US Wind COP DEIS 10/23/2023
Program Chief, Office of Renewable Energy
Bureau of Ocean Energy Management
45600 Woodland Road, VAM–OREP
Sterling, VA 20166

Public comments on Draft Environmental Impact Statement on Docket BOEM-2023-0050

Dear Program Manager,

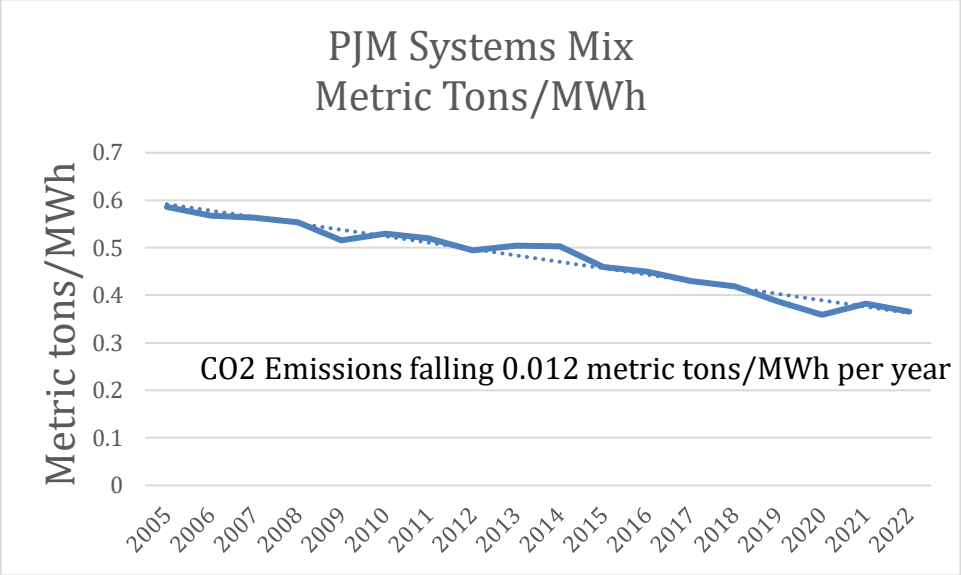
The Caesar Rodney Institute opposes the US Wind Marwin and Momentum Wind offshore wind projects on grounds that they will adversely affect the human and natural environment; pose unacceptable threats to federally-listed endangered species; cause environmental damage; damage local tourism; interfere with defense-related and other radar potentially leading to increased vessel collisions and allisions; block commercial fisheries providing food security; reduce the ability of the Coast Guard to conduct Search & Rescue operations possibly leading to human deaths; reduce the ability to conduct important scientific research, and end pristine ocean views. We represent over 1,400 individuals who have expressed concerns about offshore wind development to the Caesar Rodney Institute, and through the website Save Our Beach View. While we appreciate the effort that BOEM has put forth, the final product falls well short of what the National Environmental Quality Act (NEPA) requires of an EIS. Below and underlined, we describe the various deficiencies of the DEIS and identify potential project effects that require new or additional study, disclosure, and mitigation.

Sincerely,
David T. Stevenson
Director, Center for Energy & Environment
Caesar Rodney Institute
420 Corporate Blvd.
Newark, DE 19702

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 draft EIS 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 (CO_2) without a law passed by Congress. <u>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.</u>

In its Construction & Operations Plan (COP) Volume 1, page 72, Table 5-6, US Wind claims its project will replace fossil fuel generation and save up to about 6.3 million metric tons of CO_2 per year if 2,178 MW of offshore wind are built providing 6.8 million MWh of electricity a year. That works out to 0.94 metric tons/MWh, basically the emission rate for coal-burning power plants. However, offshore wind will not simply replace coal but the full systems mix of the regional grid currently averaging 0.36 metric tons/MWh. Further, the systems mix has been improving by 0.012 metric tons/MWh since 2005 (see graph below), so over the 20 year life of the project, the systems mix may average only 0.20 metric tons/MWh, meaning US Wind is overestimating CO_2 savings fivefold.



Source: PJM Systems Mix, https://gats.pjm-eis.com/gats2/PublicReports/PJMSystemMix

However, that is not the end of the emissions story. Two different consultants used by the Maryland Public Service Commission in dockets (see links below) approving the projects definitively state the offshore wind projects will simply replace onshore wind projects. In fact, one consultant goes on to calculate emissions will actually be higher for the offshore projects as they are located near the edge of the regional grid, while onshore projects would be more centrally located, resulting in lower regional transmission losses. The same amount of onshore wind and solar could be built for one-quarter to one-third the cost. Emission savings should be shown as zero.

Maryland Public Service Commission Docket 9666, item 33, ICF International "Evaluation and Comparison of Marwin II and Skipjack Wind proposed offshore wind project applications" Exhibits 56 and 59. https://www.psc.state.md.us/search-results/?q=9666&x.x=19&x.y=12&search=all&search=case, Maryland Public Service Commission Docket 9431, item 85, page 159, https://www.psc.state.md.us/search-results/?q=9431&x.x=20&x.y=10&search=all&search=case

2. Major negative impacts found in the DEIS on commercial fishing, the viewshed, navigation, scientific research, and environmental impacts require denial of the proposed action.

BOEM States in Volume 1, 3.6.1, "In the context of reasonably foreseeable environmental trends in the area, the incremental impacts contributed by the Proposed Action to the overall impacts on commercial fisheries will be substantial. BOEM anticipates the overall impacts on commercial fisheries and for-hire recreational fishing associated with the Proposed Action, when combined with impacts from ongoing and planned activities, including offshore wind, would be **major** and long-term because some commercial and for-hire recreational fisheries and fishing operations would experience substantial disruptions indefinitely. Commercial fishing, recreational, and other vessels would choose to avoid the Lease Area altogether with the 30 gigawatt offshore wind goal occupying land twice the size of NJ."

BOEM states in 3.6.6, "The presence of the wind turbines would affect US Coast Guard's (USCG) ability to conduct standardized search patterns. Depending on weather conditions such as low visibility, sea state, strong winds, etc., Some USCG vessels may choose not to enter the Lease Area because of heightened

risks caused by the presence of the wind turbines. USCG aviation assets conducting Search and Rescue (SAR) missions over the Lease Area would need to maneuver around wind turbines. The layout and density of Proposed Action structures could complicate SAR activities during operations and lead to abandoned SAR missions and resultant increased fatalities. BOEM anticipates the Proposed Action would have **moderate** impacts on navigation and vessel traffic in the analysis area. Impacts on non-Project vessels would include changes in navigation routes, delays in ports, degraded communication and radar signals, and increased difficulty of offshore SAR or surveillance missions within the Lease Area, all of which would increase navigational safety risks." We pointed out earlier this year in the Ocean Wind 1 DEIS that these same risks were categorized as **major**. There is no explanation of why the adverse impact was downgraded in this DEIS. The impact on US Coast Guard Search & Rescue ability needs to be reclassified as **major.**

BOEM states in 3.6.9, "The daytime presence of offshore wind turbines, as well as their nighttime lighting, would change the perception of ocean scenes from natural and undeveloped to a developed wind energy environment and would be an unavoidable presence in views from the coastline. Say goodbye to the local and national treasure of pristine ocean views. The impact would be **major**. To mitigate the nighttime viewshed impact of aircraft warning lights, US Wind states on page 23 of Volume 2 of its COP it will use Aircraft Detection Lighting Systems (ADLS) if "commercially feasible." These systems only turn on the aviation warning lights if aircraft are in the area. US Wind does not define the terms or conditions of what would make the systems commercially feasible. Without a solid commitment to using ADLS, the EIS should assume the system will not be used and define the nighttime impact on the viewshed as **major** and/or specify the use of ADLS as mandatory.

BOEM States, "The presence of stationary structures associated with offshore wind energy projects could prevent or impede continued NOAA scientific research surveys using current vessel capacities and monitoring protocols or reduce opportunities for other NOAA scientific research studies in the area. Coordinators of large-vessel survey operations or operations deploying mobile survey gear have determined that activities within offshore wind facilities would not be within current safety and operational limits. In addition, changes in required flight altitudes due to the proposed wind turbine height would affect aerial survey design and protocols. Overall, the impact would be **major** for scientific surveys, and mitigation plans are needed for how critical science surveys will be completed.

US Wind states that scour protection on inter-array and transmission cables will only be used as needed, and estimates that may be only 10% of the time, and the minimum depth of burial of transmission cables could be as small as 3'. Transmission cables from the Block Island offshore wind project became exposed several years ago despite the burial of 6' or more, including on a recreational beach. Scour protection should be required on all cables.

The Indian River Bay is classified as a Water of Exceptional Recreational Significance and a Harvestable Shellfish Water. Placing cables in the bay should be viewed as unacceptable instead of the first choice, as listed in the DEIS. No studies have been conducted on the impacts of turbines and cables on the horseshoe crab. The lease area sits atop the horseshoe crab reserve. Project approval should be withheld until studies of the impact on horseshoe crabs are complete.

Each offshore wind turbine and substation carries many gallons of lubricating oil and diesel oil listed in Appendix H of the COP. The total stored offshore is 508,078 gallons. A massive hurricane could threaten a major spill. The oil response plan seems inadequate to handle a major release and needs to be improved. This project has been approved by Maryland, however, there is no specification land filled material such as turbine blades that will be placed in Maryland.

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. However, a December 14, 2020 letter, 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). We note this is in contrast with a new Solicitor General's opinion quoted in the DEIS:
As stated in M-Opinion 37067, ". . . subsection 8(p)(4) of OCSLA imposes a general duty on the Secretary to act in a manner providing for the subsection's enumerated goals. The subsection does not require the Secretary to ensure that the goals are achieved to a particular degree, and she retains wide discretion to determine the appropriate balance between two or more goals that conflict or are otherwise in tension."

Major impacts to historic ocean uses cannot be overlooked at the discretion of the Secretary. These contrasting opinions are the kind of legal debates to be settled in lawsuits filed against BOEM.

3. A new study is needed to determine the potential economic costs of lost Tourism and Recreation. No Final EIS should be issued for any project until that study is available.

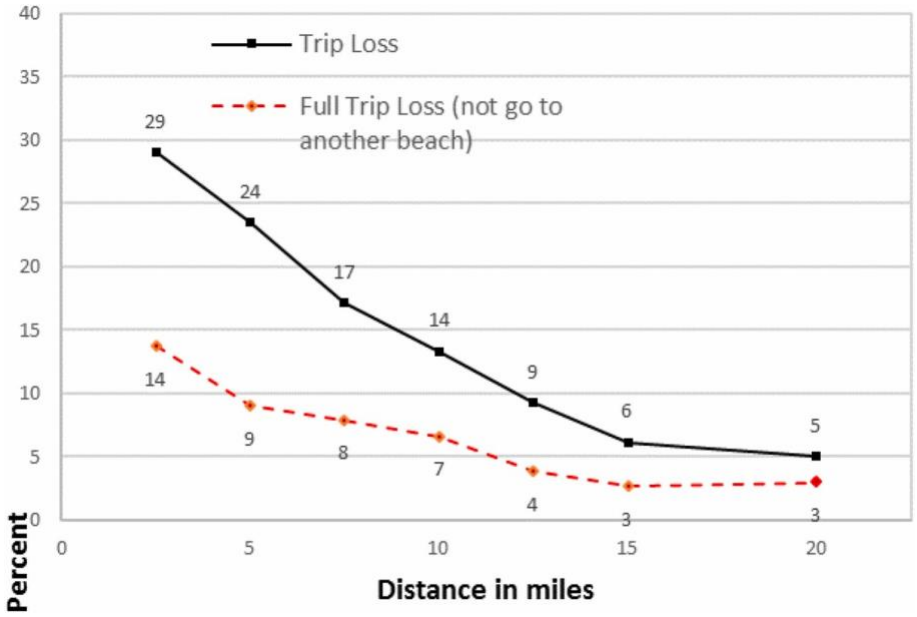
BOEM states in 3.6.8 regarding recreation and tourism, "Coastal Delaware and Maryland, as well as nearby areas of Virginia and New Jersey coasts, have a wide range of visual characteristics, with communities and landscapes ranging from large cities to small towns, suburbs, rural areas, and wildlife preserves. As a result of the proximity of the Atlantic Ocean, as well as the views associated with the shoreline, the coastal areas of these four states have been extensively developed for water-based recreation and tourism. The scenic quality of the coastal environment is important to the identity, attraction, and economic health of many of the coastal communities. Additionally, the visual qualities of coastal cities, towns, and parks, which incorporate marine activities, beaches, ocean and bay views, and the ability to view birds and marine life, are important community characteristics."

Despite finding visual impacts will be **major, "**BOEM anticipates the overall impacts associated with the Proposed Action when combined with the impacts from ongoing and planned activities including offshore wind would be **moderate**. The main drivers for this impact rating are the visual impacts associated with the presence of structures and lighting; impacts on fishing and other recreational activity from noise, vessel traffic, and cable emplacement during construction." An important assumption in this finding is other nearby offshore wind projects will still be built, so the US Wind projects will simply have only a minor additional impact. However, of 19 Gigawatts of offshore wind projects in BOEM's approval queue, 75% have claimed approved guaranteed premium prices are inadequate to obtain financing, with 30% already canceled despite $124 million in fines to exit the contracts. In particular, Ørsted, developer of the nearby Skipjack, Garden State, and Ocean Wind projects, has delayed construction until 2026 and announced they may leave the US market with a decision expected by the end of 2023.

BOEM is relying on a University of Delaware Study (Parsons and Firestone) to suggest minimal impact on the tourism and recreation industries. The University of Delaware study

(https://www.semanticscholar.org/paper/Atlantic-Offshore-Wind-Energy-Development%3A-Values-Parsons-Firestone/91b0ede146b8701cb44d72c58f09b29533df3cdf) 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 (https://delawaretoday.com/lifestyle/skipjack-wind-farm/) that the study is no longer applicable because turbines used today are so much larger.

However, even with the study's problems, it has some use. The Table below shows a Trip loss of 14% with turbines visible at 10 miles, as proposed for the US Wind project. The impact of taller towers can be approximated by assuming the towers are 1.61 times closer (the ratio of 579' tall towers to 938' tall towers). That suggests the proposed US Wind project would be equivalent to about 5 miles off the coast, and trip loss might be 24%. The proposed project should then be considered to have a **major** impact on tourism.



BOEM failed to reference a 2017 visual preference study conducted by North Carolina State University that evaluated the impact of offshore wind facilities on vacation rental prices. The study by Lutzeyer et al. (2017), "The Amenity Costs of Offshore Wind Farms: Evidence from a Choice Experiment (**https://www.aminer.org/pub/5c8c9f8a4895d9cbc6134d87/the-amenity-costs-of-offshorewind-farms-evidence-from-a-choice-experiment**) 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 quoted below with visualizations showing turbines from 5 miles to 18 miles from shore (not the 8 mile limit stated in the DEIS). 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 implies 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 proposed project will have a **major** impact on tourism and should be shown as such.

Also 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) (https://www.boem.gov/sites/default/files/renewable-energy-program/StateActivities/NY/Visual-Simulations/Compendium-Report.pdf). 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 two-thirds that of the proposed project turbines, that visual impact would be equivalent to the project turbines at 23 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 **(https://www.governor.ny.gov/sites/default/files/atoms/files/NYS_BOEM_NY_Bight_Call_Co mments.pdf).** 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. This, then, begs the question: Why is an exclusion zone OK for the Hamptons but not Delaware and Maryland Beaches?

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 938' and 1050' turbines (14MW to 18MW). 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 hundreds of billions of dollars may be invested in planned offshore wind projects. The Delaware and Maryland beach economies are estimated to total $5 billion a year, so trip losses of 24% to 54% might cost $1.2 to $2.7 billion a year or $24 to $54 billion over 20 years. The beach might look like they did during COVID lockdowns. As federal taxpayers, state residents will pay $1.3 billion for federal tax credits for turbine construction. In addition, Maryland electric customers will pay $5.2 billion in premiums over 20 years or more if US Wind applies for added guaranteed premiums. The University of Delaware study also admits property values will fall but provides no estimates of how much.

4. DEIS Underestimates Project Impacts on Radar.

According to the DEIS, "Proximity to the turbines is the primary factor that determines the degree of radar signal degradation. Smaller vessels operating in the vicinity of the Project may experience radar cluttering and shadowing." The impacts on the radar are currently listed as minor.

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 the turbine proposed for US Wind ranges between 938' and 1,050' 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
https://nap.nationalacademies.org/read/26430/chapter/2

a. "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 on Coast Guard Search and Rescue (SAR)
b. 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)[6]

a. "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."

b. "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."
c. "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."
d. "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.”

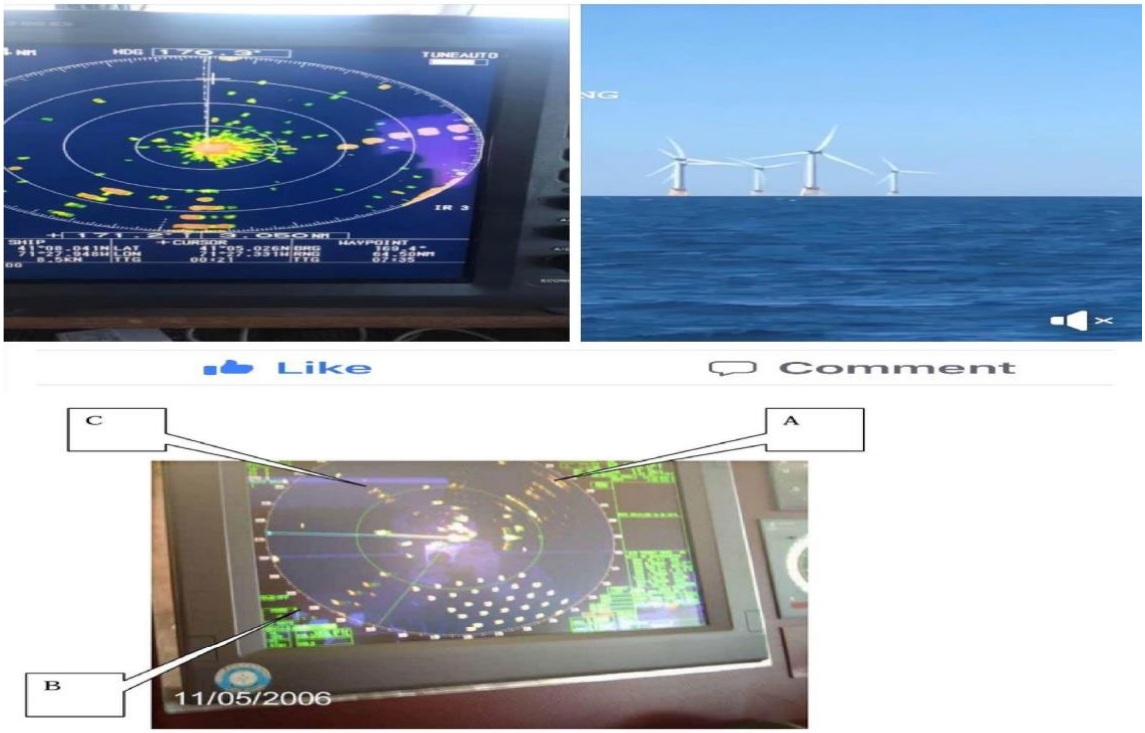
“Finding 5.4: There is no currently available “WTG mode” for MVRs, and operator control of detection threshold to mitigate strong returns will frequently lead to the unintended consequence of suppressing detections of small targets.”

“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 the 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.”

The following figures consist 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.



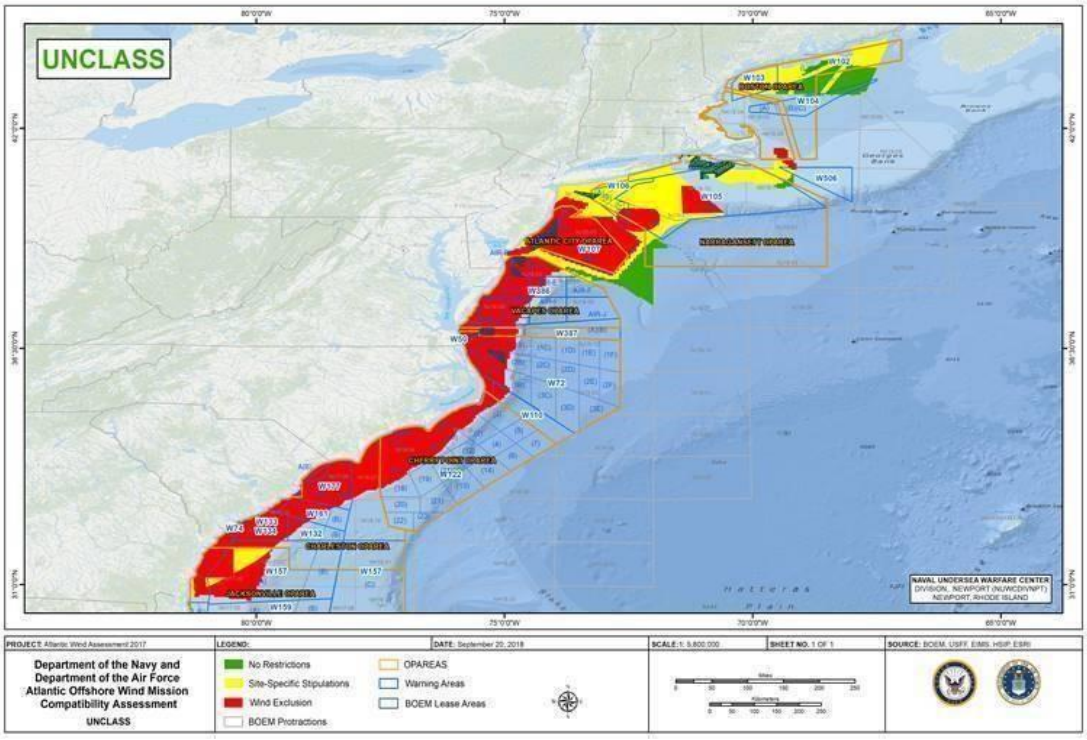
Marico **FIGURE 2.10** Illustrative plan position indicator display for magnetron-based radar from the Kentish Flats experiments, where the points A, B, and C highlight the phenomena of multiple target echoes due to wind turbine generator–radar interaction, and Radar screen near 5 turbine Block Island 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."

Comments from Seafreeze, LTD. On Vineyard Wind Supplement to Draft Environmental Impact Statement.

> On pages 67 to 73, Seafreeze explained how offshore wind projects affect/interfere with military exclusion & restriction zones.



As these data indicate, the DEIS must identify project-related interference with radar as a **major** adverse impact and develop alternatives or mitigation measures to address it.

5. The DEIS will lead directly to a flawed Letter of Authorization (LOA) for Incidental Take of the critically endangered North Atlantic Right Whale (NARW).

The critically endangered NARW is generally considered the most imperiled marine mammal native to North America. Indeed, the total NARW population rests at approximately 330 individuals, and that number is dropping due to constant human-caused mortality, low calving rates, highly extended calving intervals, loss of prey species and access to foraging habitat, low and diminishing physical fitness, lack of genetic diversity, and extreme low abundance of reproductive females. Most whale experts agree that unless human-caused mortalities are immediately curtailed to zero, the NARW will become extinct in the next 30 to 60 years. For these reasons, it is imperative that BOEM, through the DEIS, examine closely, carefully, and comprehensively the US Wind project's potential to adversely affect NARW and exacerbate existing threats to the species. Unfortunately, the DEIS fails this basic task, leaving many impacts undisclosed, unstudied, and unmitigated.

BOEM states in 3.5.6, "Operations of the wind turbines would result in long-term, low-level, continuous noise in the Project area which could result in behavioral disturbances and auditory masking." Turbines planned for the Project range from 14 MW to 18 MW. "Sound levels measured from direct-drive turbines within this size range do not currently exist in the literature and modeling scenarios are limited to two studies with a high degree of uncertainty."

The National Marine Fisheries Service (NMFS) determined the Potential Biological Removal (PBR) for NARW to be 0.7, which is down from 0.9 in 2019. According to NMFS, this means that for the species to recover, the population cannot sustain, on average over the course of a year, the death or serious injury of a single individual due to human causes. Collisions with ships is one of the leading causes of NARW deaths.

NMFS has passed restrictions on vessel speeds to reduce NARW risks during the times whales are known to migrate through wind lease areas. The lease area is surrounded by high volume shipping lanes. Operational may drive whales out of the lease areas into the shipping lanes where they may be struck.

As stated in US Wind application for Incidental Take Document 2023-09194, "An incidental take authorization shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an immitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival. the Marine Mammal Protection Agency defines "harassment" as: any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) 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 (Level B harassment)".

By these measures US Wind has failed to meet these standards especially for the Critically Endangered North Atlantic right whale (NARW) and their application should be rejected for the following reasons:

- NMFS has established no standards for determining maximum estimated marine mammal abundances allowed in a month when construction will occur
- NMFS has not established what version of estimated population abundances should be used
- NMFS has not established the current abundance of NARWs
- No LOA should be issued until at least one of the planned 14 MW to 18 MW turbines is actually built in the ocean with sound levels measured and reported accurately
- No project should receive a LOA until this cumulative effect is fully considered
- With no impact from the US Wind project, expected NARW deaths already exceed the level needed to maintain NARW stock. NMFS should not be approving any offshore wind activity that may further impact the NARW.

NMFS/NOAA allows applicants to determine protected mammal abundance in an arbitrary and capricious manner

The National Marine Fisheries Service (NMFS) along with the National Oceanic and Atmospheric Agency (NOAA) have issued numerous Letters of Authorization (LOA) for incidental take of marine mammals by offshore wind development companies consulting with the applicants during the application and approval process. The agencies have established take limits using species stock estimates and expected species densities in subject lease areas in an arbitrary and capricious manner. Consider two recent LOAs to the current Maryland Offshore Wind Project application in the Table below.

Table 1: Recent five year Incidental Take requests for the North Atlantic Right Whale (NARW)

Variable	Vineyard Wind	Ocean Wind 1	Coastal Virginia	Marwin/ Momentum Wind
LOA Date	5/1/2023	11/25/2022	Current	Current
NARW Take Request	20	14	23	6
NARW Population Estimate	394	368	346	338
Maximum Estimated NARW Presence Month Construction Allowed	June	December	May	November
Maximum Estimated NARW Presence/100KM^2 during construction	0.308	0.045	0.015	0.011
Maximum presence during construction compared to Marwin/Momentum Wind	28 X	4 X	1.4 X	-
Estimated Presence Version Used	2017	2022	2022	2022

Source of population density: Roberts and Halpin, Duke University, the Northeast Regional Planning Body, the University of North Carolina Wilmington, the Virginia Aquarium and Marine Science Center, and NOAA Habitat-based Marine Mammal Density Models for the U.S. Atlantic: Latest Versions (duke.edu)

The agencies have approved recent projects without establishing a maximum allowed monthly estimated density of critically endangered NARW in the month's construction is allowed. Allowed densities vary by a 28 fold difference, and there is no standard for the version of the source data used. This application gives an estimate of NARW population as 338 animals but each of the other projects uses a higher and different estimate from 346 to 394 animals. NMFS/NOAA should establish a NARW population number to be used in all applications, and a maximum allowed estimated population density for the month's construction is allowed. No LOAs should be issued until these standards are met.

NMFSs' consideration of incidental take during wind turbine operation is insufficient

During construction dozens of mitigation steps are required to protect NARWs. The US Wind application allowing incidental take covers the period from January, 2025, through December, 2029, with construction completed by 2027 with partial operation as soon as 2025. This means the application will also cover incidental take during operation of the wind turbines. As a critically endangered species, the impacts on the NARW are of greatest concern. There are several potential impacts on the whales from high noise levels during construction:

1) Exposure of marine mammals to sound sources can result in, but is not limited to, no response or any of the following observable responses: increased alertness; orientation or attraction to a sound source; vocal modifications; cessation of feeding; cessation of social interaction; alteration of movement or diving behavior; habitat abandonment (temporary or permanent); and in severe cases, panic, flight, stampede, or stranding, potentially resulting in death
2) Avoidance is the displacement of an individual from an area or migration path as a result of the presence of a sound or other stressors and is one of the most obvious manifestations of disturbance in marine mammals. NARW tend to swim and feed near the water surface where zooplankton is abundant, putting them at increased risk of vessel collision (Mayo and Marx 1990; Baumgartner, M.F., et al. 2017; Parks et al. 2012). There is a high potential of vessel strikes as whales avoid noise harassment by leaving or avoiding a lease area and head into high traffic shipping lanes. See the map below showing the shipping lane abutting the project
3) Behavioral change, such as disturbance manifesting in lost foraging time, in response to anthropogenic activities is often assumed to indicate a biologically significant effect on a population

of concern. Five out of six North Atlantic right whales exposed to an acoustic alarm interrupted their foraging dives (Nowacek *et al.,* 2004).

4) Sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest. North Atlantic right whales have been observed to shift the frequency content of their calls upward while reducing the rate of calling in areas of increased anthropogenic noise (Parks *et al.,* 2007)
5) Sound can induce stress. Rolland *et al.* (2012) found that noise reduction from reduced ship traffic in the Bay of Fundy was associated with decreased stress in North Atlantic right whales. Correspondingly, increased noise levels can be expected to increase stress diverting energy from other functions
6) Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (e.g., crustaceans, cephalopods, fish, and zooplankton). The presence and operation of structures such as wind turbines are, in general, likely to result in local and broader oceanographic effects in the marine environment and may disrupt marine mammal prey, such as dense aggregations and distribution of zooplankton.
7) Vessel collisions with marine mammals, also referred to as vessel strikes or ship strikes, can result in death or serious injury of the animal. Wounds resulting from ship strike may include massive trauma, hemorrhaging, broken bones, or propeller lacerations. US Wind expects at least 823 vessel trips/year during operation.

US Wind did not request and NMFS is not proposing to authorize take incidental to operation noise. The same potential harmful impacts described above during construction could exist during operation with the primary difference operational noise will be nearly continuous for decades. No turbines approaching the size of the up to 18 megawatt turbines planned for this project have been built in the ocean anywhere on the globe. A study by Stöber and Thomsen (2021) (https://asa.scitation.org/doi/abs/10.1121/10.0003760?journalCode=jas estimated the operational noise from the larger, more recent generation of direct-drive wind turbines. Their findings demonstrated noise levels could be up to 170 to 177 dB for a 10 megawatt turbine. Furthermore, noise levels where likely to diminish to NOAA Level B harassment levels of 120 dB at about 0.9 miles away from the turbine. Since planned turbine spacing is only on a 0.9 by 1.2 mile grid, noise levels will likely significantly exceed Level B harassment limits throughout the project area and for one mile beyond the project area. (Journal of the Acoustical Society, "How could operational underwater sound from future offshore wind turbines impact marine life?" Uwe Stöber *and* Frank Thomsen, https://asa.scitation.org/doi/abs/10.1121/10.0003760?journalCode=jas)

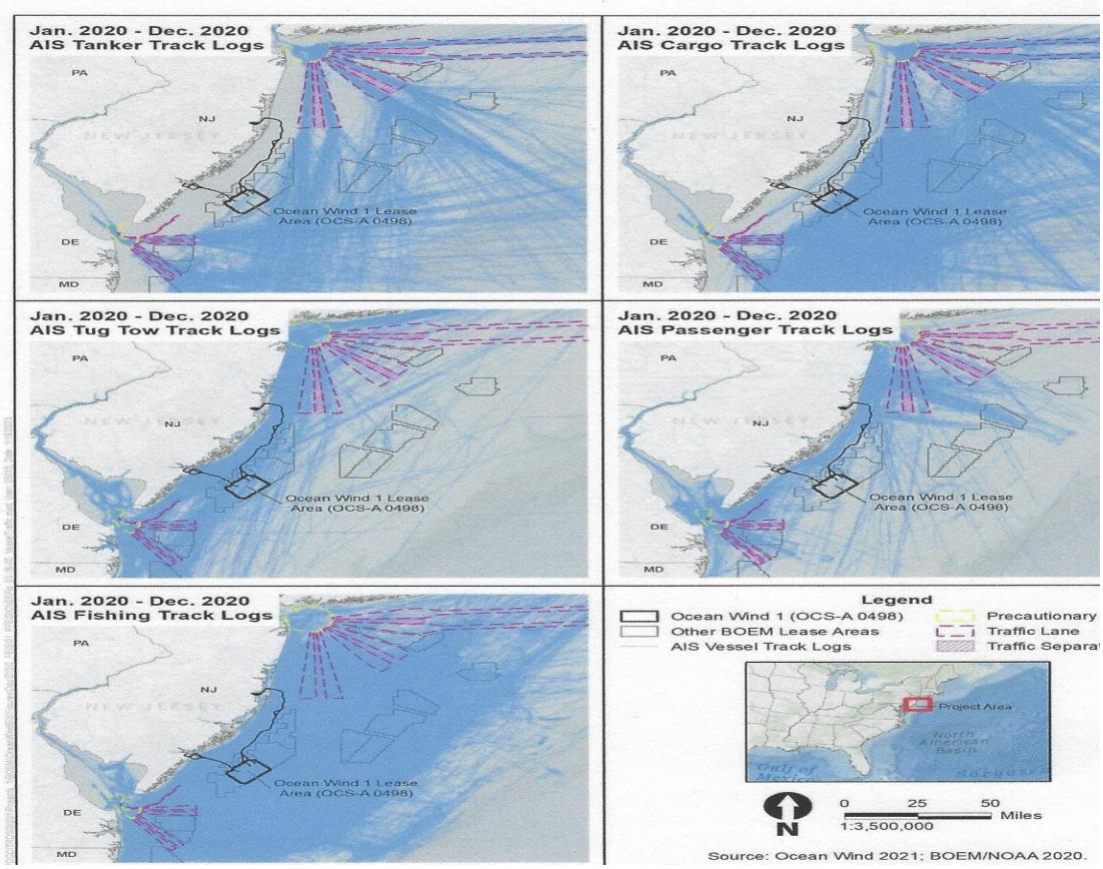
In addition to the above mentioned concerns, the US Wind application states "NARW's require extremely dense patches of zooplankton to feed efficiently". Also stated is the fact average length of NARWs has decreased 7.3% over the period 1981-2019. Smaller size can impact breeding and nursing. Broad scale hydrodynamic impacts could alter zooplankton distribution and abundance by greater mixing (van Berkel et al. 2020). US Wind admits in their application, "If the presence of Project structures causes a change in ocean circulation, it may cause marine mammals to shift their foraging grounds to account for shifting distributions of prey species." We join in recent statements from lead biologists at the National Marine Fisheries Service (NMFS) who have recommended that offshore wind energy projects be pushed back a minimum of 20 kilometers from areas used by NARW for feeding and other life history activities. This recommendation was set forth in a letter from NMFS to BOEM, dated May 13, 2022, Sean Hayes, chief of the protected species branch at NOAA's National Northeast Fisheries Science Center.

As reported in the application, "Abundance estimates, Potential Biological Removal (PBR) values, and Annual Mortality/Serious Injury (M/SI) values were sourced from the most recent NOAA Marine Mammal Stock Assessment Report issued for each species and stock (88 FR 4162, Hayes et al. 2022, 2021, 2020, 2019; Waring et al. 2015). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. Annual M/SI values represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike)." The NARW PBR estimate given in Table 3.1 is 0.7 while the M/SI value is 8.1. NARW are currently experiencing an unusual mortality event (UME); elevated numbers of dead or seriously injured NARW have been recorded in Canada and the United States since 2017 (NOAA Fisheries 2023a). Throughout this time period, 35 NARW deaths have been reported, as well as 22 serious injuries, and 37 sub-lethal injuries and illnesses (NOAA Fisheries 2023a). In the period of 2016-2020, incidental fishery entanglement mortality and serious injury averaged 5.7 individuals per year, and vessel strike mortality and serious injury averaged 2.4 individuals per year (88 FR 4162). This means, with no impact from the US Wind project, expected NARW deaths already exceed the level needed to maintain NARW stock. NMFS should not be approving any offshore wind activity that may further impact the NARW.

Clearly, operational noise poses a serious, and even potentially deadly threat and could result in NARW extinctions. No LOA should be issued until at least one of the planned 18 MW turbines is actually built in the ocean with sound levels measured and reported accurately. Building the project with sound measured only after project is built is unacceptable.

NMFS has failed to consider the cumulative impact from the numerous LOAs issued in active NARW habitat

The Harassment Permit analysis does not assess *cumulative* impacts on the affected marine mammals. Instead, it treats the Project as if it were to be installed and operated in a vacuum, where no other impacts exists. In reality the project is adjacent to the Skipjack 1 and 2 Projects, and the Garden State project, and not far from multiple projects off the southern New Jersey coast. All of these projects may be simultaneously be under construction, and will certainly be operational at the same time. Marine mammals avoiding the Marwin and Momentum Wind projects may simply wander into another project and across multiple shipping channels adding to stress and confusion greatly increasing the potential for vessel strikes and entanglement. See the below maps of vessel paths to the north of the Maryland project. NMFS is ignoring this issue. No project should receive a LOA until this cumulative effect is fully considered.



Conclusion

The DEIS, as currently written, is legally inadequate, and its defects cannot be cured by simply making "fixes" in the *Final* EIS. Instead, BOEM must prepare a new DEIS that addresses the deficiencies identified herein and then re-release that document for another round of public review and comment.

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