

Program Manager  
Office of Renewable Energy  
Bureau of Ocean Energy Management  
45600 Woodland Road  
Sterling, Virginia 20166

Dec. 30, 2022 by e-mail

**RE: Public Comments on Empire Wind Draft Environmental Impact Statement (DEIS)  
Docket BOEM-2022-0053**

Dear Sir/Madam:

My interest in this project is as founder of the American Coalition for Ocean Protection with concerns about the potential cumulative impact of commercial-scale offshore wind projects on the east coast. A decision to approve the Empire Wind 1 & 2 Construction & Operation Plan (COP) will make impacts on our ocean environment worse. The coalition represents beach communities and policy institutes from North Carolina to Maine.

We submit BOEM has not properly followed all the requirements of the National Environmental Policy Act (NEPA), the Administrative Procedures Act, the Endangered Species Act (ESA), and the Outer Continental Shelf Lands Act (OCSLA) in preparing this DEIS. The DEIS underestimates the threats on the endangered Northern Atlantic right whales, commercial fisheries providing food security, vessel collisions, the ability of the Coast Guard to conduct Search & Rescue operations, national security, scientific research, and pristine ocean views. Generation from the project will most likely displace zero emission generation sources so emissions will not fall. Project costs to the economy will likely exceed benefits four fold. We note fifteen of twenty-one issues covered in the DEIS have moderate to major adverse impacts either from the direct impacts of the proposed project, or from cumulative impacts of all the planned projects covering an area the size of Connecticut with almost 3,000 structures and thousands of miles of cables (Volume 1. Chapter 3.9-43). Proposals to mitigate some adverse impacts with financial compensation do not satisfy requirements in OCSLA to avoid unreasonable interference with historic ocean uses. Quite simply BOEM should not approve this project. Details follow below with quotes from the DEIS wherever possible.

Sincerely,

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Founder American Coalition for Ocean Protection  
Director, Center for Energy & Environment  
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## Detailed comments

### **1 President Biden's Executive Order 14008 is irrelevant to the purpose and need of the proposed action**

BOEM begins its discussion of the purpose and need of the DEIS as the need to follow the President's Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad". As inferred by the Supreme Court in its decision *West Virginia v. EPA*, the Executive Branch has no authority to regulate carbon dioxide without a law passed by Congress. As the purpose of the offshore wind project is to reduce carbon dioxide emissions the Executive Order is irrelevant and these comments should be removed from the DEIS.

### **2 Increases in intermittent wind and solar generation since 2009 have replaced reliable, zero emission nuclear power not fossil fuels so renewable power has not reduced emissions**

Electric demand grew 1% in New York between 2009 and 2021 compared to a 2.7% increase in population. Natural gas generation replaced higher emitting coal and petroleum generation on a one to one basis. Coal and petroleum generation fell 14.7 million MWhs and natural gas generation increased 14.7 million MWhs (see Table 1 below). The replacement was based on lower natural gas cost, and tighter federal regulations. New York participation in the Regional Greenhouse Gas Initiative carbon tax program contributed to shifting generation out of state<sup>1</sup>. Imports of electricity grew from 6.9 million MWhs to 16.5 million MWhs. Some of that imported power came from coal and natural gas powered plants in the PJM regional grid.

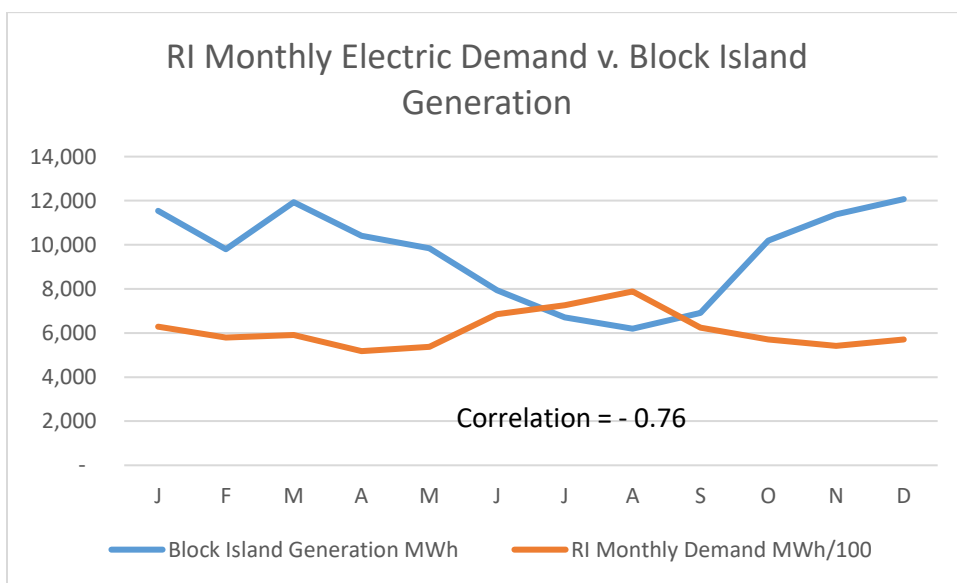
Meanwhile, nuclear generation fell 12.3 million MWhs and wind and solar power increased 3 million MWh, and imports from out of state increased 9.6 million MWhs replacing the lost nuclear power. The decline in nuclear power was not replaced by in state generation. The Empire Wind projects have a guaranteed price for about 7.2 million MWhs a year<sup>2</sup>. However, a report<sup>3</sup> from the New York Independent System Operator forecasts the import of 7.0 million MWhs of nuclear power from Ontario will end in 2023-24, just about matching the output of Empire Wind, so no emission reductions will occur.

Nuclear power plants generate power about 95% of the time while offshore wind might generate power intermittently depending on the weather 48% of the time. With a guaranteed price of \$107.50/MWh<sup>2</sup> offshore wind will cost about four times as much as power from existing nuclear plants. The US Energy Information Agency projects<sup>4</sup> offshore wind projects will produce power from projects coming on stream in 2027 at \$136.51/MWh, while onshore wind will cost \$40.23, and solar \$36.49, about one-quarter as much. New York already has the 6<sup>th</sup> highest electric rates in the continental US and offshore wind will raise rates further. In addition, as we can see from the chart below from four years of operation at the Block Island offshore wind project, offshore wind generates the least amount of power in the summer when it is most needed.

Table 1: New York Electric Demand and Generation, Million Megawatt hours (MWh)

	2009	2021	Change
Coal & Petroleum	15.4	0.7	(14.7)
Natural Gas	41.8	56.5	14.7
Nuclear	43.5	31.2	(12.3)
Wind & Solar	2.3	5.3	3.0
Total Demand	140.0	141.4	1.4
Total Generation	133.2	124.9	(8.3)
Imports	6.9	16.5	9.6

Source: US Energy Information Agency Detailed State Data

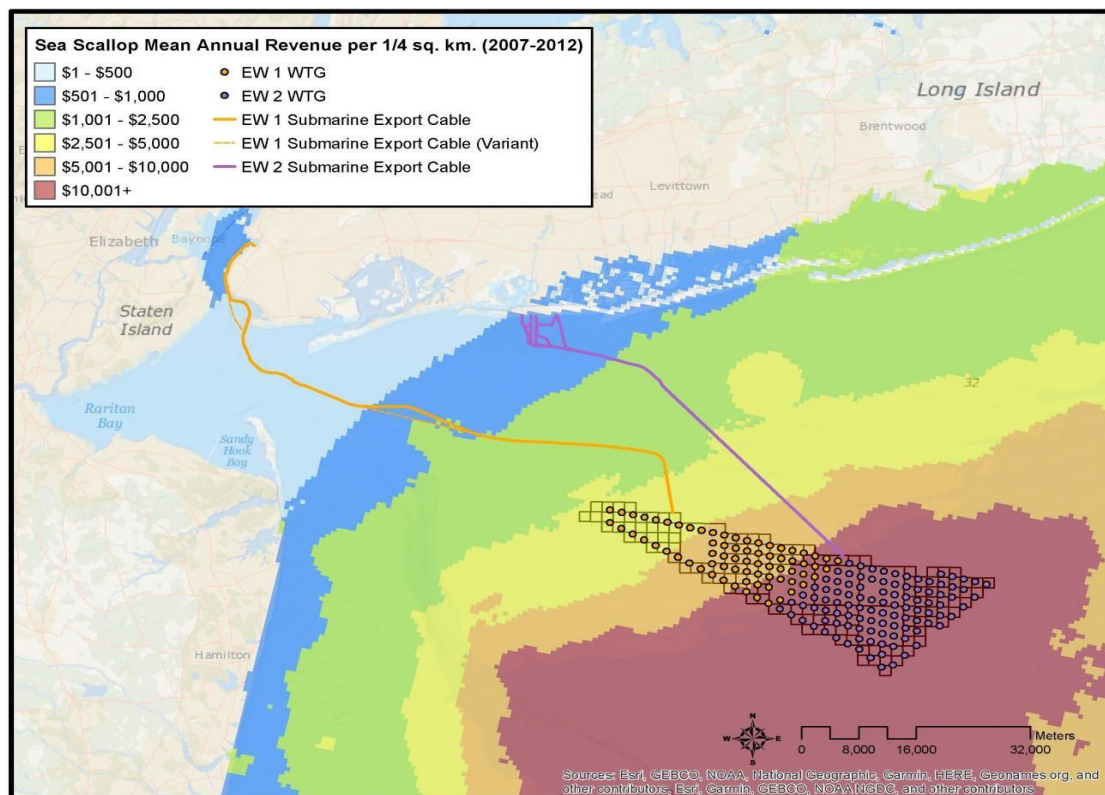


Source: US Energy Information Agency Form 923

### 3 Major adverse impacts found in the DEIS on Commercial Fisheries, Cultural resources, the viewshed, and scientific research requires denial of the proposed action

**A)** BOEM States “Commercial fisheries provide economic benefits to the coastal communities of New England and the Mid-Atlantic region by contributing to the income of vessel crews and owners and by creating demand for dockside services to process seafood products and maintain vessels. On average, commercial fishing activity in New England and the Mid-Atlantic generated approximately \$1.2 billion in annual ex-vessel revenue from 2010 through 2019” (Table 3.9-3). “BOEM anticipates that the cumulative impacts of the Proposed Action and all ongoing and planned non-offshore wind and offshore wind activities on commercial fisheries

and for-hire recreational fishing in the geographic analysis area would be major. The Proposed Action would contribute to the cumulative impact rating primarily through permanent impacts associated with the presence of structures, including navigational hazards, gear loss and damage, and space-use conflicts. The cumulative impacts on commercial fisheries and for-hire recreational fishing would be major because the fishing industry would experience unavoidable disruptions beyond what is normally acceptable". (3.9-73). The map below shows Empire Wind 2 sits squarely over the leading catch area for scallops, the second most valuable seafood.



Source: Kirkpatrick et al. 2017

**Figure 3.9-19 Sea Scallop Revenue Intensity in Relation to the Project Area**

**B)** "The National Park Service has indicated during consultation that a dark nighttime sky should be assumed to be a character-defining feature of certain resource types, such as lighthouses, or resources associated with historic events that may have occurred at night, such as battlefields." (3.10-11). "The development of planned offshore wind projects would introduce new, modern, and intrusive visual elements to the viewsheds of cultural resources along the coasts of New Jersey and New York. Up to 269 WTGs with a maximum blade tip height of 1,049 feet (319 meters) would be added within the geographic analysis area for cumulative visual effects on historic properties. We note comments Aircraft Detection Lighting Systems may be adopted are not a reasonable mitigation for nighttime lighting concerns. The developer has stated use of ADLS is subject to confirmation of commercial availability, technical feasibility, and agency review and approval rendering that option as unlikely for deployment. The

presence of visible from planned offshore wind activities would have long-term, continuous, major impacts on cultural resources.”(3.10-13).

**C)** “Potential impacts on scientific research and surveys would generally be major, particularly for NOAA surveys supporting commercial fisheries and protected-species research programs. The presence of structures would exclude certain areas within the Project area occupied by Project components (e.g., turbine foundations, cable routes) from potential future vessel and aerial sampling, and could affect survey gear performance, efficiency, and availability.” (3.17-18). “Aerial survey track lines for cetacean and sea turtle abundance surveys could not continue at the current altitude (600 feet) within the Project area because the planned maximum-case scenario for turbine blade tip height would exceed the survey altitude. The increased altitude necessary for safe survey operations could result in lower chances of detecting marine mammals and sea turtles, especially smaller species. Agencies would need to expend resources to update scientific survey methodologies due to construction and operation of the Proposed Action, as well as to evaluate these changes on stock assessments and fisheries management.” (3.17-16). “The entities conducting scientific research and surveys would have to make significant annual investments to change methodologies and to implement survey mitigation programs to account for areas occupied by offshore energy components, such as turbines and cable routes, that are no longer able to be sampled due to the Proposed Action and other offshore wind projects within the geographic analysis area”. (3.17-18).

**D)** “Highly sensitive to views, residents with views of the proposed Projects from their homes; people with a strong cultural, historic, religious, or spiritual connection to landscape or seascape views; people engaged in outdoor recreation whose attention or interest is focused on the seascape, open ocean, and landscape, and on particular views; visitors to historic or culturally important sites, where views of the surroundings are an important contributor to the experience; people who regard the visual environment as an important asset to their community, churches, schools, cemeteries, public buildings, and parks; and people traveling on scenic highways and roads, or walking on beaches and trails, specifically for enjoyment of views.” (3.20-15). “The Projects would introduce features that would have dominant levels of visual prominence within the geographic area of an ocean/seascape/ landscape character unit. The Projects would introduce a visual character that is inconsistent with the character of the unit, which may have a major negative effect on the unit’s features, elements, or key qualities”. (3.20-19). “BOEM anticipates that the cumulative impacts would be major. The main drivers for this impact rating are the major visual impacts associated with the presence of structures, lighting, and vessel traffic.” (3.20-32).

Clearly the proposed project has serious major impacts on historic uses of the outer continental shelf. Some compensating actions are offered such as reimbursement for lost fishing gear and adoption of Aircraft Detection Lighting System. However, a December 14, 2020 letter<sup>5</sup>, page 12, from the Department of the Interior Solicitor to Interior Secretary David Bernhardt states:

*"It is important to observe that any compensation system established by a lease to make users of the lease area whole financially does not negate interference – indeed the creation of such a system presumes interference. As such, any proposed compensation process should not be viewed as 'curing' any 8(p)(4)(I) interference since the statute does not provide for such a cure."*

The letter also discusses the Secretary's duty to prevent interference with reasonable historic uses in federal waters, such as fishing, navigation and the viewshed by denying offshore wind projects in accordance with the Outer Continental Shelf Lands Act Subsection 8(p).

Major impacts to historic ocean uses cannot be overlooked at the discretion of the Secretary. It is recommended no further offshore wind project Final EIS and Record of Decision be published until these cases are heard.

#### **4 BOEM has inappropriately lowered the adverse impact on navigation and vessel traffic from major to moderate**

Earlier this year BOEM concluded in the Ocean Wind 1 DEIS adverse project impacts would be major as seen in the following quotes:

"The impacts of the Proposed Action on navigation and vessel traffic would be major. The Proposed Action when combined with impacts from ongoing and planned activities including offshore wind would be major, due primarily to the increased possibility for marine accidents, which could produce significant disruptions for ocean users in the geographic analysis area. Proposed Action structures would increase the risk of allision as well as collision with other vessels navigating through WTGs and could interfere with marine radars. Radar is the main tool used to help locate other nearby vessels that are not otherwise visible, particularly in adverse weather when visibility is limited. "The navigational complexity of transiting through the Wind Farm Area, including the potential effects of WTGs and OSS on marine radars, would increase risk of collision with other vessels (including non-Project vessels and Proposed Action vessels)." (3.16-18, Volume 1 Ocean Wind DEIS).

Now BOEM uses similar wording but considers the risks to be negligible to moderate. "Impacts on navigation could include changes to navigational patterns and effectiveness of marine radar and other navigation tools for vessels approaching or navigating within or near the array. In conjunction with or in addition to vessel congestion, this could result in the increased risk of incidents such as collision and allision, which could result in personal injury or loss of life from a marine casualty, damage to boats or turbines, and oil spills." (3.16-15). Increased navigational awareness while navigating through turbines could lead to increased crew fatigue, which could also increase the risk of allision or collision and resultant injury or loss of life. The navigational complexity of transiting through the Wind Farm Development Area, including the potential effects of wind turbines and offshore substations on marine radars, would increase risk of collision with other vessels (including non-Project vessels and Proposed Action vessels). Furthermore, the presence of the turbines could complicate offshore Search & Rescue and resultant increased fatalities." (3.16-18). "BOEM anticipates that cumulative

impacts would range from minor to moderate. Wind activities would increase the risk of allision and navigational complexity in the geographic analysis area, resulting in an increased risk of collisions and allisions that could result in personal injury or loss of life from a marine casualty, damage to boats or turbines, and oil spills.”(3.16-25).

## **5 Radar adverse impacts should be classified as major**

BOEM states, “Air traffic control, national defense, weather, and oceanographic radar within the line of sight of the offshore infrastructure associated with the Proposed Action may be affected by the O&M phase of the Projects. Potential impacts for radar operations over and in the immediate vicinity of the Project area include unwanted radar returns (clutter) resulting in a partial loss of primary target detection and a number of false primary targets, a loss of ocean surface current data, and a partial loss of weather detection including false weather indications. 3.17-16.

Following is a summary of the key issues of radar interference by offshore wind turbines. There are major unknowns exacerbated by the fact the largest installed turbines are only about 600’ tall while proposed turbines now range between 850’ and 1,040’ with equivalently larger blade diameters. Study titles are underlined with quotation marks for direct quotes.

### United States Coast Guard, Port Access Route Study: Northern New York Bight<sup>6</sup>

“Conducting this study, three recurring themes were raised that were determined to fall outside the scope of this study. Specifically, potential Offshore Renewable Energy Installations (OREI) impacts to Coast Guard Search and Rescue (SAR) operations, the impacts of Wind Turbine Generators on the efficacy of marine vessel radar, and potential impacts to vessels fishing in Wind Energy Areas.”

### Wind Turbine Generator (WTG) Impacts to Marine Vessel Radar (MVR) (2022)<sup>7</sup>

“WTGs are large structures predominantly constructed of steel. As a result, they generally have significant electromagnetic reflectivity and the capacity to interfere with radar systems in their vicinity. Additionally, the rotating blades can return large and numerous Doppler-shifted reflections as the blades move relative to a receiving radar system. The installation of WTGs towering hundreds of meters above the sea surface across the U.S. OCS therefore poses potential conflicts with a number of radar missions supporting air traffic control, weather forecasting, homeland security, national defense, maritime commerce, and other activities relying on this technology for surveillance, navigation, and situational awareness. Upcoming COPs include WTGs with hub heights and rotor diameters approaching 175 m and 250 m, respectively.”

“Due to their size, structure, and proposed placement offshore, the maritime community expressed concern that WTGs may cast radar shadows, obfuscating smaller vessels exiting wind facilities in the vicinity of deep draft vessels in Traffic Separation Schemes. Other

possible forms of radar interference that may preclude safe navigation within an offshore wind facility, such as radar clutter and mirror effects (false signaling). WTGs may produce strong reflected, multiple, and side lobe echoes that can mask or complicate the identification of real targets. A loss of contact with smaller vessels due to the various forms of MVR interference could complicate MTS operations, and is therefore particularly consequential when conducting maritime surface SAR operations in and adjacent to an offshore wind farm.”

“MVRs are not optimized to operate in the complex environments of a fully populated, continental shelf wind farm. There is no simple MVR modification resulting in a robust WTG operating mode. Additionally, in contrast to investments by developers and operators of air traffic control and military radar systems, compelling WTG mitigation techniques for MVR have not been substantially investigated, implemented, matured, or deployed.”

“Conclusion 1: Wind turbines in the maritime environment affect marine vessel radar in a situation-dependent manner, with the most common impact being a substantial increase in strong, reflected energy cluttering the operator’s display, leading to complications in navigation decision-making.”

**Finding 5.2:** WTGs lead to interference in MVR, including strong stationary returns from the wind turbine tower, the potential for a strong blade flash return for certain geometries, and Doppler spread clutter generated along the radial extent of the WTG blade, which could obfuscate smaller watercraft or stationary objects such as buoys. Additionally, own vessel platform multipath is a significant challenge for returns from WTGs, leading to ambiguous detections and a potentially confusing operator picture.

**Finding 5.3:** When conducting maritime surface SAR operations in and adjacent to an offshore wind farm, use of MVR could be challenging because wind turbines can cause significant interference and shadowing that suppress the detection of small contacts.

**Finding 5.4:** There is no currently available “WTG mode” for MVRs, and operator control of detection threshold to mitigate strong returns will frequently lead to the unintended consequence of suppressing detections of small targets.

**Finding 5.5:** There is a paucity of field collected data to understand and evaluate the impacts of WTGs on currently deployed MVR models and support comprehensive development of ameliorating methods. Similarly, the impact of anomalous propagation and returns from range ambiguous regions on MVR is poorly understood due to lack of experimental data.

**Finding 6.1:** In contrast to investments by developers and operators of air traffic control and military radar systems, compelling WTG mitigation techniques for MVR have not been substantially investigated, implemented, matured, or deployed.



Following are images of actual radar screens with false images:



**FIGURE 1.3** Photograph of the display of a shipboard radar operated in a U.K. wind farm.



Marico **FIGURE 2.10** Illustrative plan position indicator display for magnetron-based radar from the Kentish Flats experiments, where the points A, B, and C highlight the phenomena of multiple target echoes due to wind turbine generator–radar interaction



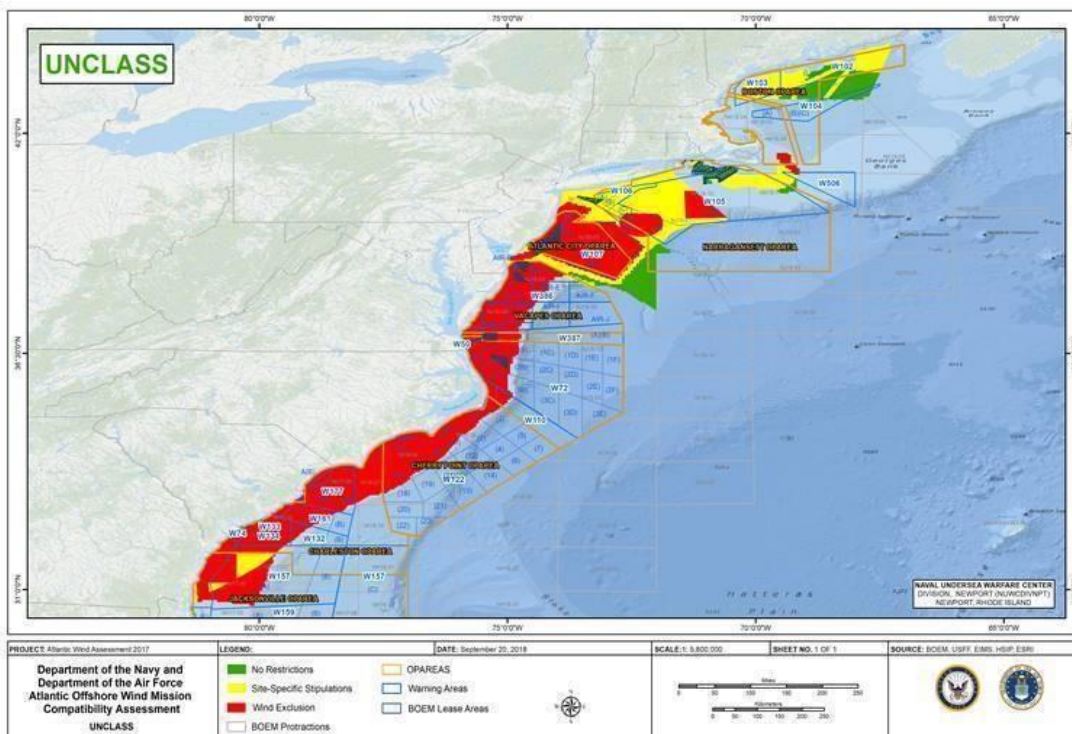
Radar screen near 5 turbine Block Island RI 5 turbine project

Military Aviation and Installation Assurance Siting Clearinghouse coordinated within the Department of Defense (DOD) a review of the New York Bight Offshore Call Areas

“Encroachment is often irreversible and as the New York Bight continues to see increased density of offshore wind energy development, few areas will remain free and clear to support DON training activities. Therefore, the DOD requests BOEM defer leasing all remaining unleased portions of W-107B/C as well as lease blocks in W-107A within 30 nautical miles of the New Jersey coastline if BOEM moves forward with leasing in the Hudson South Call Area. Any vertical obstructions in these areas would foreclose the DON’s ability to safely conduct training missions in the region such as low-level rotary wing aircraft operations.”

This brings into question what negative impacts are currently approved lease areas that are within the 30 nautical mile exclusion zone should be reconsidered.

Comments from Seafreeze, LTD. On Vineyard Wind Supplement to Draft Environmental Impact Statement, pages 67 to 73 on military impacts of OSW showing exclusion & restriction zones.



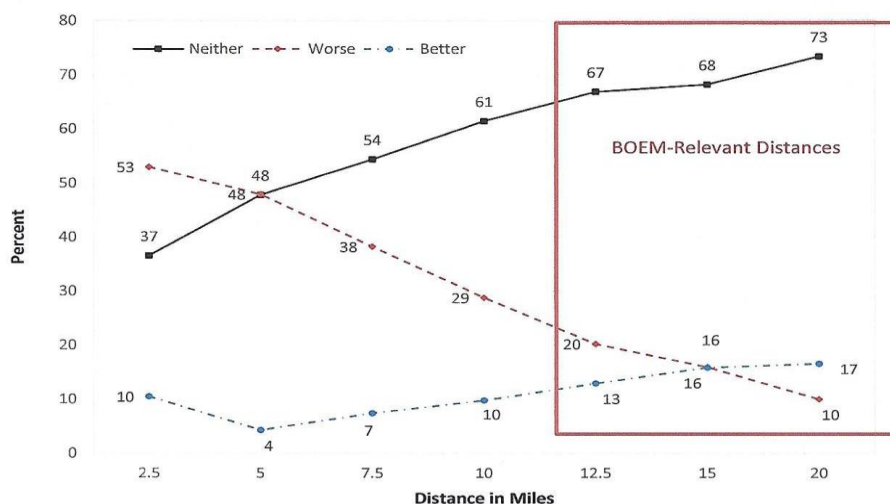
Clearly radar interference needs to be classified as a major adverse impact.

**6 Visual impacts of turbines in the Proposed Project on Tourism should be considered “major” instead of “moderate”, and a new study is needed to determine potential economic costs. No Final EIS should be issued for any project until that study is available.**

BOEM states, “The visibility of the Projects would introduce a major level of character change to the view; attract, hold, and dominate the viewer’s attention.” (3.20-19). The cumulative impact of the project in combination with other projects would also have a major adverse impact, especially because of nighttime aircraft and vessel flashing warning lights. Despite an admitted major adverse impact the DEIS offers no estimate of the adverse economic impact on tourism even claiming in section 3.18 the impacts on tourism would be minor to minor beneficial.

The Ocean Wind DEIS was released June 24 of this year and included a detailed discussion of visual impacts. This discussion was excluded from the Empire Wind DEIS. In the Ocean Wind DEIS BOEM stated, “The turbines will be 15 miles off Atlantic City, are 906’ tall, and will be theoretically visible to a viewer at the ocean surface or at beach elevations at distances up to 39.6 miles with clear-day conditions”. The Empire Wind turbines will only be 14 miles off Jones Beach, and will be 951’ tall with blade diameters of 853’.

The Ocean wind DEIS quotes a University of Delaware study<sup>8</sup>, “evaluating the impacts of visible offshore turbines on beach use found that turbines visible more than 15 miles from the viewer would have negligible impacts on businesses dependent on recreation and tourism activity (Parsons and Firestone 2018). Below is a copy of the chart quoted from the UD study.



The University of Delaware study did its survey by showing panning photomontages on a computer screen of 579’ tall turbines, respondents were also provided instructions on the distance to the screen from which they should view the images and were asked to view the project at three distances offshore – near, medium and far. After each distance was viewed, respondents were asked whether the presence of the wind power project would have affected their beach experience/enjoyment -- making it worse, somewhat worse, neither worse nor better, somewhat better, or better. If they responded worse or somewhat worse, they were then asked a certainty-response question. They used the response to this question to construct certainty-adjusted data. Note no such certainty adjustment was used for those who favored wind turbines. Results from nighttime views were never released. The survey group also included about 35% of respondents who never actually visited the beach. In March, 2021, one of the authors (Parsons) stated in a Delaware Today Magazine interview<sup>9</sup> the study is no longer applicable because turbines used today are so much larger.

However, even with the studies problems it has some use. The figure shows at 10 miles 29% found the view worse while only 10% found it better for a 19% difference choosing worse. At 7 miles 38% found the view worse compared to 7% favorable, a 31% difference. So ignoring the taller towers in the Empire Wind 1 project we see perhaps 25% of tourists will find the cumulative impact worse. The impact of taller towers can be approximated by assuming the towers are 1.64 times closer (the ratio of 579’ tall towers to 951’ tall towers). The proposed Empire Wind project would be equivalent to about 10 miles off the coast. The proposed project then should be considered to have a major impact on tourism.

A study by Lutzeyer et.al. (2017), “The Amenity Costs of Offshore Wind Farms: Evidence from a Choice Experiment”<sup>10</sup> was quite a contrast to the UD study. The Lutzeyer study worked with beach home rental companies, and surveyed only people who had recently rented a house on, or near the beach. The study found 38 percent of beach renters would likely not come back to a beach with daytime visible turbines regardless of the distance as shown in the study quote below with visualizations showing turbines from 5 miles to 18 miles from shore. In addition, others would return only with a rental discount depending on the distance.

*Overall, the willingness to accept estimates for the Never View class imply that these respondents would likely exit the local rental market if turbines were present, rather than make intensive margin tradeoffs among rental price and characteristics of the viewshed.*

The Lutzeyer study also showed nighttime visualizations of red flashing aircraft warning lights, and respondents stated even higher rates of objection with 54 percent not likely to return to a beach with nighttime visible turbines. The visualizations showed 5 to 7 MW turbines about the same size as the UD study. Again, this study confirms visible turbines in the propose project will have a major impact on tourism.

Not referenced by BOEM in the DEIS is a 2015 BOEM study about a viewshed analysis it did for the New York Outer Continental Shelf Area (Renewable Energy Viewshed Analysis and Visual Simulation for the New York Outer Continental Shelf Call Area: Compendium Report OCS Study, BOEM 2015- 044)<sup>11</sup>. It simulated the visual impact of one hundred and fifty-two 6.2 MW wind turbines from 16 observation points in New York and New Jersey. The simulation most relevant to LBI is the Jones Beach observation point because the turbine array was roughly parallel to that shore. The closest point of the turbine array to Jones Beach was 15 miles, the same distance as the Proposed Project.

The study ranked the visible impact on a scale from 1 to 6. The visual impact from Jones Beach scored a 6, its highest rating. A 6 rating was defined as; “Dominates the view because the study subject fills most of the field for views in its general direction. Strong contrast in form, line, color, texture, luminance, or motion may contribute to view dominance”.

Since the height of a 6.2 MW turbine is 63% of the proposed Empire Wind project turbines that visual impact would be equivalent to the project turbines at 24 miles. So, the proposed project would still register a major visual impact, based on the BOEM study. We note, based on this study, officials in New York and BOEM determined that the proposed offshore wind turbine lease area off the Hamptons is too close and ruins the serene ocean viewshed, and created a 20 mile exclusion zone<sup>12</sup>. They also noted it is a threat to navigation, fishing, and endangered marine mammals. The Fairway lease area sat as close as 12 miles off the Long Island coast near the Hamptons extending out to 30 miles. Why is an exclusion zone OK for the Hamptons but not Jones Beach? BOEM should cancel the Empire Wind 1 project.

In Appendix D, “Analysis of incomplete or unavailable information”. In D.1.15 BOEM states, “BOEM has determined that incomplete and unavailable resource information for recreation and tourism or for other resources on which the analysis of recreation and tourism impacts rely was either not relevant to reasonably foreseeable significant adverse impacts, was not essential to a reasoned choice among alternatives, alternative data or methods could be used to predict potential impacts and provided the best available information, or the overall costs of obtaining the information were exorbitant or the means to do so were unknown. Therefore, the information provided in the EIS is sufficient to support sound scientific judgments and informed decision-making related to the proposed uses of the onshore and offshore portions of the geographic analysis area”.

In fact, all the currently available studies on the impact of visible turbines on tourism are out-of-date as the turbine size has increased dramatically. Existing studies used turbine heights of 579’ to 600’. The proposed project uses 951’. The Kitty Hawk North COP uses turbines 1,042’ tall. A new study is needed that focuses on the economic impact of taller turbines on tourism similar to the NC State study. We note BOEM paid the University of Delaware only \$350,000 for its study, a small price considering over \$100 billion may be invested on planned offshore wind projects.

**7 Acoustical studies on operational noise are inadequate to determine the impact on marine mammal species and no Final EIS should be issued for any project until such a study is available.**

BOEM has released the *DRAFT BOEM and NOAA Fisheries North Atlantic Right Whale and Offshore Wind Strategy, October 2022*<sup>13</sup>. In this document the risk of killing even 1 North Atlantic right whale (NARW) could lead to extinction in violation of the Endangered Species Act. Unfortunately, the document focuses on the strategy to deal with the temporary noise from pile driving. Available studies show a strong likelihood operational noise is more important in the long run. Until a strategy is complete on how to deal with the adverse impacts of operational noise no offshore wind projects should be approved.

BOEM discusses adverse impacts on marine mammals in the DEIS. “All 50 marine mammal species that occur in the northwest Atlantic OCS are protected under the MMPA, and six are listed under the ESA. The blue whale, fin whale, NARW, sei whale, and sperm whale are listed as endangered.” (3.15-1). “The Project area does overlap with a seasonal management area for NARW and a biologically important area for NARW migration (COP Volume 2b, Figure 5.6-4; Empire 2022). Fin whale and NARW are common year round in the lease area.” (3.15-5).

“NARWs found in the Project area belong to the Western North Atlantic stock. This species is found primarily in coastal waters although it is also found in deep waters offshore. In the U.S. Atlantic, the NARW range extends from Florida to Maine. NARWs exhibit strong migratory patterns between high-latitude summer feeding grounds and low-latitude winter calving and breeding grounds. Species densities are expected to be highest in the spring, but



NARW could be found in the Project area throughout the year. The species is considered critically endangered, and the Western North Atlantic stock experienced a decline in abundance between 2011 and 2019 with an overall decline of 23.5 percent. NARW has been experiencing an unusual mortality event since 2017 attributed to vessel strikes and entanglement in fisheries gear.” (3.15-4).

“Operating turbines generate non-impulsive, underwater noise that is audible to marine mammals. Stöber and Thomsen (2021)<sup>14</sup> predicted that a turbine with a nominal power of 10 MW would have a broadband source level of 170 dB re 1  $\mu$ Pa and a spectral band source level of 177 dB.” The National Oceanic Atmospheric Administration criterion for behavioral disruption for continuous noise (i.e., level B at 120 decibels). “Based on predicted source levels for a 10-MW turbine, Stöber and Thomsen (2021) estimated that sound levels would exceed the behavioral threshold for marine mammals at distances up to 0.9 mile (1.4 kilometers) from the turbine, assuming the turbine operates with a direct drive.” (3.15-13). As the turbines will be spaced on about 1 mile apart the Level B threshold will likely be exceeded everywhere in the project area resulting in this having a major impact, but BOEM has not classified the risk and instead will consult with NMFS under the ESA and results of consultation will be included in the Final EIS.

“Vessel strikes may be particularly significant for NARWs, for whom vessel strikes are a primary cause of death. Marine mammals are expected to be most vulnerable to vessel strikes when within the vessel’s draft and not detectable by visual observers (e.g., animal below the surface or poor visibility conditions such as bad weather or low light), and probability of vessel strike increases with increasing vessel speed. NARWs are at highest risk for vessel strike when vessels travel in excess of 10 knots; serious injury to cetaceans due to vessel collision rarely occurs when vessels travel below 10 knots. Average vessel speeds in the geographic analysis area may exceed 10 knots, indicating that vessel traffic associated with planned offshore wind activities may pose a collision risk for marine mammals.” (3.15-17).

“Given the larger turbines anticipated for the project (15 MW) broadband source levels could exceed 170 decibels. 3.15-21. The number of mammals expected to be exposed to noise above threshold levels by pile driving are Fin Whales 3 injured, and 18 with behavior, NARW 16 behavior.” (Table 3.15-8). The presence of offshore wind facility structures could result in avoidance and displacement of marine mammals (into the two shipping lanes surrounding the lease area), which could potentially move marine mammals into areas with lower habitat value or with higher risk of vessel collision or fisheries interactions. The presence of structures could have long-term, intermittent impacts on foraging, migration, and other normal behaviors.” (3.15-25). “The Proposed Action may affect and is likely to adversely affect fin whale and NARW.”(3.15-28).

The following is summarized from Appendix M-1 on acoustics. Level A and Level B. By definition, Level A harassment is any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock, while Level B harassment is any act of pursuit, torment, or annoyance which has the potential to disturb a marine mammal or

marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. NOAA Fisheries defines the threshold level for Level B harassment at 160 dB SPL re 1 $\mu$ Pa for impulsive sound, averaged over the duration of the signal and at 120 dB re 1 $\mu$ Pa for non-impulsive sound, with no relevant acceptable distance specified. Acoustic threshold levels, above which individual marine mammals are predicted to experience changes in their hearing sensitivity (permanent threshold shift [PTS], or temporary threshold shift [TTS]) for acute, incidental exposure to underwater sound. Under this guidance, any occurrence of PTS constitutes a Level A, or injury, take. The sound emitted by man-made sources may induce TTS or PTS in an animal in two ways: peak sound pressure levels (LPK) may cause damage to the inner ear (this is discussed further below), and the accumulated sound energy the animal is exposed to (cumulative sound exposure levels, SEL) over the entire duration of a discrete or repeated noise exposure, which has the potential to induce auditory damage if it exceeds distinct threshold levels. NARW vocalize at 70-224 Hz, and noise levels at that frequency averaged 84 to 143 Db. For fin whales the numbers are 17 to 28 Hz, and 84 to 148 Db with loudest noises near the harbor. Turbines operate around 500 Hz with peak sound at 140 to 153 Db. The available field data showed that the absolute level of turbine noise increases with increasing wind speed and size of turbine. Calculations show zero take from construction operations. The available field data showed that the absolute level of turbine noise increases with increasing wind speed and size of turbine.

In Appendix D 1.12 BOEM discusses unknowns and uncertainties, “There is a lack of research regarding the responses of large whale species to extensive networks of new structures due to the novelty of this type of development on the Atlantic OCS. BOEM determined that the overall costs of obtaining the missing information for or addressing these uncertainties are exorbitant, or the means to obtain it are not known.” BOEM then states this conclusion, “Therefore, BOEM does not believe that there is incomplete or unavailable information on marine mammal resources that is essential to a reasoned choice among alternatives.” We disagree determining the reaction of large whales to offshore wind projects, and the noise levels for large turbines will result in exorbitant costs, or means to obtain the information is unknown. BOEM has approved the South Fork project with just twelve 12 MW turbines located in a known NARW habitat. BOEM, at low expense, can await the construction of this project to determine the answer to both questions. We shouldn’t build almost 3,000 turbines before obtaining these answers until we do a trial installation.

## **8 Projects should be denied as projected costs are higher than benefits**

BOEM copied a benefit analysis from the New York Public Service Commission (PSC) into Appendix O in the DEIS. The analysis shows a net direct economic benefit in 2020\$ of \$1.6 billion over the 35 year project life. The analysis also shows \$0.9 billion in indirect, and \$0.8 billion in induced benefits based on the direct benefits. The primary issue with this analysis is it completely ignored offsetting costs of the project, and those costs shift spending from elsewhere in the economy. Those negative direct economic effects also have negative indirect and induced costs. A second issue is the discount factor used in the analysis was only 3%. BOEM, as a federal agency, should be using the US Office of Management & Budget



recommendation of using a 7% discount factor<sup>15</sup> on projects with an expected life beyond 7 years which lowers the direct benefit from \$1.6 billion to \$1.2 billion. A third issue is the cost of federal Investment Tax Credits (ITC).

The costs can be estimated by calculating the annual premium electricity price increase over the project life. Purchase contracts provide a guaranteed price for power produced less any revenue received from the sales of energy and capacity value to the New York Independent System Operator. For Empire Wind 1 the premium price expected for Offshore Wind Renewable Energy Credits was \$25/MWh<sup>16</sup> with an annual generation expectation of 2.8 million MWh, or \$70 million a year in premium electricity cost. For Empire Wind 2 the premium price expected for Offshore Wind Renewable Energy Credits is, at a minimum, \$35/MWh with an annual generation expectation of 4.5 million MWh, or \$156 million a year in premium electricity cost. The total cost of \$226 million a year for 35 years at a 7% discount rate is \$2.8 billion.

The federal government provides a 30% ITC for offshore wind projects. No estimate of the total investment to build the Empire Wind project is available. However, the Dominion Energy in Virginia provided investment information this year for the Coastal Virginia Offshore Wind project. They expect to invest \$9.8 billion for a 2,600 MW project or about \$3.8 million/MW<sup>17</sup>. The Empire Wind Project is 2,100 MW so the investment might be \$8 billion with the federal government providing \$2.4 billion in tax credits as the investment is made.

There are other potential costs such as lost tourism from fewer people coming because of the visual appearance discussed elsewhere in this document, and lost fishing revenue or higher cost. These costs are not estimated here. Just using premium electric costs and the ITC cost shows costs outweigh benefits \$5.2 billion to \$1.2 billion at a 7% discount rate, or \$6.7 billion to \$1.6 billion with a 3% discount rate, a four to one disadvantage. Clearly, on a Benefit Cost Analysis basis BOEM should not approve these projects.

## **Conclusion**

The DEIS has found major impacts from the proposed project. The cumulative impact of planned east coast offshore wind turbines from commercial fishing abandonment of lease areas is as large as the state of Connecticut which will cost jobs, revenue, and food security. Navigational and vessel traffic will have major impacts from radar interference leading to increased vessel collisions combined with compromised US Coast Guard ability to do Search & Rescue Operations leading to more potential deaths, and may threaten national security. Visible wind turbines will dominate the horizon leading to reduced tourism and reduced property values. Operational noise may exceed NOAA Level B Harassment thresholds harming marine life including the critically endangered North Atlantic right whale. Research requiring surface or aerial surveys will not be able to be carried out. The cost of the Empire Wind project is four times the benefits, and the new generation is likely to simply displace other zero emission sources. Studies measuring these impacts are not available. Until needed studies are

completed no offshore wind projects should be approved. Such large scale interference with historic uses of the ocean resources, and high cost should result in denying approval for offshore wind projects.

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