off of a beautiful 18-mile-long seascape.

The location and width of the project area does not allow for turbine exclusion zones to allow the whale to migrate (I.1). These conflicts were raised to the New Jersey Board of Public Utilities (BPU) prior to its power purchase agreement with Atlantic Shores ^(BG3) but not considered. They were raised with the Bureau of Ocean Energy Management (BOEM) in our comments ^(BG4) on the Ocean Wind NOI, and apparently ignored because there is no mention of the right whale operational noise problem in this NOI.

Absent any consideration of these conflicts in formulating the proposal, any number up to two hundred turbines is an entirely arbitrary one, would very likely violate the MMPA and the ESA, and is therefore not a reasonable federal proposal to be made under the National Environmental Policy Act (NEPA).

Regarding visible impact, at a minimum the turbine exclusion zone that was provided by BOEM for New York State of 17.3 miles ^{V5} based on visible impact should be adopted for New Jersey projects. If not, the EIS needs to provide an explanation as to why that exclusion zone is not being applied to NJ projects.

In light of the gravity of the endangered whale problem, the extraordinary visible impact and other major problems, we ask involved agency managers to review these issues personally, and we offer to meet with you to explore reasonable alternatives to this project that can still meet offshore wind energy goals.

We ask the BOEM to rescind this proposal and NOI. The BOEM should propose appropriate turbine placement in the Hudson South area, and the use of this lease area to transmit the power from Hudson South to shore. There is ample wind energy in Hudson South to meet the NJ State goal of 7500 mw of offshore wind power by 2035 (Enclosure 2, Table 2).

In the event that the BOEM proceeds with this ill-conceived proposal, we provide detailed suggestions in Enclosure 2 regarding the content, analysis, clarity, and presentation of results in the EIS (II.1-6, V), the BA and BO (IV.1), and the timing of their release (III.1-3), to make these documents scientifically credible, consistent with each other, and understandable to the public. The comment topics covered are listed in Enclosure 1. Among those suggestions,

- The EIS should provide a comparable analysis of the no action alternative, using a realistic scenario of where the proposed 1510 mw of turbine power for project 1, and whatever power the BOEM proposes for project 2 and the remaining lease area, would be placed if this project was not approved, since it is not likely that the State's goal would be abandoned (II.2-3) in that case.
- The proposal should exclude turbines within 17.3 miles of shore as was done by the BOEM for New York State (I.9) to mitigate the extreme visible impact.
- The BOEM should include the State Plan's connected actions under NEPA rules, and reasonable alternatives within it (II.1,2,3) in the scope of this EIS, end the practices of scoring impacts (II.5) and excessive referencing to other documents (II.6), and focus on presenting significant impacts (II.6) as opposed to lengthy presentations of background information and insignificant impacts.
- The EIS, ITR, BA and BO should present precise "jeopardize" and "negligible impact" criteria (I.2), describe any realistic avoidance scenarios and the scientific basis for them, not just rely on opaque modeling results (I.3), and augment mean take and harm estimates with an uncertainty analysis to provide results close to a 95 percent confidence level (I.4).

- The BOEM, National Marine and Fisheries Service (NMFS), and the Coast Guard should collaborate on a joint study to assess the synergistic impact on the right whale from the long-term operational noise of the offshore wind projects foreseen, and the use of its migratory corridor as a deep draft vessel lane, and include the results in the EIS, ITR, BA and BO.

We also request, as an interested party, to participate in the formal ESA Section 7 90-day consultation period (IV.3), and would appreciate a response to that request.

If we could offer a closing thought. As seen from these comments, notwithstanding the distress this project causes our supporters, we have been and will continue to be forthright, specific, and professional in our dealings with your agency.

Some reciprocity is sought to address the continuing obfuscation surrounding this project: the inappropriate and confusing use of a project design envelope as the proposal (V), the failure to present a federal project purpose and a clear preliminary, reasonable proposal in terms of the intended use of the full lease area, the turbine power, capacity factor, size, make, number, drive type, spacing, foundation type, and locations (V), the use of non-representative and misleading visual renditions (I.10), the lack of any meaningful alternatives (II.1-3), and the clouding of, rather than illuminating the project's significant impacts (II.5-6).

This lack of clarity and full disclosure, especially regarding the Atlantic Shore's project full geographical scope, turbine visualizations, and the State's prior turbine make and foundation-type approvals, does not serve the public nor you as decision-makers. Therefore, we do hope that all our suggestions throughout will be seriously considered in the interest of pursuing a reasonable and transparent offshore wind effort, with opportunity for real public engagement and influence.

Sincerely,



Dr. Robert Stern, former Director, Office of Environmental Compliance, U.S. Department of Energy, on behalf of the Long Beach Island Coalition for Wind Without Impact.
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Cc; James Bennett & Michelle Morin, BOEM, Jennifer Anderson, NMFS, Jane Cohen, NJ Governor's Office, Joseph Fiordaliso, NJBPU, Jaclyn Daly, NMFS, Eric Schradling, FWS, George H. Detweiler, USCG, Jim Ferris, NJ BPU, Megan Brunatti, NJDEP, Carl Lobue, the Nature Conservancy, Peter Baker, Pew Charitable Trusts, Francine Kershaw, NRDC.

Enclosure 1. Topics Addressed

I. Key Issues

1. Impact of Operational Turbine Noise on Endangered Whales.
2. Criteria to Avoid Jeopardizing the Existence of the North Atlantic right whale.
3. Realistic Avoidance Behavior in Take and Harm Estimates
4. Addressing Uncertainty in Animal Take and Harm Estimates
5. The need for Turbine Exclusion Zones.
6. Addressing Temporary or Permanent Whale Hearing Loss
7. A different Noise Impact Analysis
8. Visible Turbine Impact
9. A Turbine Exclusion Zone to Mitigate Visible Impact
10. Visual Turbine Renditions
11. Publicizing Contracts, Donations, Gifts, Services
12. Other Shore Condition Impacts
13. The Piping Plover and Red Knot
14. The Cold Pool
15. Essential Fish Habitat
16. Radar and Sonar Interference
17. Decommissioning
18. Climate Change
19. Socioeconomic Cost and Benefit

II. EIS Scope, Content and Reasonable Alternatives

1. Need to Include "Connected Actions".
2. Alternatives Commensurate with the Proper EIS Scope
3. The No Action Alternative
4. Scope of Impacts on Endangered Species
5. Scoring of Impacts as Negligible, Minor, Moderate, or Major
6. EIS Length and Content

III. NEPA Coordination with Marine Mammal Protection Act, the Endangered Species Act, and other Reviews.

1. The Marine Mammal Protection Act (MMPA), Required Rulemaking
2. The Marine Mammal Protection Act, Timing of Review
3. The Endangered Species Act (ESA), Coordination with the EIS process
4. The Magnuson-Stevens Fishery Conservation and Management Act, Coordination.

IV. Other Issues Regarding the Endangered Species Review

1. The Scope of the ESA Biological Assessment.
2. the Need for a Programmatic Consultation under the ESA.
3. Interested Party Involvement in the ESA Consultation-Request for Participation

V. A Clear Federal Purpose and Proposed Action

Enclosure 2. Detailed Comments on the Proposed Action, the EIS and Related Environmental Reviews.

I. Key Impacts to be Analyzed in the EIS

The following are key impacts to address in the EIS, not only because of their significant impact but because mitigating many of them will likely place restrictions on the project area to be used and is therefore directly linked to the electric power than can be obtained from the project.

1. The Impact of Operational Turbine Noise from Larger Turbines on Endangered Whales.

The presence of endangered whales in and near the project area and the use of larger gearbox turbines poses a significant operational noise problem and requires a thorough quantitative analysis in the EIS. Those impacts, based on currently available data and studies are summarized below.

- The number of critically endangered North Atlantic right whales (NARW) is already low at 366 animals and in steep decline- Exhibit A. There are less than 94 females of reproductive age left.
- The proposed action would place turbines 10 to 20 miles offshore. The right whale's north/south migratory corridor starts about 20 miles out, and is about 12 miles wide, extending to 32 miles out (Exhibit B).
- Endangered fin and humpback whales frequent the inner part of the project area, distances out to 11.5 miles (Exhibit C).
- Operational turbine noise was previously dismissed by the BOEM as a problem. But that was based on assessment of smaller, much less noisy turbines, e.g., in the Vineyard Wind 1 EIS with source levels of 137 decibels (dB)*.
- Neither this NOI or the Construction and Operations Plan (COP) state the power, manufacturer, or drive type of the turbine proposed to be used or the foundation type. But the New Jersey Board of Public utilities (BPU) approval of 1510 megawatts (mw) for Project 1 was based on the use of Vesta-236 13.6 mw turbines and monopile foundations ^(BG1). We assume that Atlantic Shores is adhering to the conditions of the State's approval so our analysis herein is based on the use of those turbines and foundations.
- Source sound levels for those 13.6 mw gearbox turbines are predicted at 180 dB^{W2} using the root mean square trend line of Figure 1 of that study extrapolated out to 13.6 mw turbines, which is about 40 dB higher and 10,000 times* more intense than the noise from the smaller turbines.

- The 180 dB source noise level is confirmed by another study ^{W17}. The authors there also tabulated, correlated and plotted sound levels as a function of wind speed, power, and distance. Figure 3(C) shows the trend in received noise level at 100 meters from the source versus turbine power for monopile foundations. Drawing a trend line through that data and extrapolating it out to 13.6 megawatts results in noise level of 132.5 dB. Back calculating that from 100 meters to the turbine source at 1 meter adds 47.4 dB (page 21) resulting in a 179.9 dB noise source level.
- Using the formula in the first study ^{W2} for transmission loss, $15 \log_{10}(r/r_0)$, it takes six miles ^(W2) ^(W3) for that single turbine source noise level of 180 dB to fall below the 120 dB National Marine and Fisheries Service (NMFS) level B criterion for disrupting marine mammal behavior from continuous noise ^(W4) ^(W5) ^(W6).
- The 6-mile distance above is for a single turbine 180 dB source. At distances close to that source it dominates the received noise level. But at distances 6 miles away the contributions from neighboring turbines become comparable and must be considered. For example, with a one mile spacing, just the six other turbines closest to a receiver 6 miles away will add 8.3 dB to the received noise level, again using the $15 \log_{10}(r/r_0)$ formula.
- That is equivalent to having a single equivalent source for all seven turbines of 188.3 dB, requiring 22.2 miles to bring that level down to 120 dB. This would envelop the entire 12-mile-wide right whale migratory corridor with noise above the 120 dB disturbance criterion. When the entire wind complex is considered, the zone of influence for behavior disruption will be even larger than 22 miles, and the sound levels within the migratory corridor more intense.
- Since the noise zone of influence is much larger than the turbine spacing of about a mile the 120 dB level will also be exceeded everywhere in the project area.
- This creates a “wall” of noise across the turbine complex and the whale’s migration corridor, essentially blocking it.
- It will be extremely difficult for the whales to avoid that expanse of elevated noise and continue their migration. Attempting to do will expose them to high cumulative sound exposures potentially exceeding hearing threshold shift criteria, cause loss of communication between and separation of females from calves, stranding, and loss of echolocation and other navigational abilities (I.3).
- Experiments have shown ^(W5) that one reaction of the right whale to such sound disturbances is to ascend and swim just under the surface where it is vulnerable to vessel strike.

- The proposed use by the Coast Guard ^(BG2) of the right whale's migration corridor as a new deep draft vessel lane (Exhibit D) would significantly increase the risk of vessel strike once it ascends.
- Subsequent planned turbine placement along the inner part of the Hudson South area would only elevate the noise levels in the corridor and worsen the problem.
- Mitigating measures involving detection and turbine shut down are not viable for the large noise influence zones and multi-year operational time frames here, leading to the need to consider turbine exclusion zones to try to avoid disrupting the right whale's migration.
- However, since the zone of influence above 120 dB (at least 22 miles) from even the innermost turbines at 10 miles extends across the entire 12-mile width of the migration corridor, **there is no place in this project area for turbine placement that is compatible with protecting the whale's migration.**

*Decibels are a logarithmic scale; a plus 10 dB = 10 times the sound intensity.

Given the severity of these impacts, the analysis of operational noise is perhaps the most important to be undertaken and presented in the EIS, the Biological Assessment (BA) and the Biological Opinion (BO).

Therefore, the EIS, BA and BO should among other changes: (a) establish clear "jeopardize" and "negligible impact" criteria (I.2), (b) provide a realistic avoidance and harm assessment (I.3), and (c) augment its mean take and harm estimates with an analysis of the uncertainties involved to provide results closer to those with a 95 percent confidence level (I.4).

2. Criteria for Avoiding Jeopardizing the Continued Existence of the North Atlantic right whale.

The EIS, BA and BO should provide a clear, definitive criteria to avoid the likelihood of jeopardizing the existence of the NARW, or causing a non-negligible impact to it.

The numbers of NARW are already very low at 366 animals and in steep decline-Exhibit A. There are less than 94 females of reproductive age left.

The NMFS 2020 stock assessment report for the NARW shows an average per female productivity rate of 0.06 for the years 2013 to 2017, Figure 4. It also shows (Figure 2a) an average female population of 180, leading to 11 average births per year. Table 2 shows estimated human caused fatalities at an average of 18.6 per year for that period.

According to the International Fund for Animal Welfare ^{W10}, over the past five years from 2016 through 2020, 17 whales died on average per year from human actions. During that same period 7 whales were born on average per year.

Clearly, with a human caused death rate (not including natural mortality) about twice the birth rate and a net loss of 8 to 10 whales per year, current mitigating and recovery measures are not sufficient to protect the whale, and any additional serious injury or fatality would “jeopardize” it under the meaning of that word which is to put (someone or something) into a situation in which there is the possibility of suffering loss, harm, injury or failure.

Therefore, the only sensible and scientifically credible criterion for the NMFS to adopt for the right whale is one of zero tolerance for any fatality or serious injury during its migration from turbine noise, and as discussed below in I.4. that criteria must be met with high statistical confidence.

3. Defining Realistic, Take, Avoidance Behavior & Harm Outcomes

Under the above impact setting the number of takes or daily exposures above the 120 dB behavior disruption criterion will be high compared to the right whale population. The primary noise exposure from operational Atlantic Shores 13.6 mw gearbox turbines to the right whale would occur in March and April as the whales migrate north. That migration appears to consist primarily of mothers and calves.

Previous analysis of turbine installation involving one or two discrete pile driving sources assumed that a whale approaching a source above the behavior disruption level could veer to the left or the right, find an “noise open route” and proceed on its migration.

Here, given the elevated noise levels above the 120 dB criterion throughout the wind complex and across their entire migration corridor it will be very difficult for the whales to avoid the noise disturbance and continue their migration. Attempting to do will expose them to high cumulative sound exposures potentially exceeding hearing threshold shift criteria, loss of communication between and separation of females from calves, stranding, and loss of echolocation and other navigational abilities.

Consider a whale traveling north approaching the migratory corridor between the project area and Hudson South.

In an effort to continue its migration, it might tolerate the noise disturbance and continue its 25-mile, 30-hour journey (@1.3 km/hr.) past the complex, incurring an additional sound exposure of 50 dB, for total levels likely exceeding the NMFS sound exposure level (SEL) criteria for temporary or permanent threshold hearing loss ^{W11}. It might veer west and travel north through the wind complex, incurring similar exposures.

But it is far more likely that it would try to avoid the elevated sound. Traveling due west to avoid the noise disturbance would require it to go all the way to shore because the zone of influence goes that far. Traveling east to avoid the disturbance requires it to find a noise open route through the Hudson South area, and once turbines are placed there that will not be possible. It would then have to go all the way around Hudson South and find a new route, all the while incurring long exposure times.

Experiments have shown ^{W5} that one reaction of the right whale to such sound disturbances is to ascend and swim just under the surface where it is vulnerable to vessel strike.

The proposed use ^{W15} of the migration corridor as a new deep draft vessel lane (Exhibit D) would significantly increase the risk of vessel strike once it ascends and struggles to find a new migration route. Subsequent planned turbine placement along the inner part of the Hudson South area worsens the situation.

As discussed further under the EIS scope, all three federal actions, the Atlantic Shores proposal, leasing the inner part of Hudson South and the deep draft vessel lane bear on the impact to the whale and should be assessed together in the EIS, BA, and BO.

The exposures described above have been shown to cause the right whale to surface and travel just below the surface subjecting it to greater risk of vessel strike ^{W5}. Masking of its communications risks the separation of females from calves during migration ^{W13, W14}. Its echolocation and navigation ability will be impaired ^{W16}, while trying to find a noise open route to continue its migration. Whales seeking to avoid the noise by going closer to shore risk stranding and elevated sound exposure levels as mentioned above.

Common sense dictates that under this expanse of high, multiple noise sources and the unattractive avoidance options discussed above, it is likely that there will be at least some of the animals exposed above 120 dB who will be subjected to prolonged exposure above that level, undergo stress ^{W12} and be seriously injured or killed.

There will be a similar and cumulative impact on the whales from other projects up and down the East Coast, wherever the migration route intersects the elevated noise area.

Therefore, the EIS, BA and BO should provide a realistic, scientifically supported assessment of behavior avoidance for such continuous, multiple, high noise sources. New assumptions, equations and models are needed as discussed more fully in section I.6 and I.7 below to accurately assess the harm here. In particular, the use of mean numbers also does not adequately capture the uncertainties involved in avoidance and other assessments and provide assurance that the criterion in I.2 will be met.

4. Addressing Uncertainty in Animal Take and Harm Estimates.

The NMFS is charged to determine the “likelihood” of the continued existence of a species. Likelihood involves probability. The current procedures using only mean estimates of key parameters to estimate animal take and harm are not mathematically sufficient to meet its charge.

The current process involves multiple steps:

1. Estimation of source noise levels
2. Estimation of noise transmission loss
3. Determination of zones of influence (ZOI) where noise levels are above Criteria, using 1 and 2.
4. Estimates of animal densities within the ZOI.
5. Estimates of animal “takes” i.e., the number of days an animal experiences noise above thresholds, using 3. and 4.
6. Judgments regarding animal avoidance behavior, that are largely qualitative but sometimes using numerical estimates of certain factors such as animal travel speeds and times to escape the ZOI, and,
7. Conclusions regarding the number of animals seriously injured or killed, based on 5 and 6.

At each step the NMFS appears to use mean estimates, for example, for density and animal travel speeds. While such mean estimates are informative, they leave open the question that the harm conclusion could be worse than predicted for half of the plausible scenarios. Therefore, the mean estimates don’t directly address the problem of determining extinction which as discussed above for the right whale depends on adverse outcomes for only a few animals.

In mathematical terms what is important to know here is the behavior of the tail end of a statistical distribution, as opposed to the average or mean. Therefore, NMFS needs to augment its current procedures and inject the probability of worse outcomes to provide closer to 95 percent or two standard deviation confidence in its conclusions. It’s recognized that certain aspects here do not lend themselves to precise statistical distributions but there are steps that can be taken to make the calculations and conclusions more relevant, as suggested in section I.7 below.

5. Turbine Exclusion Zones for the Atlantic Shores Offshore Wind Project to Protect Endangered Whales

Detection and shut down procedures are unreliable for the noise reduction distances and the 30-year time periods for turbine operation here^(W8). The only reliable measure would be turbine exclusion zones. However, since the width of the project area, 10 miles, is less than the greater than 22-mile noise zone of influence, there is no place in this lease area for turbine placement that is compatible with protecting the whale’s migration.

6. Addressing Temporary and Permanent Whale Hearing Loss

With a turbine source noise level for a 13.6-mw turbine of 180 dB, depending on the route and the time it takes a whale to exit high sound level areas, the received sound exposure level (SEL) could easily exceed the NMFS criteria of 199 dB SEL for permanent hearing threshold loss and 179 dB for temporary threshold loss^{W11}. The EIS, BA and BO need to include this assessment in the noise impact analysis.

7. A Different Noise Impact Analysis and Presentation

A different noise impact analysis is needed for the EIS, BA and BO. As discussed above the operational noise impacts from multiple larger gearbox turbines are now a significant problem, and a full quantitative analysis of the noise impact of the entire complex on the surrounding area is required.

The physical setting for operational noise is considerably different from the impacts previously assessed for turbine installation. The operational noise levels are continuously high and require large distances to bring those levels down to threshold criteria. Instead of one or two noise sources for construction at a time there are multiple turbine noise sources.

The noise levels in the entire wind complex area and at least 22 miles beyond it will subject the whale to behavior disruption, and the whales will have considerable difficulty avoiding that noise. Previous assumptions regarding relatively rapid avoidance from one or two sources for construction noise analysis are no longer valid. Mitigating measures based on observation and shut down are no longer viable.

The analysis also needs to inject a degree of probability since extinction outcomes can depend on more adverse scenarios as opposed to mean or average estimates.

Regarding presentation of results, current descriptions of noise impact in EISs, BAs and BOs are lengthy, contain nonessential background material and numerous references to other work, making reading and understanding them extremely hard. At the same time, they lack information in the document itself regarding how key calculations are made and conclusions arrived at.

Considering all of the above it is recommended that the approach in the BA, BO and EIS be altered and augmented to include:

1. Less emphasis on background descriptions and references to other studies, more actual data on the calculation of and support for take and harm estimates.
2. Referencing other studies only after the key relevant data or information from that study is presented in the BA, BO or EIS itself, and then pointing the reader to the specific place in that study for further information,
3. Presentation of source noise levels, an explanation of how they were arrived at and the uncertainties and any ranges in the numbers.

4. The presentation of the transmission loss equations and assumptions used with an estimate of the uncertainty involved and how that might affect the zones of influence estimates.
5. Inclusion of a table with the noise threshold criteria for injury and behavioral disruption for impulsive, non-impulsive and continuous noise sources.
6. Considering all the turbines proposed as sources, tables and isopleths on maps showing the distances required for noise levels to decline to threshold criteria.
7. The use of animal density data to achieve a 95 percent confidence level. Ranges of mean estimates and covariance data are available ^{w9}.
8. Inclusion of cumulative take and harm estimates from reasonably foreseeable offshore wind development in Atlantic Shores, Ocean Wind and Hudson South.
9. Apportioning take and harm estimates by males, females and juveniles.
10. The full presentation of any plausible avoidance scenarios, including the key equations and assumptions used to simulate it and estimate the number of animals exceeding PTS or TTS thresholds, and those potentially injured or killed indirectly from e.g., vessel strike, migration disruption, separation from family groups, stranding, foraging loss and impaired predator detection as a result of prolonged exposure to behavioral disruption levels above 120 dB, with the uncertainties involved in those equations and assumptions(as opposed to just presenting “modeled” conclusions), and
11. A sensitivity analysis of the take and harm estimates using conservative assumptions for the key factors involved in items 3,4,7 and 10 above. A sensitivity analysis can shed light on plausible worse than average outcome results that are critical to reaching reasoned conclusions regarding right whale and others extinction.

Since these analyses for turbine operation may lead to conclusions that conflict with the proposed power size of projects and revenues, they create a potential conflict of interest for applicants and should not be left to them to do on a case-by-case basis. The BOEM and NMFS should develop science-based peer reviewed methods for determining source levels, using animal density data, determining transmission loss, and most of all assessing avoidance behavior, and require their use. This could be done through an ESA programmatic consultation (IV.2), a framework programmatic consultation, or the rulemaking required for Letters of Authorization (III.1).

8. Visible Turbine Impact

The EIS needs to include current, realistic, quantified impacts of visible turbines on rentals, tourist visits and spending, tourism related jobs and property values.

This project as proposed would be the closest, most visible large turbine wind turbine complex in the entire world -See Exhibit E. It would destroy the natural beauty of an unvarnished ocean vista from an 18 mile long, 5000-year-old barrier Island. It would create out of place, unseemly large vessel traffic along the seaside (Exhibit K). Based on data depicting visible impact comparable to the proposal from previous people surveys and studies it would cause an extreme unreasonable adverse economic impact on the Island.

Those results are summarized below using data for the smaller turbines and closer distances previously studied that are visually comparable to what will be seen off of LBI, i.e., having the same upper line of sight.

Visibility:

- . The BOEM concluded in its NY Visual Assessment Study ^(V4) that the Jones Beach scenario of 577-foot-high turbines, 15 miles offshore, would have its worst "dominant" visual impact ranking.
- . The Vesta-236 turbines approved by the NJ BPU for LBI are at least 850 feet high and would start 9 miles offshore, and therefore would have an even worse and disturbing visual impact.

Tourism and Rental Impact:

- . Based on the Global Insight Study^(V1) an expected loss of several hundred million dollars in annual revenue to LBI is predicted.
- Based on a University of Delaware Study^(V2) sponsored by BOEM
 - Using study results for smaller, closer turbines comparable to larger LBI turbines at 10 miles
 - 44% of those surveyed saying they would have a worse shore experience, and
 - 19% would not visit that shore again
- Based on a North Carolina State University Study^(V3)
 - Again, using turbine sizes and distances visually comparable to the LBI project,
 - 54% of prior oceanfront and ocean view renters would not return even with a rent discount

Property Values: Significant impact based on Global Insight Study^(V1)

- Global Insight conducted a study of 584 ocean view homes in Ocean County, NJ
- It estimated property loss under two economic assumptions
- By dividing the results by the 584 properties surveyed (Figs 5.3 and 5.4), using smaller turbines at 4.5 miles as visually comparable, it found,

- Significant losses in property value for ocean view properties, which has major implications for all other property owners on LBI.

The EIS should present the results of these prior survey studies using that same approach, i.e., the data points in them for the smaller turbines and closer distances that are visually comparable to what will be seen off of LBI.

In addition, since the visible impact of these turbines on LBI residents, renters and those who frequent the island is a critical impact issue it should be addressed in the EIS with a more current, independent analysis by the BOEM.

The BOEM cannot simply cite conflicting conclusions of prior studies which may have no strength or even relevance to the current proposal. It should engage an independent contractor to do a survey of residents, renters and visitors to the island, show them representative visual renditions of the turbines proposed here, assess their reactions, and then based on that predict the impact on rentals, tourism visits and revenues, property values and tax revenues. That study should also include the impact of night aviation warning lights.

Considering conflicts of interest and past misleading representations, it cannot rely on the applicant to do an objective analysis here, see also the discussion under visible turbine renditions (I.10).

9. The Need for a Turbine Exclusion Zone to Mitigate Visible Impact-Similar to that provided to New York.

At a minimum the turbine exclusion zone that was provided by BOEM for New York State of 17.3 miles ^{V5} based on visible impact should be adopted for New Jersey projects. If not, the EIS needs to provide an explanation as to why that exclusion zone is not being applied to New Jersey projects.

10. Visual Turbine Renditions.

Key to the public recognizing the severity of the visibility problem are representative renditions of what the turbines would look like from a nearby shore. The public has been and is being misled by statements and visual showings of turbine layouts shown by both the Ocean Wind and Atlantic Shores projects.

Regarding Atlantic Shores, such renditions are currently shown on their website in video format. Several frames are shown from vantage points up and down the coast far away from the project where one would not expect to see the turbines. One frame shown for several seconds is against a dark gray background that looks something like a solar eclipse. One frame that appears to be a reasonable rendition passes by so fast that you cannot even freeze it to get a good look.

Regarding the Ocean Wind project, a large number of the computer-generated renditions on its website are superimposed onto cloudy/hazy conditions. Several are superimposed on mid-day conditions when you don't see either a morning

silhouette effect or afternoon light reflecting off the turbine to the viewer. A view from Corson's Inlet is at the southern end of the project where the inner part of the lease area extends out further. Avalon, Stone Harbor, Wildwood Crest and Cape May views are south of the Ocean Wind project area so of course you're not going to see much from there.

Past statements from project representatives that the turbines would be barely or rarely visible are patently false.

These concerns have been raised to the BOEM multiple times. The COP does contain some renditions. Appendix II-M provides daytime visual renditions from beach observation points very far away from the nearest visible wind turbine, e.g., Seaside Park, 40 miles away, and from inland sites where the view will be blocked by ground cover, e.g., a manor in the Edwin P. Forsythe Reserve 32 miles away, where they obviously will not be visible. Without giving the viewer that distance perspective, they give the misleading impression that the turbines will not be visible from anywhere.

The only rendition from heavily used beaches closer to the turbines, in Beach Haven NJ, at 13.5 miles, is done under pre-dawn, poor light and overcast conditions (Exhibit J, first image) providing a misleading impression on the casual viewer. The renditions from the North Brigantine Natural area are better but still done under overcast conditions, and the persons interested in the view from LBI and Beach Haven may never think to look at them(Exhibit J, second image).

Considering all the above, there appears to be a deliberate effort on the part of Atlantic Shores to obscure the true visual effect of the turbines on a viewer. This deception has gone on long enough. The current set of renditions was prepared by a contractor under Atlantic Shore's direction, and that is no longer acceptable.

The BOEM, which is ultimately responsible to fully disclose the visual impact, needs to engage another contractor do representative renditions under its direction, release them promptly to the public, include a full set of them prominently in the draft EIS itself, and not defer to the COP.

Those new representative renditions should be done for the beach observation point in Beach Haven as well as ones in Holgate and Long Beach Township. They should be done for clear, sunny conditions at different times of day, including morning, midday and afternoon, which would be representative of what beachgoers will actually see, especially in the summer.

11. Contracts, Donations, Gifts, Services

It appears that the Atlantic Shores project, or its backers have been providing all of the above to persons and organizations on and off the Island. Again, in the interest of the public getting objective information and having confidence in sources, it should know whether any such information source might have ulterior motives.

Therefore, the BOEM should require Atlantic shores, Shell New Energy and EDF renewables to provide a listing of such payments and make it public.

12. Other Shore Condition Impacts

Shore Breezes, Air Temperature and Currents. Along with the visible impacts, the EIS should provide an analysis of the potential impacts of the wind turbine complex on shore wind speed, temperature, humidity and perhaps wave action. Several prior measurement studies of such downwind impacts from smaller turbine complexes indicate the potential for reduced wind speeds and higher temperatures. An extrapolation of those results for the wind turbine sizes and atmospheric settings expected here should be presented in the EIS.

One study ^{OS1} deals with the wind velocity deficit, the percentage decrease in the free flow wind speed approaching the turbine, and concludes that it takes about 10 km (6.25 miles) downwind of the complex for that wind speed to get back to within 7 percent of its free flow value (Figure 5-for offshore winds). Those measurements were for 2 megawatt (mw) turbines. With 13.6 mw or higher power turbines the wind speed reduction at the shore here only 10 miles away from the complex will likely be considerably greater.

Since the wind speed drives the currents, the wind complex will also have an effect on the longshore currents, which in essence will have an effect on the nearshore currents, and thus will be impactful on our coastline. Given the size and scope of this project, this needs to be analyzed and results presented in the EIS, including a description of what type of studies the BOEM, and others have conducted on this subject to support any conclusions reached.

Another study ^{OS2} speaks to air temperature increases and humidity changes. It finds (see its conclusions) temperature increases up to 0.6 degrees kelvin (1.1 degrees Fahrenheit) 45 kilometers (28 miles) downwind of the wind complex. Here again, these measurements are for smaller turbines- a combination of 3.6 mw and 6.2 mw. With larger turbines and the shorter turbine to shore distances here the temperature and humidity changes could be significant. So, because of the unusual 9–10-mile proximity of this project area this should be analyzed in the EIS for the turbine sizes proposed.

Underwater Noise. The high noise level from these turbines also raises the prospect that persons going underwater at the shore will hear the turbines. Using the same seven turbine sources in I.1 above, the underwater noise level at the shore 10 miles away from inner project area turbines would be 125 dB. That would be audible to a person ^{OS3} and above typical background levels of approximately 80 dB.

Underwater noise is received differently than an air, and the impacts of this on a person are not clear. However, this needs to be fully investigated for the EIS lest diving into a wave at the shore becomes a thing of the past.

13. The Piping Plover and Red Knot

The NOI does not mention the Piping Plover or the Red Knot birds.

The piping plover's existence is "threatened" under the Endangered Species Act (ESA) and should receive a review under that statute. About 86 plovers' nest in Holgate and Barnegat Light where they are protected, others in the North Brigantine State Natural Area.

It migrates offshore, north-south ^{PP1} and must cross the project area in and out from their nests. If heading toward turbines, it would seem quite difficult for a 7-inch bird to avoid rotating blades with a 774-foot diameter and blade tip speeds approaching 200 miles per hour creating highly turbulent conditions. Assuming little avoidance there is the potential for a high number of fatalities ^(PP2) estimated here at up to 31 percent per year. That is based on reference PP2, Figure 2.25, the average of the Chapin, Dead Neck, Avalon, Stone Harbor results. It is also consistent with the percent of transit area blocked by rotating blades and 2 flights per bird, in and out.

The BOEM needs to do a current assessment of collision risk and fatalities here. It cannot rely on the BAND model as it did for the Vineyard Wind 1 Biological Assessment which according to the U.S. Fish and Wildlife Service has major drawbacks ^{PP3}.

The BOEM cannot assume a 98 percent avoidance rate by simply referencing studies which reference other studies, which in turn are based on much smaller turbines (e.g., 216-foot diameters), other bird species, and different circumstances. On its face it does not seem realistic to expect a small bird to easily and often escape multiple rows of rotating turbine blades with diameters more than two football fields long, a rotor swept area 13 times that used in previous studies, and wind tip speeds approaching 200 miles an hour causing significant disruptions in air currents.

Prior studies ^(PP2) acknowledge that the avoidance rate for the piping plover is simply not known. If the BOEM uses an avoidance percentage number it needs to provide a plausible explanation for it. Otherwise, it should be conservative in its analysis.

Similarly, the federally threatened and State endangered red knot is likely crossing the lease area as well, and a similar analysis should be done for it. It has a critical habitat in the Holgate and North Brigantine areas during its fall migration ^(PP4). The results of all Atlantic Shores studies of its migration routes should be included in the draft EIS. Phase 1 results should be made available now.

Authorizations should also include compliance with the Migratory Bird Protection Act.

14. The Cold Pool

An important factor impacting marine habitats and migratory patterns on the mid-Atlantic shelf is the “Cold Pool”. This seasonal thermocline is one of the largest of its kind in the global ocean and extends from Nantucket to Cape Hatteras. Wind turbines have been shown to impact the mixing of ocean water both at the surface through their change in wind energy and at other levels through their physical structure.

The impact on the Cold Pool, both off the New Jersey coast and more broadly off the mid-Atlantic shelf, from this project and in conjunction with the other foreseeable offshore wind projects must be carefully assessed. As mentioned in the July 22, 2020 report of the Science Center for Marine Fisheries Management (a project funded by the National Science Foundation) in its critique of the BOEM Supplementary Environmental Impact Statement for the Vineyard Wind Project: “Too much attention cannot be given to the Cold Pool” and “The weakening of the Cold Pool supports the potential of generating the most catastrophic ecological event on the continental shelf the world has ever seen”. The potential impact of this and other such wind projects on the Cold Pool should be clearly understood before this or any new projects are permitted.

15. Essential Fish Habitat.

The EIS should address potential significant impacts on overlapping essential fish habitats (EFHs) for both migratory and nonmigratory species. Concerns have been expressed regarding the presence of EFHs in the project area for ocean quahogs, surf clams, Atlantic cod and black sea bass. A December 2017 BOEM report, *Habitat Mapping and Assessment of Northeast Wind Energy Areas*, stated that the EFHs for these species broadly overlap the lease area. The report also stated that although the sea scallop EFH did not overlap the lease area, trawling surveys found scallops widespread in the lease area. The report states that these species are “worth considering in terms of potential habitat disturbance”.

The impact on the fish and their habitat from the high levels of turbine operational noise described above in I.1 needs to be included in the EIS and the EFH assessment prepared for the Magnuson-Stevens Fishery Conservation and Recovery Act consultation (see III.4).

Sounds exposure guidelines ^{F1} in Table 7.7 for fish for continuous noise show temporary threshold shift occurring above 158 dB and recoverable injury above 170 d, as well as a high potential for masking of communications and behavior modification, including avoiding the area. Those levels and higher will be encountered within the wind complex as discussed above in I.1, so this needs to be fully analyzed in the EIS and EFH assessment.

In addition, the offshore wind cables produce electro-magnetic fields during the construction and operation periods. The impact of these fields on the fish population and surrounding ecosystems needs to be analyzed and the results presented in the EIS. Given the size and scope of this project, those results should

include a description of what type of studies have been conducted on this subject to support any conclusions reached.

16. Radar and Sonar Interference

The EIS needs to assess the potential interference^(RS1) from the proposed Atlantic Shores project with the airport surveillance radar, ASR-9 at Atlantic City, the Air Route Surveillance Radars, ARSR-4, used jointly by the Federal Aviation Administration and the Department of Defense at Gibbsboro, New Jersey, as well as the Sea-sonde ocean monitoring radar system in Loveladies, New Jersey.

Equally important, the larger underwater source noise levels and the significantly greater distances required for those levels to dissipate to background raise serious issues regarding potential interference with Navy underwater acoustical surveillance systems (sonar). Previous studies^(RS2) assumed that underwater noise levels from wind turbines would attenuate to backgrounds level well before reaching the edge of the outer continental shelf and open ocean. This may no longer be the case. The Department of Defense should be consulted to make them aware of the higher noise levels and determine their position.

17. Decommissioning

The NOI suggests that project decommissioning will not be included in this EIS but will be deferred until the lease expires. That is not consistent with NEPA requirements the reasonably foreseeable impacts be included in an EIS. In addition, decommissioning expenses are significant (one study for an 1100 MW offshore wind project shows \$590 million or \$19.5% of the total project cost) and the scope of the effort is major (each of around 200 structures will be 850 feet above the surface and each monopile base is said to be 40 feet in diameter and weigh up to 5 million lbs.). Decommissioning is an important part of any credible economic and environmental impact assessment for a project of this magnitude.

The EIS should present the plan for decommissioning and its impact in specific terms. Using one turbine for discussion, what is going to be removed? How is it going to be removed? How many ships, how big, how many trips, how many workers will be involved? What equipment will be needed? How long will the removal process take? What will remain in place? Where specifically will each piece be disposed of, using existing facilities or new ones? A hypothetical location to be determined when the time comes is not sufficient. What is the cost? How will the effort be funded? Will funds for decommissioning be held in escrow in a separate dedicated account or become a part of the "General Fund"?

18. Climate Change

The NOI alludes to climate change as a benefit from the project, and for New Jersey constraining sea level rise would be a major part of that. But in fact, as explained below, the proposal has virtually no effect on sea level rise.

- Sea level rise from greenhouse gases (GHG) is different than other air pollutants.
- GHG emissions raise the earth's surface temperature, predicted in 2100
- Subsequent heat transfer to ice caps and oceans causes the sea level rise,
- The height of the sea level rise depends on both the 2100 temperature rise and the time elapsed afterward.
- The earth is currently headed to a 3.3-degree Celsius rise in 2100
- In that regime, Exhibit H shows the effect of a lower temperature rise from a GHG reduction is to delay, not reduce or prevent, future sea level rise.
- A 90 percent reduction (41 **billion** metric tons) of annual global GHG emissions is required to go from 3.3 degrees to a desired 2 degrees.
- The Atlantic shores project offers a GHG reduction of 2.6 **million** metric tons
 - Per NJ BPU press release distributed in June 2021
- Even accounting for an early reduction, the project will result only in a 0.00016-degree lower 2100 temperature rise.
- Exhibit H shows a 0.65-degree reduction is needed to delay a given sea level rise by 100 years.
- **So, the only project impact is to lower the temperature rise by 0.00016 degrees and delay (not reduce) future sea level rise by about 9 days.**

A nine-day delay in sea level rise is hardly a benefit worth a multi-billion-dollar investment. If the BOEM claims climate change as a project benefit it needs to say what the benefit is.

In addition, the EIS should explain how the 2.6 million metric ton GHG reduction was calculated. It does not appear to have considered GHG emissions created in the manufacture of, transport or installation of turbine components, or from the greater economic activity that the project claims.

This analysis is not to suggest that GHG reduction should not be pursued, but before claiming a project benefit BOEM should make clear to the public the global scope of this problem and the need to first get other countries aboard so the earth heads towards a temperature rise less than 2.5 degrees, which, as seen in Exhibit H would actually constrain sea level rise. By proposing more modest and practical GHG reductions (40% vs 90 %) the U.S. could get other countries to buy-in and overall global GHG reductions would actually be greater ^{CC1}

19. Socio-Economic Cost and Benefit.

Since the cost of this project is substantial, and will impact millions of household budgets such data is essential to reach a reasoned decision on it. Therefore, the EIS should include a full Socio-economic benefit and cost analysis.

There has also been considerable misinformation provided regarding project benefits that should be clarified. For example, thousands of jobs created have been claimed without pointing out that many are short-lived. There has been no

assessment of jobs lost because of higher electric rates, which according to one study by the Beacon Hill Institute ^{CB1} would outweigh the jobs created (Exhibit I).

The NOI speaks to substantial job gains from the project. But the New Jersey BPU projects only 289 full time equivalent jobs created if contracts are selected on a least-cost basis, up to 859 full-time jobs created if selected otherwise ^{CB2}. All this should be analyzed and clarified in the EIS, including the jobs created overseas and out-of-state for perspective.

The EIS should also include a clear description of the project economics, the capital and operational costs, the revenues generated, and the return on investment to the companies. It should explain how the State's OREC system works, present the levelized cost of electricity from the project (with and without subsidies), expected annual revenues, and what proportion of that will be returned to ratepayers.

The EIS should present the increased annual electric cost to NJ ratepayer households from this project and the cumulative cost for the full 7500 mw program. It should show how that number was derived and whether it might increase depending on how much backup natural gas generation capability needs to be retained. It should show what annual amount is being paid by NJ taxpayers in the form of federal and state tax subsidies to sustain this project and the full program.

The data in Exhibit I points towards an annual household cost increase of \$220 from both electric ratepayer cost and taxpayer subsidies for the full 7500 mw program. Compared to the current average annual NJ household electric bill of \$1,314, that represents a 17 percent increase. Over its 20-year life the project adds \$7.27 billion (\$927 per residential ratepayer) to the already high cost of electricity paid by NJ ratepayers. With its sister projects the total estimated additional cost to NJ ratepayers will be \$32 billion (\$4067 per residential ratepayer), and these ratepayer costs do not include tax subsidies for the project which are estimated at \$1.35 billion (\$6.75 billion including its sister projects). If these numbers are correct or close to correct this is a significant socio-economic cost that needs to be disclosed.

The EIS should also estimate the economic costs to the local communities such as the impacts on tourism, rentals, and property values (as noted above in section I.8 Visual Turbine Impact) and to the commercial and recreational fisheries.

A summary of the NJ BPU cost-benefit analysis required by State law should also be included with an explanation of how its numbers were derived. In particular, the potential authorized costs to ratepayers of \$7.27 billion over 20 years of operation based on that study's levelized net OREC cost of \$.058821 far exceeds the claimed economic benefit of \$1.869 billion. So, it is necessary to attribute a huge benefit from avoided emissions to justify a positive benefit to cost. But as shown in I.18 above, the sea level rise change from the project is insignificant so it is hard to see where this multi-billion-dollar environmental benefit is coming from. This needs to be clarified. In addition, the cumulative impacts of the 3 projects considered to date

and including those contemplated to meet the NJ goal of 7500 MW by 2035 should be provided.

II. EIS Scope and Reasonable Alternatives

1. The scope of the EIS Needs to be expanded to include “Connected Actions” per 40 CFR §1501.9 (e)(1)(iii).

Purpose and Need. The governmental purpose and plan here is to meet the New Jersey State plan for 7500 megawatts (mw) of offshore wind power by 2035. NJ Executive Order No. 92 directed the New Jersey Board of Public Utilities (NJBPU), the New Jersey Department of Environmental Protection, and other state agencies with responsibilities arising under the Offshore Wind Economic Development Act (OWEDA) to take all necessary actions to promote the development of wind energy off the coast of New Jersey to secure 7,500 megawatts of offshore wind energy generation by the year 2035.

On February 28, 2020, the Murphy Administration announced the offshore wind solicitation schedule to meet the 7,500 MW offshore wind goal by 2035 and called upon the NJ BPU to take all necessary actions to implement the schedule. The State has been and is proceeding with a specific, defined plan, with schedules, for solicitations to achieve that objective as shown below. In addition, it is proceeding to implement a consolidated transmission network to bring power from Hudson South to the NJ shore.

Table 1. New Jersey Offshore Wind Energy Solicitation Plan and Schedule

Solicitation	Capacity Target (MW)	Issue Date	Submittal Date	Award Date	Estimated Commercial Operation
1	1,100	Q3 2018	Q4 2018	Q2 2019	2024
2	1,200	Q3 2020	Q4 2020	Q2 2021	2027
3	1,200	Q3 2022	Q4 2022	Q2 2023	2029
4	1,200	Q2 2024	Q3 2024	Q1 2025	2031
5	1,400	Q2 2026	Q3 2026	Q1 2027	2033
6	1,400	Q2 2028	Q3 2028	Q1 2029	2035

The BOEM has, de facto, adopted the State’s Plan. Its proposed actions in its Notice of Intent to Prepare an EIS for the Ocean Wind Project, March 30, 2021 and here for the Atlantic shores project directly match the NJPBU awards and projected ones. In addition, the BOEM has expressed support for the State’s proposed consolidated transmission network, the linkage that would make Hudson South an

integral part of the State's Plan (BOEM Announces Next Steps for Proposed New York – New Jersey Wind Energy Transmission Line, 06/17/2019).

Wind Energy Potential. The wind energy potential from lease area A- 0498 (the Ocean Wind Project), A-0499 (the Atlantic Shores offshore wind project) and lease areas A-0538 through A-0543 (the Hudson south area) is shown below. The numbers for lease areas A-0498 and A-0499 in Figure ES1 of reference WEP2 were adjusted to a one nautical mile (8 rotor diameter) turbine spacing using the data in Figure ES2.

Table 2. Wind Energy Potential

Lease Area(s)	Wind Energy Potential(megawatts)
A-0498(Ocean Wind)	3192 ^{WEP2}
A-0499(Atlantic Shores)	3418 ^{WEP2}
A-0538 to A-0543(Hudson South)	6890 ^{WEP1}
All Areas	13,500 (NJ Program 7500 mw)

The wind energy potential from all three areas is 13,500 mw, 80 percent more than needed to meet the 7500-mw goal. Neither the Ocean Wind or the Atlantic Shores projects by themselves or combined can meet the 7500-mw program goal, so executing the State plan requires development in Hudson South. Consequently, all three areas must be considered to execute the Plan.

Connected Actions. *Therefore, in accordance with NEPA regulation EIS scoping requirements, §1501.9 (e)(1)(iii), development in these three areas are "connected" actions because they are: "Interdependent parts of a larger action and depend on that larger action for their justification", and as such they should all be included in the scope of this EIS.*

The need to include these areas in this EIS is further supported by NEPA rule §1502.4 which states that: "Agencies shall evaluate in a single environmental impact statement proposals or parts of proposals that are related to each other closely enough to be in effect a single course of action". Since as shown above, development in all these lease areas is in effect a single course of action, they should all be evaluated in this EIS.

Further, the impacts in and from each of the three areas are often similar and sometimes cumulative. From certain shore areas turbines from both the Ocean Wind and Atlantic Shores projects will be visible. Impacts on the right whale will come from all three areas. It is not scientifically credible to assess impacts on a critically endangered species in a piecemeal fashion, so addressing the three areas in this single EIS would allow for the analysis and presentation of the full impact from turbine noise to these endangered whales.

In addition, as mentioned above, the Coast Guard proposal to make the right whale's migratory corridor a deep draft vessel lane may have a synergistic impact on the whale because it surfaces as a result of the turbine noise, where it is

exposed to vessel strike. So, the combined impact of the foreseeable turbines and the Coast guard proposal should also be analyzed in the EIS.

The scope of the EIS needs to be expanded to include these connected actions. The BOEM has already done substantial analysis^{WEP1} regarding the environmental impacts of turbine placement in the Hudson South lease areas which can be used to provide a good comparison of impact there to the other areas consistent with the direction in 40 CFR §1502.21(c). Regarding the Ocean Wind project in Lease area A-0498, the BOEM can incorporate that EIS by reference and summarize its impacts in this EIS for comparative purposes.

2. Alternatives Commensurate with the Proper EIS Scope

NEPA rules require that other reasonable courses of action and their impact should be identified and analyzed in the EIS in detail per 40CFR§1501.9(e) and §1502.14(b), and in comparative form to the proposal per 40CFR§1502.14.

Since as shown above, the wind energy potential from all three areas exceeds the State's program requirement, there are clearly alternative ways of proceeding that involve all three areas. The proper EIS scope described above affords the opportunity to craft EIS alternatives that can meet the Governor's 7500 mw programmatic goal with much reduced environmental impact. Such alternatives could take the form below:

Table 3. EIS Alternatives

Area/Project	Alternative A, no Action on the Atlantic Shores Proposal ⁽¹⁾	Alternative B, Current NJ BPU ⁽²⁾	Alternative C, Restricted NJ BPU ⁽³⁾	Alternative D, Whale Protective ⁽⁴⁾	Alternative E, Maximum Reliance on Closer-in Areas ⁽⁵⁾
A-0498, Ocean Wind	2248	2248	2248	1140	3192
A-0499, Atlantic Shores	0	1510	530	0	3418
Hudson South	5252	3742	4722	6360	890
All	7500	7500	7500	7500	7500

(1) Alternative A, The No Action Alternative

NEPA rule §1502.14 requires that each alternative be considered in detail and comparative form to evaluate their merits and detriments. That includes the no action alternative.

As shown in Tables 2 and 3 above not proceeding with turbine placement in the Atlantic Shores project area would still allow for the State's offshore power generation goal of 7500 mw to be met through development in the Ocean Wind and Hudson South areas.

So, a no action decision on Atlantic Shores cannot be dismissed as not meeting the State's and the defacto, BOEM goal. Rather this section of the EIS should: (1) prescribe the most likely scenario and locations where the BOEM proposed level of power generation for Atlantic Shores would be made up, i.e., in the Ocean Wind and Hudson South areas, and (2) present the impacts of that turbine placement in comparative form to the proposal and any other alternatives. The analysis done by the BOEM for the Hudson South area to adopt the New York Bight lease areas is sufficient to provide that comparison.

Since the BOEM has repeatedly, and in Court, stated that it is under no commitment for turbine placement in the current lease area, the no action alternative could also include converting the use of the current lease area to a power transmission effort in support of the one consolidated transmission project to transmit all the power from Hudson South to New Jersey that the NJ BPU and the BOEM are pursuing (BOEM Announces Next Steps for Proposed New York – New Jersey Wind Energy Transmission Line 06/17/2019). The EIS should present the significant environmental benefit of that in contrast to the need for two transmission projects and the attendant greater sub-seabed excavation and substation construction if turbines are placed in both Hudson South and the current lease area.

The Alternative A discussion should also recognize that the current Atlantic Shores lease area was identified over 10 years ago without public input and consideration of onshore visible turbine impact or operational noise impact to endangered whales, and that the explosion in turbine power and dimensions and the associated underwater noise now place significant restrictions on it. Our analysis in the cover letter and Enclosure 2 indicates that there is no room for the turbines proposed in the project area consistent with the requirements of the ESA and MMPA.

Alternative A places greater reliance on development in Hudson South. The Hudson South area has been screened more recently by BOEM for all relevant turbine placement factors such as visible impact, navigation, Coast Guard use, other defense use, fishery conflicts, marine mammal conflicts, water depth and cost, and has been found to be suitable for offshore wind energy leasing. It offers several clear environmental advantages such as avoiding visible turbine impacts to shore communities. Those benefits should be described in the EIS.

Further, regarding the applicant's interests, as shown by comparing the two maps in exhibit F, EDF Renewables is poised to secure leases covering a large area in the western part of Hudson south. In much the dark green areas of that part EDF has provided the only nomination. In the lighter green areas it is one of two potential leasees. So, it is likely that EDF Renewables will come away with a substantial turbine effort in Hudson South and its interest can be served. Likewise, Shell New

Energy could use the its advantage with the current lease area to get involved in the substantial transmission project that will be needed to bring the power from Hudson South to shore.

To summarize, while in many federal projects requiring an EIS the no action alternative is often summarily dismissed, in this case it is extremely attractive. State power objectives can still be met through greater reliance on the Hudson South area which has substantial wind energy and has already been screened for environmental and other use factors. Impacts to endangered whales can be avoided by smart turbine placement. Using direct drive turbines in Hudson South can limit buffer zones and avoid impact to the right whale. Visible turbine impact on local shore communities would be avoided. The jobs expected for New Jersey are still the same.

The fact that the Hudson South areas do not yet have specific turbine size and location information need not be a deterrent to the preparation of such a useful comparison. The BOEM has already done substantial analysis^{WEP1} regarding the environmental impacts of turbine placement in the Hudson South lease areas which can be used to provide a good comparison of impact there to the other areas consistent with the direction in 40 CFR §1502.21(c). Regarding Lease area A-0498, BOEM can incorporate that EIS by reference and summarize its impacts for comparative purposes.

Therefore, the EIS should at a minimum provide a realistic, thorough, and comparable analysis of the no action alternative using a realistic scenario of where the proposed 1510 megawatts of power for project 1 and whatever power is sought for project 2 would be placed to continue to meet the State's 7500 mw goal if this project was not approved, since it is not likely that that goal would be abandoned under this alternative.

(2) Alternative B, Current BPU is based on decisions by the New Jersey Board of Public Utilities for power purchase agreements up to 2250 mw for the Ocean Wind project and 1510 mw for the Atlantic Shores project. However, such decisions did not consider the environmental constraints regarding visible impact or endangered whale protection even though they were placed in the docket record.

As mentioned above, the entire project area has very serious constraints regarding those issues, therefore a restricted project would be more sensible, as described below.

(3) Alternative C, restricted BPU. The initial proposal by Atlantic Shores to place the first 1510 mw in the southern portion of the lease area shown in blue in Exhibit G offers some possibilities. That area is wider, running from 8.7 miles to about 22 miles from shore. So, turbines could be restricted to the 17.3-19.3-mile range, which would allow for three rows of thirteen Vesta-236 13.6 mw turbines, or 530 mw of power.

This would mitigate the visible impact similar to what BOEM has done for New York State, and reduce the noise levels in the right whale's migration corridor, although they would still exceed the 120 dB level.

No further turbine placement in the lease area should be part of this proposal, and the EIS should state the BOEM's intention in this regard.

(4) Alternative D, Whale Protective, excludes turbines to protect the critically endangered right whale and the endangered fin and humpback whales. The right whale's migratory path comes within 20 miles to shore (Exhibit B), and the fin and humpback whales' frequent areas out to 11.5 miles (Exhibit C).

As shown above in I.1, since the width of this project area (about 10 miles), is less than the noise zone of influence that will disrupt the right whale's behavior (at least 22 miles), there is no place in this project or entire lease area for turbine placement that will avoid exposures above the 120 dB behavior disruption criterion, and block its migration corridor.

Given the endangered whale constraints, Alternative D also places greater reliance on Hudson South similar to Alternative A.

(5) Alternative E, Maximum Use of the Ocean Wind & Atlantic Shores Areas would make greater use of the closer-in lease areas, but that would exacerbate the visible turbine impact on shore communities and the operational noise danger to the endangered whales.

Atlantic Shores has also said they will seek authorization in the next State solicitation (above 1510 mw) for up to 20 mw power turbines that are 1042 feet high, or about 200 feet higher than the Vestas-236, so this turbine size (and power) needs to be incorporated into this alternative. This would of course exacerbate the shore visible impact and the operational noise impacts on the whales even further.

Since even the maximum wind energy potential in lease areas A-0498 and A-0499 combined cannot meet the 7500-mw goal, this alternative would still require some development in Hudson South, further linking the three areas, and requiring two transmission projects, which is avoided under Alternative A.

Alternatives similar to those above should form the structure of this EIS to provide real options for decision-making that can achieve wind energy goals with lesser environmental impact.

3. The No Action Alternative

NEPA rules in §1502.14 and elsewhere require that each alternative be considered in detail and comparative form to evaluate their merits and detriments. That includes the no action alternative.

It should not be dismissed as not meeting power goals, because as shown above in Tables 2 and 3 above, not proceeding with turbine placement in the Atlantic Shores project area would still allow for the State's offshore power generation goal of 7500 mw to be met through development in the Ocean Wind and Hudson South areas, and the BOEM, defacto by proposing the State endorsed projects, has adopted that goal and the State's Plan.

In addition, the BOEM has not stated its own specific power goal number and plan for its larger offshore wind program so it's not possible to say whether the no action alternative would not meet it. If the BOEM goal is the same as the President's then it should say so, and how much of that is expected from these projects.

Rather this section of the EIS should: (1) prescribe the most likely scenario and locations where the BOEM proposed level of power generation for Atlantic Shores would be made up, i.e., in the Ocean Wind and Hudson South areas and (2) present the impacts of that turbine placement there in comparative form to the proposal and other alternatives. The considerable analysis done by the BOEM for the Hudson South area to adopt the New York Bight lease areas is sufficient to provide that comparison (see discussion above under Alternative A for more information).

4. Scope of Impacts on Endangered Species

With the recent removal of the definition of cumulative impacts from the NEPA regulation the scope of the impacts to be discussed in an EIS from 40§CFR 1501.9(e)(3) and §1508.1(g) is not very clear. However, 40 CFR §1502.23 does require that every impact analysis in an EIS be scientifically credible.

Assessing the impact on an endangered species, particularly a critically endangered one, in a piecemeal, project by project way, is not scientifically credible. Regardless of what you call it, "cumulative" or some other word, NEPA requirements for full disclosure and scientific integrity demand a more comprehensive look in EIS's. With respect to Marine Mammal Protection Act (MMPA) issues, we recommend that be pursued through a programmatic consultation with NMFS as discussed in Section IV.2 below.

With respect to the Piping Plover, it is our understanding that USFWS Regional Office 5 is preparing such a cumulative analysis. We suggest that the BOEM consult with them toward including that in the draft EIS.

5. Scoring of Impacts as Negligible, Minor, Moderate, or Major

The BOEM should dispense with scoring the impacts of the proposed action and alternatives as negligible, minor, moderate or major, and characterizing impacts that way in comparative tables and throughout the entire EIS. There are many reasons for ending this practice.

First, the NEPA regulations at §1502.14 call for a comparison of the "environmental impacts of the proposed action and the alternatives" in an EIS, not the agency's

view of their severity or benefit, which is more appropriate for the Record of Decision (ROD).

Second, a “scored” comparison Table is of no use to readers who want to get an overview of the actual impacts and draw their own conclusions. It actually makes it harder for the reader to make comparisons because it requires the reader to go to many places in lengthy draft or final EISs, including Appendices, and then to many references to find actual impacts, which destroys the very purpose of the summary comparative table.

Finally, and most important, this practice of scoring is jeopardizing the objectivity of the EIS. Once a judgement has been made as to severity, the discussion then supports that score, and whether done consciously or not, data and discussion are being presented selectively to do that.

For example, regarding visual impact, the Supplemental EIS(SEIS) for the Vineyard Wind 1 project acknowledges in Section 3.10.2.1 that the turbines used could be 837 feet tall, or 141 feet higher than the turbines previously assessed and that they will be more visible. But it still ranks this as a minor impact without any new justification and just refers back to the draft EIS.

However, the draft EIS discussion was based on visual renditions in the COP using smaller turbines, the Block Island wind farm, which is not relevant either in turbine size or number, and selected data from the University of Delaware study ^(V2) based on smaller turbines. None of this supports a minor impact conclusion for the larger turbines.

For the SEIS, the BOEM could have extracted impact information from University of Delaware study that is relevant to the larger turbines by selecting data for the smaller turbines at a closer in distance (10 miles) that is visually comparable to the larger turbines at the 14.7-mile Vineyard Wind distance. Had it done so it would have found a 14 percent tourist trip loss from Figure 5, which shore communities would not consider minor. But it did not present this.

It did not present the result of the North Carolina State University Study^(V3) which found that 54 percent of prior oceanfront and ocean view renters would not return even with a rent discount if turbines were in view, again something not minor. It did not present results from BOEM’s own visual impact analysis ^(V4) for New York State which concluded (for the similar Jones beach observation point scenario) that even smaller turbines, 577 feet high, would have a “dominant” visual impact, its worst visible ranking, at about the same distance as Vineyard Wind. It did not present the results of the report done for NJ by Global Insight, Inc.^{V1} which showed significant losses in property values.

The SEIS provided none of these adverse data, apparently driven by the need to prove that the effects were minor. This tendency occurs throughout the EIS for other impact factors as well, and it appears to be largely the result of attempting to

justify the scorings. This is not the full disclosure, objective presentation required for an EIS, and is dangerous territory for an EIS preparer to enter.

Therefore, it is recommended that comparative tables and the presentation of impacts throughout the EIS dispense with the scorings. The comparative tables should present for each impact factor, the one or two most important impacts themselves, quantitatively wherever possible, using percentages to create a degree of proportion, and where numbers are not available and cannot be reasonably obtained, through a very brief qualitative description. Each cell in the Table should reference the reader to the supporting section in the EIS for more detail. Any judgments by the BOEM as to what is negligible, minor, moderate and major should be left to the Record of Decision.

6. EIS Length and Content

An EIS should provide **full** and fair discussion of **significant** environmental impacts, §1502.1 and only **brief** discussion of **other than significant issues** §1502.2. It should be concise, clear and to the point and supported by evidence that the agency has made the necessary environmental analysis, §1502.1. It should not be encyclopedic and shall be analytic and concise, §1502.2. It should be less than 150 pages or 300 for a project of unusual scope or complexity, §1502.7. It should inform federal decision making and the public, §1502.1. It should avoid useless bulk and concentrate effort and attention on important issues, §1502.15. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an EIS, §1502.15.

The EIS's being prepared for offshore wind projects are not meeting these criteria. The body of the EIS is far too long, and yet despite its length presents few significant environmental impacts. There is far too much presentation of background information, the affected environment, and insignificant impacts.

Lack of Significant Impacts. The affected environment and environmental consequences sections are dominated by discussion of the affected environment i.e., the thing being impacted as opposed to an actual impact itself. Numbers appear when describing technical equipment to be used but very few quantitative environmental impacts are provided. Graphs and visual portrayal of impacts are missing.

When impacts are presented, it is very often in the form of qualitative conclusory statements as to the severity or the lack thereof of an impact, again the focus on scoring discussed above. Some of these conclusions are not supported at all. Some are purportedly supported by references to other documents, but on reading those documents they often are not relevant to the proposal and do not support the conclusion. In many cases mitigating measures or caveats regarding what the actual proposal will include are not pinned down so the actual environmental impact is further obscured.

Emphasis on Insignificant Issues. There is too much focus in these EIS's on insignificant issues. For example, in the Vineyard Wind 1 final EIS comparison of alternatives Table on page ES-13, seventy five percent of the one hundred and twelve impact cells are rated as negligible or minor, only twenty five percent as moderate or major. That proportionality is reflected in the discussion in the EIS. The focus of the EIS should be predominantly on the latter, the former should be presented in one place and then dismissed, not repeated over and over. The focus on the negligible and minor also turns the document towards an advocacy one as opposed to a neutral one in terms of just presenting credible impact information.

Excessive Referencing. Throughout these EISs, the reader is referred to hundreds of references apparently for further information on impacts or to find support for the conclusions stated. But often these references just repeat the conclusion and/or provide no impact information relevant to the EIS proposal or alternatives. It is not the readers job to secure and sift through hundreds of technical documents and thousands of pages to try to ferret out relevant environmental impacts. ***It is BOEM's job to do that, show that it has done the "necessary environmental analysis", and to present the relevant impact itself in the EIS proper.***

Taking the above characteristics together, the EISs being prepared descend more into a literature review, with virtually no presentation in them of significant environmental impacts. They are not useful to a serious decision-maker and unreadable and incomprehensible to the public. To turn this around we make the following recommendations:

First, the BOEM should adhere to the 150-page EIS body limit, using appendices as needed.

Second, it should separate out the affected environment and the environmental consequence sections so that the impacts themselves are distinct and clear. It should reduce the verbiage on the affected environment and enhance the presentation of the environmental consequences.

Third, it should discuss and dismiss insignificant issues in one place in the EIS and not repeat that discussion for every alternative. The rest of the EIS should focus on significant impacts.

Fourth, it should rely much less on referencing the reader to other studies. It should only reference a document after the BOEM has extracted a piece of relevant impact information from it and presented it in the body of the EIS, then it could reference the reader ***to a specific section of the study*** for further detail. When it does reference it should provide for direct web access to the document being referenced.

Fifth, it should provide much more quantitative impact information and make greater use of impact tables and graphs.

Finally, as mentioned above, it should avoid conclusory statements in the EIS as to what is minor, major etc. The BOEM need not fear presenting significant impacts, that is the very purpose of an EIS. Those conclusions can await the Record of Decision.

III. NEPA Coordination with Marine Mammal Protection Act, Endangered Species Act and other Reviews.

NEPA regulation 40 CFR §1502.24 requires that to the fullest extent possible draft environmental impact statements shall be integrated with other environmental reviews such as those under the Marine Mammal Protection Act (MMPA), the Historic Preservation Act in the Endangered Species Act (ESA).

As discussed above in section I.1 the impact of operational noise levels on endangered whales is a long-term continuing issue, more than 5 years at least, and the larger gearbox turbines require significant distance for noise levels to reduce to safe levels. Therefore, any incidental take authorizations must be done through an Incidental Take Regulation (ITR) and Letters of Authorization (LOA).

Under these conditions one mitigating measure and perhaps the only effective one will be the creation of turbine exclusion zones. This would directly affect the proposed project in terms of number of turbines and power level and potentially create conflict in terms of formulating reasonable proposed actions and alternatives in the EIS. Therefore, coordination of the EIS, ESA, and MMPA processes is especially important here.

Therefore, the BOEM should avail itself of preliminary ITR determinations regarding the means of effecting the least practical adverse impact under the ITR and associated LOA process, and preliminary biological opinions regarding reasonable and prudent measures and alternatives developed under the ESA consultation, prior to releasing the draft EIS.

Suggestions on how to do that and coordinate the EIS process with the ESA section 7 consultation and with the MMPA ITR process are provided below.

1. The Marine Mammal Protection Act, Required Rulemaking

The NOI mentions the need for incidental take authorizations only in connection with pile driving and construction. The turbine operational noise problem described in Sections I.1 to 7 persists for the life of the project, much greater than five years. Therefore, under the MMPA, any incidental take authorizations will require an Incidental Take Regulation and associated letters of authorization as opposed to annual incidental harassment authorizations

After receipt of the Atlantic Shores application this requires NMFS to accept it for adequacy and completeness, publish a Notice of Receipt of application in the Federal register for a 30-day comment period, consider such comments and prepare and publish a proposed rule for a 30 to 60-day comment period. NOAA

estimates the time required for those efforts to be between 5-10 months (Incidental Take Authorizations under the Marine Mammal protection Act/NOAA Fisheries).

2. The Marine Mammal Protection Act, Timing

As explained in the cover letter turbine exclusion zones must be considered to formulate a reasonable proposal. Therefore, the EIS NOI with a proposed action should have awaited the public comment period on a LOA application so that turbine exclusion zones can be considered and a proposed action formulated that does not violate the MMPA or the ESA.

The ITR should be proposed with a 60-day comment period prior to release of the draft EIS so the BOEM can reflect the preliminary determinations of that rule in its EIS proposed action and alternatives. This also allows the public to become familiar with and comment on the scientific information, noise transmission methods and calculations used to come to those preliminary determinations prior to the draft EIS. Issuance of the final ITR rule would await the Final EIS.

3. The Endangered Species Act (ESA), Coordination with the EIS process.

With regard to the ESA and marine mammals, the BOEM should enter into an early consultation process pursuant to 50 CFR§402.11 with NMFS to secure the benefit of a preliminary biological opinion in formulating its proposed action for the draft EIS. It should then proceed to submit the biological assessment (BA) to NMFS at least 30 days prior to release of the draft EIS so the draft EIS can inform the public as to whether the proposed action is likely to adversely affect the whales and whether a formal consultation will be pursued.

It is also recommended that the BOEM release the BA with the draft EIS, and assuming that a formal consultation is required, initiate it at that time. This will allow the BOEM and NMFS to have the benefit of public comment on the BA as the biological opinion is formed.

4. The Magnuson-Stevens Fishery Conservation and Management Act, Coordination with the EIS Process.

The consultation requirements of §305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. 1855(b)) provide that federal agencies must consult with the Secretary on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect essential fish habitat (EFH);

The process of satisfying the Federal agency consultation and response requirements of section 305(b)(2) and 305(b)(4)(B) of the MSA, and the EFH Conservation Recommendation requirement of section 305(b)(4)(A) of that Act generally consists of: 1) notification to NOAA Fisheries of a Federal action that may adversely affect EFH, 2) an EFH assessment provided to NOAA Fisheries, 3) EFH

Conservation Recommendations provided by NOAA Fisheries to the Federal action agency, and 4) the Federal agency's response to NOAA Fisheries' EFH Conservation Recommendations.

Since the impacts of turbine operational noise may have long term impact on fish and their habitat (see I.15) and restrict the placement of turbines there and the scope of the proposed action, the EFH assessment should be provided to NOAA Fisheries before the release of the draft EIS so that at least preliminary NOAA conservation recommendations can be provided to the BOEM prior to the release of the draft EIS, and incorporated in the proposed action.

IV Other issues Regarding Marine Mammal and Endangered Species Reviews

1. The Scope of the ESA Biological Assessment (BA) and Biological Opinion (BO).

The BA includes per CFR50 §402.12(f)(4) an analysis of the effects of the action on the species and habitat, including consideration of cumulative effects, and the results of any related studies.

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See §402.17).

Cumulative effects, §402.02, are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the **action area** of the Federal action subject to consultation, where the **action area** means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.

The Action Area. Within this framework the action area for the NMFS BA should include the wind turbine area and the surrounding areas enveloped by project noise at levels that may cause impacts, at a minimum above the 120dB level. It should also include offshore and onshore export cable corridors, any new onshore electric grid construction, and the vessel transit lanes between ports, including Paulsboro and the staging area at Alloways Creek, and the wind complex project area throughout all project phases (construction, maintenance, and decommissioning).

Regarding the piping plover, the action area for the USFWS BA needs to encompass its transit corridors to and from, and its nesting and foraging areas in the Edwin P. Forsythe Wildlife Refuge in Holgate, Barnegat Light and the North Brigantine State Natural area. Similarly, that action area should include corridors to and from, and habitat areas, for the red knot in Holgate and North Brigantine.

Interrelated and Interdependent Actions. It is noted that assessments of such actions are included in the analysis of the effects of the action in the US Fish and Wildlife Service and National Marine Fisheries Service Endangered Species Consultation Hand Book (page 4-26). The Vineyard Wind 1 BA also included the effects of such interrelated and interdependent actions in its definition of the action area (Section 1.2).

As noted above in our comments on EIS scope, development in the Ocean Wind and Hudson South areas are interrelated with those in the Atlantic Shores area since they all are intended to contribute to a single objective. In addition, based on Exhibit B, impacts on the right whale will occur from all three areas since the operational noise envelope from all three intersects its migratory corridor. Therefore, it would serve the purpose of the ESA to assess the full impact on the right whale from all three areas, and the BA should do so.

2. Programmatic Consultation. A programmatic consultation is called for when there are multiple similar actions expected to be implemented in a particular geographical area. Such is the case here. As shown in Exhibit B, impacts on the right whale will occur from all the Ocean Wind, Atlantic Shores, and Hudson South areas since all their operational turbine noise envelopes interests its migratory corridor.

Therefore, in the interest of providing a scientifically credible analysis of the impact of turbine operational noise on the right whale, the BOEM should pursue a Programmatic Consultation with NMFS to define the best scientific data and methods to be used in offshore wind BA's for determining source noise levels, noise transmission loss and take and harm estimates. Those methods should be used for all three wind energy areas here and perhaps other offshore wind projects as well. These are critical calculations. They should not be left to the discretion of applicants on a project-by-project basis with potential conflicts of interest regarding project size.

Such a programmatic consultation should also develop a method to assess the cumulative impact on endangered mammals from all current and reasonably foreseeable BOEM offshore wind projects. Notwithstanding the requirements and procedures for ESA consultations, there is no scientific credibility in assessing the impact on endangered mammals in a piecemeal fashion. Regardless of what you call it, "cumulative" or some other word, NEPA requirements for full disclosure and scientific integrity through 40 CFR §1502.23 demand such a look in EIS's.

3. Interested Party Involvement in Consultation-Request for Participation.

The LBI Coalition for Wind Without Impact, as an interested party representing over a thousand persons, is requesting participation in any discussions and/or meetings held during the formal ESA Section 7, 90-day consultation period regarding the impacts of the action or reasonable and prudent measures or alternatives to mitigate those impacts (USFWS and NMFS Endangered Species Handbook, page 4-6).

V. A Clear Federal Purpose and Proposed Action

Purpose. The only purpose and need mentioned in the NOI is that of the applicant's, whose obvious need is to have their application approved. But this is a to be federally approved project, a federally prepared EIS and the federal government must have its own purpose and need here. That federal purpose in the broad sense is to implement a fiscally and environmentally sound offshore wind program which may or may not coincide with the applicant's need, which is rooted in financial gain. There are some high level, worthy national goals presented early in the NOI, the BOEM needs to establish a connection between this proposed project and those goals.

As explained above in Section II.1 the obvious purpose of the proposed action is to contribute to meeting the New Jersey plan for 7500 mw of offshore wind energy by 2035. If the BOEM would just acknowledge and state the obvious, useful and environmentally beneficial alternatives can be crafted to meet that Plan as proposed in Section II above.

Need for a Proposal. According to NEPA rule §1501.9(d), a NOI should be published when a proposal is sufficiently developed to allow for meaningful public comment. The NOI is required to provide a preliminary description of the proposed action but "preliminary" still requires an actual proposal, not just a limit of "up to 200 wind turbine generators".

The public cannot meaningfully comment on such a vague description. The number and power of turbines proposed needs to be specified, as well as their size, dimensions, drive and foundation type, spacing, approximate location and capacity factor. These are critical parameters necessary to describe the environmental impact. If the applicant does not know them or wish to share them, this EIS cannot logically proceed.

Omission of Part of the Lease Area. The NOI should have presented Atlantic Shore's plan for the northern part of the lease area. It did not pay money to lease that area to leave it idle. If Atlantic Shores can foresee a project 2 then it very likely foresees and has a plan for a project 3 in that part, and that needs to be included in the scope of the EIS to assess the full effects that are coming. Following the BOEM's own logic in the NOI, the EIS should include "effects that occur at the same time and place as the Proposed Action and alternatives and such effects that are later in time or not at the same place".

Failure to Specify Key Parameters in the Proposal. Neither the NOI or the COP state the power, manufacturer, drive type or foundation type of the turbines to be used. But the New Jersey BPU approval of 1510 mw for Project 1 was based on the use of Vesta-236 13.6 mw turbines and monopile foundations ^(BG1). We assume that Atlantic Shores will adhere to the conditions of the State's approval so these parameters should be specified in the proposal, not buried in an opaque project design envelope approach as discussed below.

The use of a Project Design Envelope. The substitution by the BOEM of a project design envelope (PDE) for what NEPA rules require as a proposed action is contrary to one the purposes of the NEPA EIS, i.e., to identify agency options that can meet program objectives with lesser, not the most, environmental impact.

First it should be noted that the BOEM 2018 guidance for the use of PDEs was never finalized. In its draft form it only related to BOEM's review of the COP, there was no analysis or justification of its applicability to meeting the NEPA.

Regarding its use under NEPA, the PDE requires that the parameter having the maximum impact for a given resource be used in the analysis. This is not specified now in the COP but if and when that identification is done and the PDE is the proposal, it means that the BOEM is proposing an action that will have the worst environmental impact possible. Assuming the BOEM would never select this, then it is proposing something that it will never choose which makes little sense.

The BOEM needs to separate the PDE concept from the proposed action. The PDE may have some use to show a maximum impact and possibly avoid supplemental analyses but it should not be used as the proposal. They are two different things, and the use of a PDE does not absolve the BOEM of presenting a preliminary proposal under NEPA rules.

The PDE proposed thus far is not an envelope at all because it does not specify which parameter will be used to determine the maximum impact for a given resource. In addition, vague terminology like "up to 200 turbines" does not create an envelope. The PDE stated also does not include key parameters like the plan for the northern portion of the lease area, the project 2 power, turbine power and drive type, which are essential to analyzing maximum impacts. It also presents as options parameters that have already been decided through the State's project approval like the use of monopile foundations and Vesta-236 turbines.

Exhibit A, North Atlantic Right Whale Population

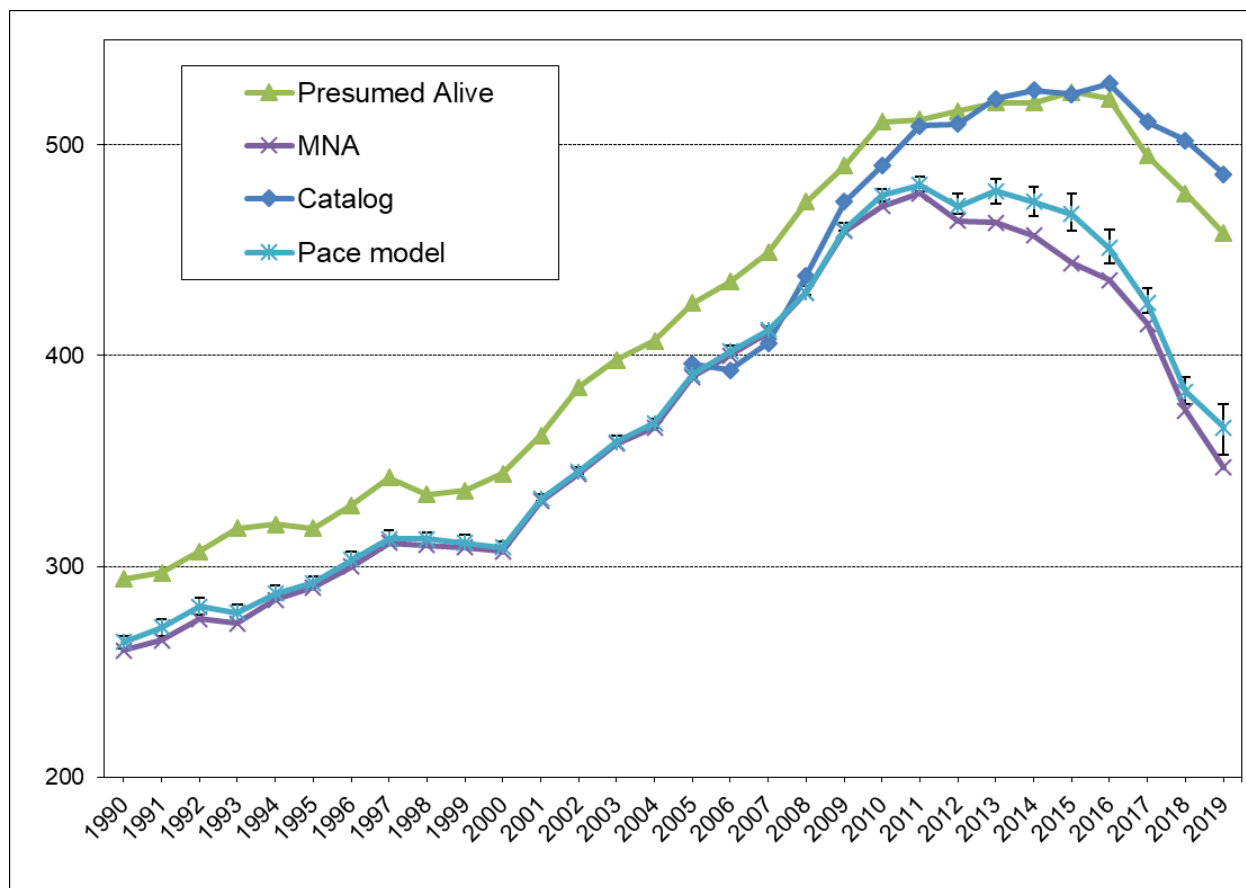
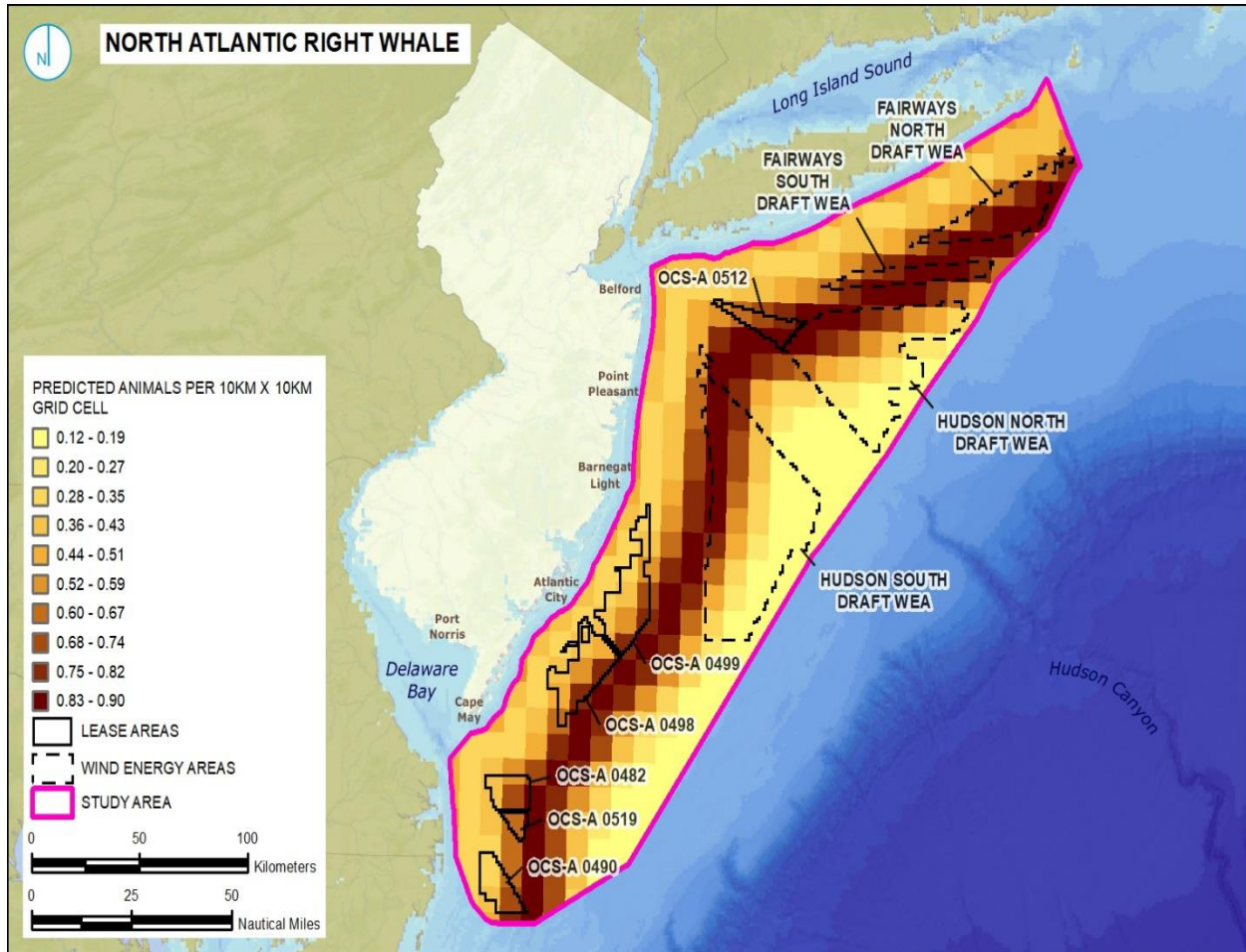


Exhibit B, North Atlantic right whale migration corridor



Key Points: The annual abundance of the NARW is highest in the study area at depth contours between 30 and 40 meters, at up to 0.9 animals per 100 km². Areas that are shallower (as well as much deeper) than this range show less relative density, including significant portions of existing wind lease areas and WEAs. The NARW high abundance areas are present in all lease areas and draft WEAs but do not exceed 0.9 individuals per 100 km².

Source, NJ Offshore Wind Strategic Plan, Natural Resource Technical Appendix, Figure 21.

Exhibit B, continued

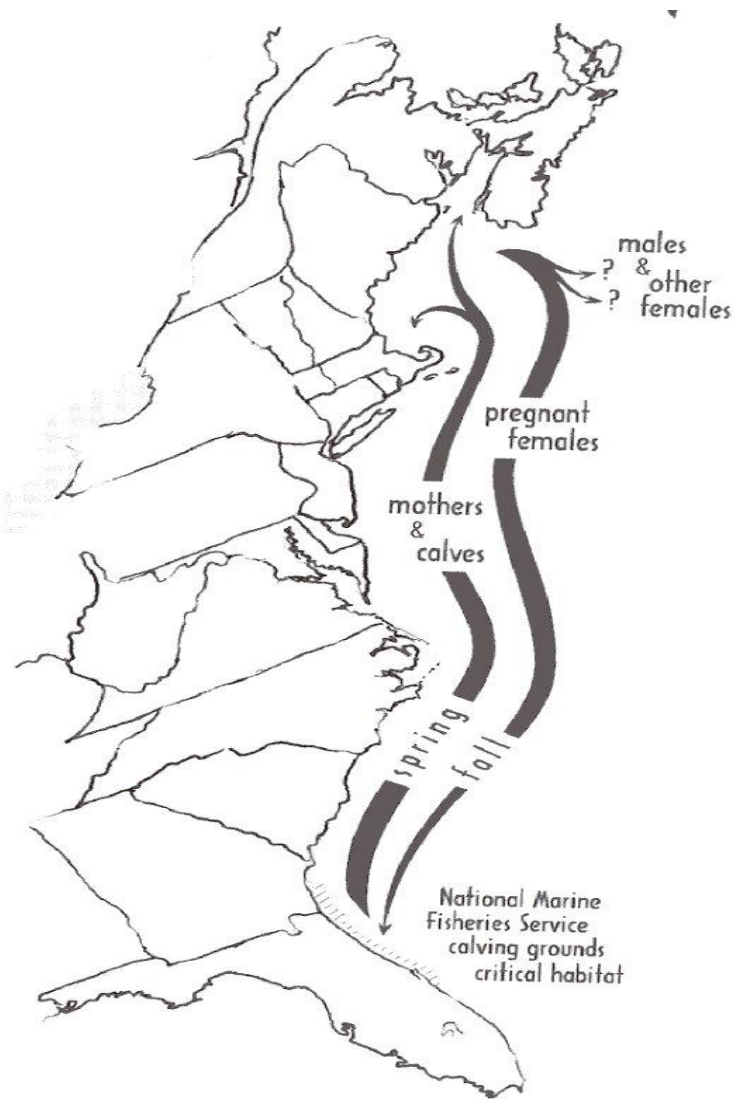
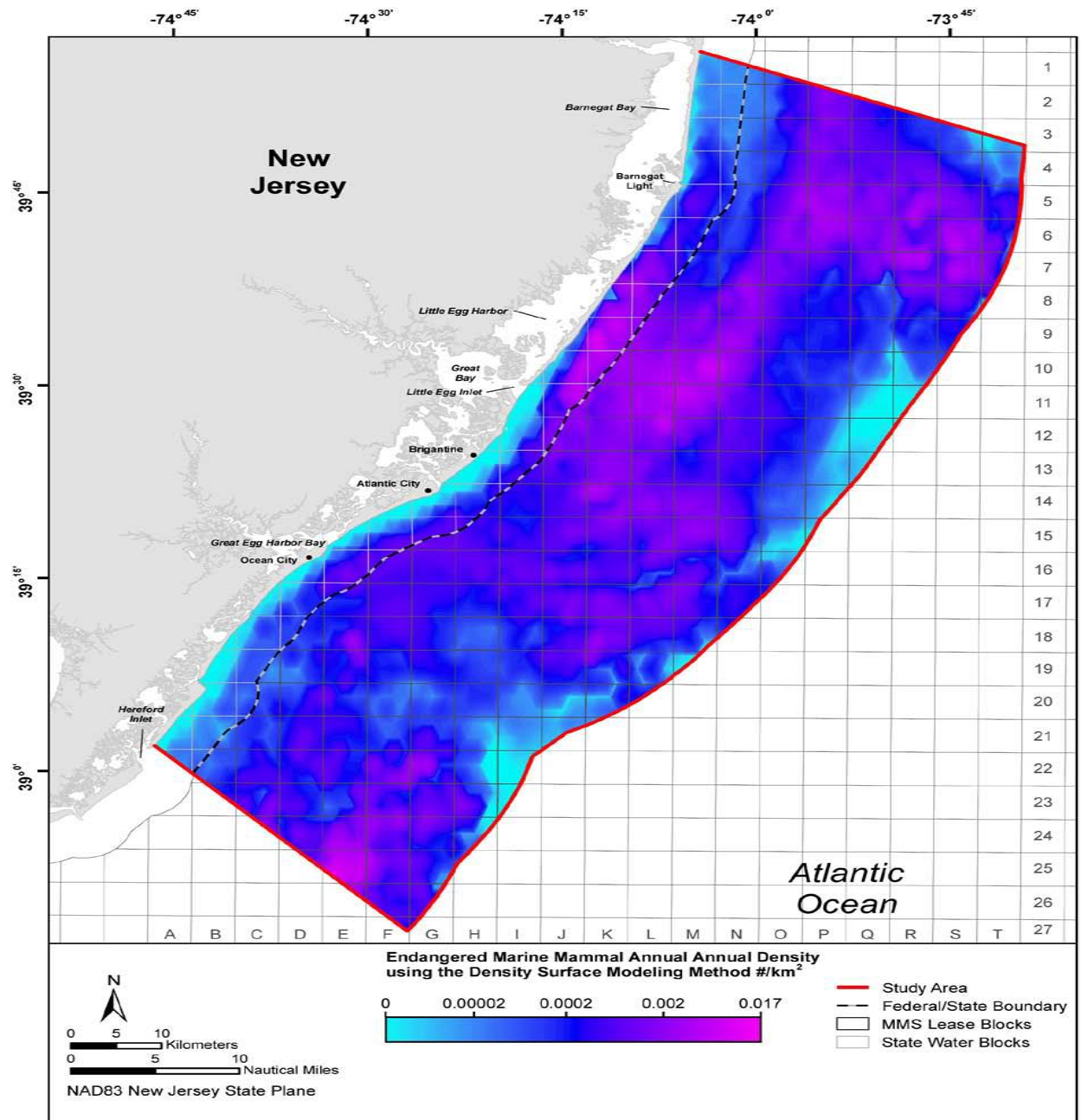
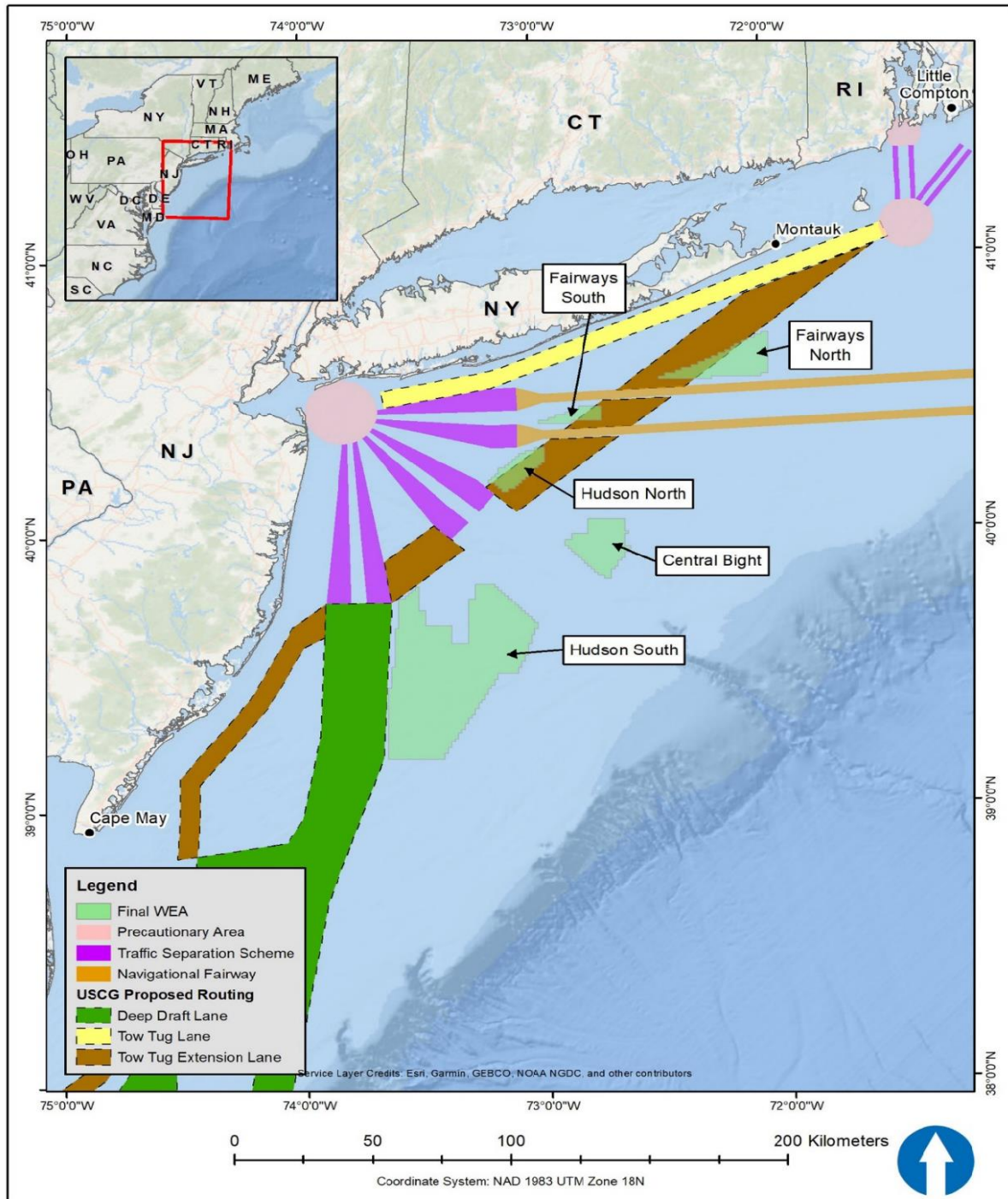


Exhibit C, Fin and Humpback Whale Density



Source, NJDEP, Ocean/Wind Power Ecological Baseline Studies, Volume III, page 5-35, marine mammals, the right, fin and humpback whales https://www.nj.gov/dep/dsr/ocean-wind/Ocean%20Wind%20Power%20Ecological%20Baseline%20Studies_Volume%20Three.pdf [Dominated by fin and humpback densities]

Exhibit D, Deep Draft Vessel Lane



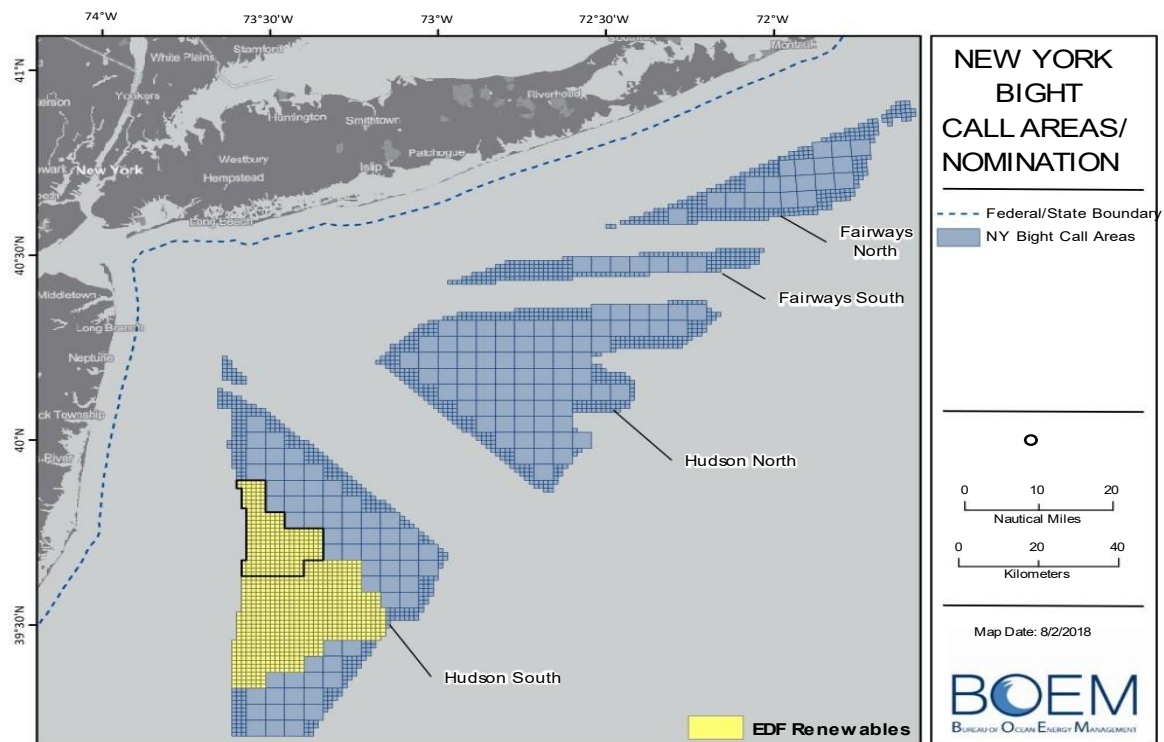
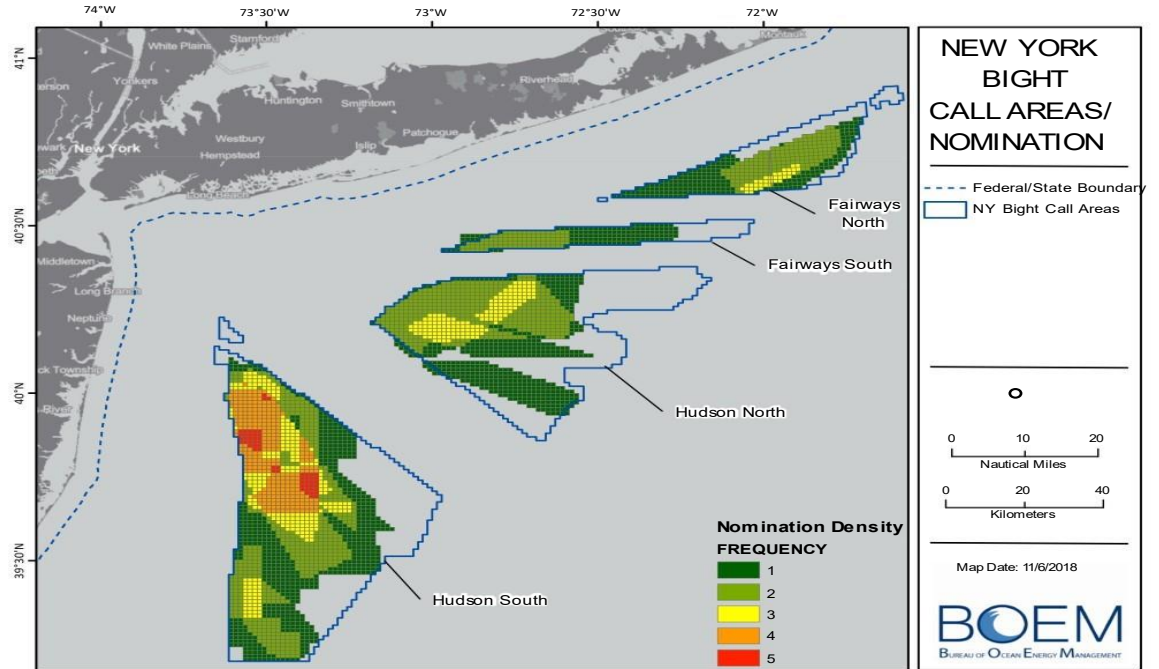
Source; BOEM, Commercial and Research Wind Lease and Grant Issuance on Site Assessment Activities on the OCS of the NY Bight, Draft EA, August, 2021, page 41 and Figure 9.

Exhibit E

Proximity to Coastline: Other large turbine projects vs. LBI project

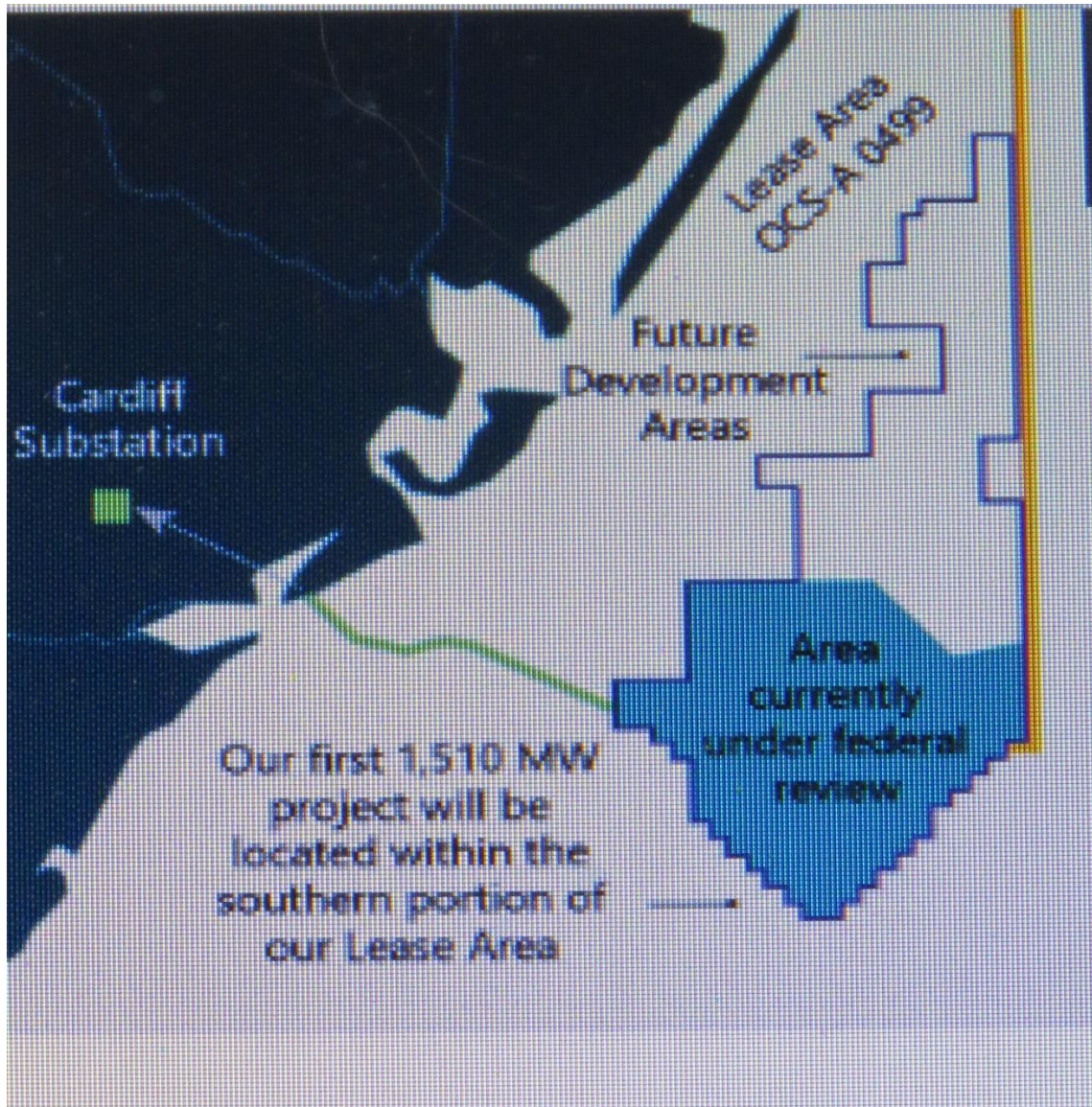
Project name	Location	Country	Distance from coast (miles)
Ocean Wind	Atlantic City, NJ	US	15
Vineyard 1	Nantucket, MA	US	15
Skipjack	Ocean City, MD	US	19.5
Dominion Energy	Virginia	US	27
Cape Wind	Cape Cod, MA	US	5 (cancelled, local opposition)
Humboldt	Eureka, CA	US	21
Morro Bay	San Simeon, CA	US	33
Hornsea 1		UK	75
Sinan project		S. Korea	80
Dogger Bank		UK	78
East Anglia 3		UK	43
Changua		Taiwan	23 to 58
<p>The BOEM exclusion zone for New York turbines is 17 miles from their coast.... Starting at 9 and 10 miles from N.J. beaches, the LBI project is extreme</p>			

Exhibit F, New York Bight Leasing Nominations



Source: <https://www.boem.gov/renewable-energy/state-activities/nominations>

Exhibit G, Proposed Initial Turbine Placement



Source, Atlantic shore press release.

Exhibit H

Correlation between Rising Sea Levels, Temperature Increase & Time

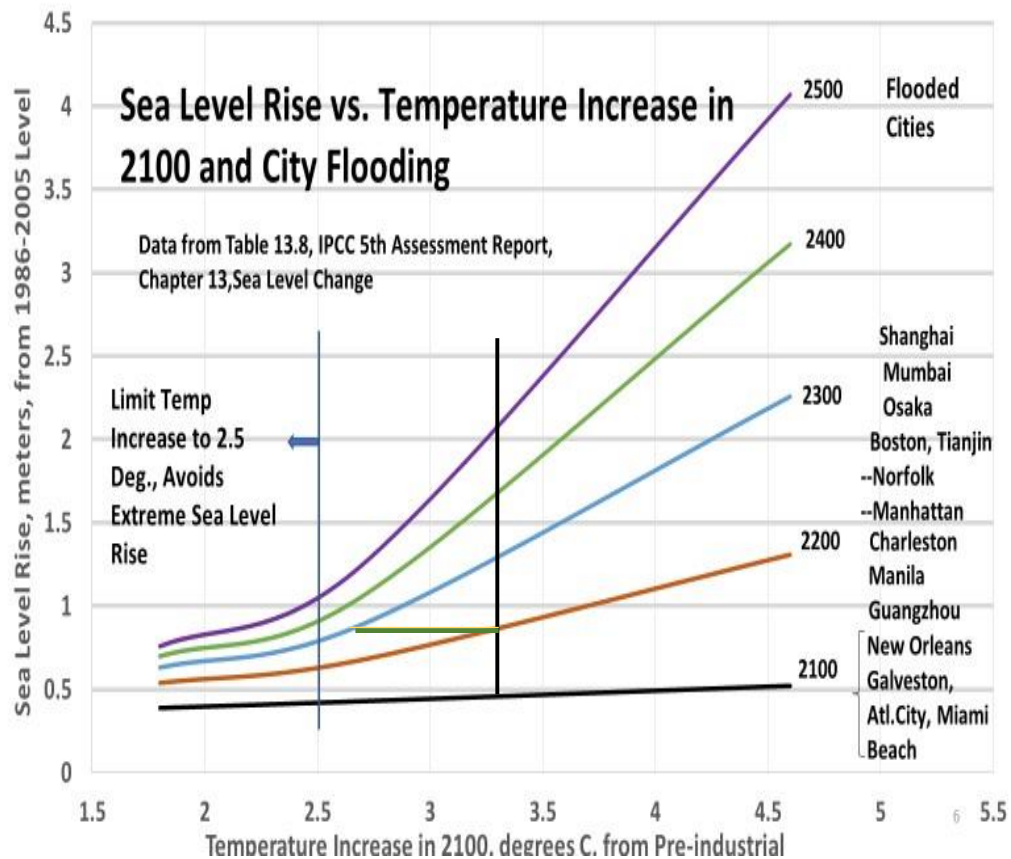


Exhibit I

Impact on jobs and electric bills:

Atlantic Shores 1510 megawatt project alone

	BPU Strategic Plan July 2020 ^(J1)	BPU Press Release June 2021	Beacon Hill Report June 2011 ^(CB1)
Full time equivalent jobs created	289 to 859	2025	----
Full-time jobs lost statewide from higher electric rates	----	----	(3046)
Increase in electric rate	----	2.3%	2.9%
Increase in residential electric bill Annual	----	\$ 27	\$ 36
Cost of federal and state subsidies, tax credits-Annual	----	----	\$ 8
Total Cost-Annual	----	----	\$ 44

For the full 7500 megawatt program: Multiply numbers by $7500/1510 = 5$ times.

- For Example, Total Annual Cost = \$ 220 , per Beacon Hill Report data.
- Actual costs may be double to those shown, depending largely on the degree that fossil plants must be retained for back-up power.

28

Beach Haven, Very Early Morning, Poor Light, 13.5miles to nearest turbine, Atlantic Shores COP



Still not clear, sunny conditions, but a better rendition than the misleading pre-dawn one from Beach Haven .

Exhibit K, Turbine Transport Vessels



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