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Program Chief  
Office of Renewable Energy Programs  
Bureau of Ocean Energy Management  
45600 Woodland Road  
Sterling, VA 20166

*Submitted Electronically*

**Re: Empire Wind 1 and 2 Draft Environmental Impact Statement, Docket No. BOEM-2022-0053**

Dear Program Chief,

Clean Ocean Action (COA) is a regional, broad-based coalition of conservation, environmental, fishing, boating, diving, student, surfing, women's, business, civic and community groups with a mission to protect and enhance the degraded water quality of the marine waters off the New Jersey/New York coast. COA submits the following comments to the Bureau of Ocean Energy Management ("BOEM") on the Draft Environmental Impact Statement ("DEIS") for Equinor and BP's Empire Offshore Wind, LLC's Proposed Wind Energy Facilities off New York, "Empire Wind 1 and 2." These comments are also submitted for the public comments simultaneously being requested by the U.S. Army Corps of Engineers New York District for the DEIS for Empire Wind 1 (DEIS NAN-2022-00901-EMI) and Empire Wind 2 (NAN-2022-00902-EMI).

Clean Ocean Action strongly supports the "No Action Alternative" as presented in the DEIS for Empire Wind 1 and 2 for the rationale and concerns described below, and calls for the federal and state government to produce a fair and transparent cost-benefit analysis of the extensive offshore wind industrialization so the public will be fully informed about the outcomes and consequences of offshore wind.

**From the outset, COA supports responsible and reasonable offshore wind energy development; this includes leasing, pre-construction, construction, operation, management, and decommissioning, as well as the associated onshore infrastructure.** However, the scope, scale, magnitude, and speed of multiple and ever increasing offshore wind (OSW) projects in the

region are raising serious concerns about the sustainability of ocean resources to coexist with the dramatic ecosystem changes. Moreover, Empire Wind 1 and 2 are poorly located as they are within an ecologically vulnerable area, as well as within the most highly trafficked region for shipping and commerce along the entire East Coast. This combination of factors raise irreconcilable challenges for the project. In addition, there is a lack of a meaningful, scientifically robust, and comprehensive pilot project to determine best practices for responsible development including assessing impacts to marine life. Moreover, Equinor and BP are using unproven technology, including 15 megawatt (MW) wind turbines, which are the largest in the world and largely untested. Further, there are no clear commitments or evidence provided that the projects will reduce carbon dioxide (CO<sub>2</sub>) emissions which is necessary to reduce climate change. This lack of due diligence by federal and state agencies is reckless and is likely to ensure the hype of offshore wind never meets reality.

This is essential as currently the region is without the benefit of current and comprehensive baseline data for the diverse marine life that presently live, frequent, or transit the ecosystem. Indeed, the NY/NJ Bight is rich with diverse species and extraordinary natural features, including the Hudson Canyon, Shrewsbury Rocks, shoals, and flats. Species diversity include over 30 species of whales and dolphins, including the critically endangered Northern Atlantic right whale; 5 species of sea turtles; 300 species of fish including the endangered Shortnose and Atlantic sturgeon; 350 species of birds; 4 species of seals; hundreds of invertebrates<sup>1</sup>, eels and other species. Scientists also concur that baseline data is not available and cumulative impacts from offshore wind energy development are unknown for many species. Accordingly, a complete and thorough DEIS process is critical to the legitimacy of such development.

COA is specifically concerned about the location of Empire Wind's projects, the unknown significant environmental impacts of large-scale offshore wind energy development as identified by marine scientists, and the cumulative impacts of the numerous massive offshore wind projects in various stages of development in the NY/NJ Bight, as well as the East Coast. Given the scope and magnitude of the proposed offshore wind energy infrastructure, both on- and offshore, it is imperative that each project be environmentally responsible, and the cumulative impacts be considered and first avoided, then minimized, and if unavoidable, mitigated. As this new industrial development has been initiated, cultivated, and promoted, proponents – especially state and federal leaders – are committed to moving forward “responsibly.” However, the current scale, scope, magnitude, and speed by which offshore wind energy development is progressing is too much, too fast, and the DEIS is deficient in assessing cumulative impacts of all the proposed offshore wind projects in the region.

COA also notes that this DEIS is for two distinct projects, Empire Wind 1 and Empire Wind 2. Other projects in the region have separate review processes for each project. The agencies reviewing offshore wind projects and Equinor and BP fail to act responsibly by combining two projects into one, eliminating the opportunity for a phased-in approach allowing for improvements in technology and measures or efforts to reduce harm.

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<sup>1</sup> Hutchison *et al.*, The Interaction Between Resource Species and Electromagnetic Fields Associated with Electricity Production by Offshore Wind Farms, 96 *Oceanography* Vol. 33, No. 4 (December 2020).

In sum, COA supports the No Action Alternative as outlined in the Draft DEIS and submits the following comments, and repeats the call for a comprehensive, comparable, scientific, independent pilot project as a pathway to developing responsible offshore wind energy development.

**I. Unprecedented Scope, Scale, Magnitude, & Pace of OSW, Lack of Information, Coordination, and General Comments on Empire Wind 1 & 2**

COA is concerned about the scope, scale, magnitude, and speed of the totality of projects and proposals currently moving rapidly forward in the NY/NJ region, especially with the dearth of science available about the impacts to the physical environment, benthos, fisheries, mammals, birds, and bats. BOEM's process is woefully inadequate and fails to fully recognize the massive impact of all this industrialization in the Atlantic Ocean. The ecosystem is interconnected and fluid and all projects in the Atlantic from the North to the South Atlantic Planning Areas will impact marine life and waters that are shared within the ecosystem.

Equinor and BP plan to construct and operate two separate offshore wind facilities – Empire Wind 1 and 2 – fourteen (14) miles south of Long Island, NY, and about 19.5 miles east of Long Branch, NJ. However as stated above, they are proposing to combine them to fast-track permitting– creating a larger combined project. However, each project is large, full-scale development. Combined, Empire Wind 1 and 2 will install 174 wind turbine generators, two offshore substations, 3 cable landfall locations, 2 onshore substations, and 375 miles of inter-array and export cables.<sup>2</sup> During every part of the life-cycle of an offshore wind project, there are environmental impacts offshore, nearshore, and inshore. Moreover, there is uncertainty regarding the long-term and *onshore* impacts associated with this unprecedented scale of development.

Equinor and BP are planning to use and install 15 megawatt (MW) turbines, the largest turbines in the world. Indeed, These turbines are still in the prototype and test phase. This untested status leads to questions such as: how can Equinor and BP, as well as the reviewing agency BOEM, guarantee the performance of these turbines especially in the harsh marine environment? How much maintenance will be required? What are the back-up sources of energy should these turbines prove inconsistent or fail?

Currently, there are 11 companies conducting pre-construction activities for offshore wind energy development, as indicated by the Active Authorizations for Incidental Take Authorizations.<sup>3</sup> What monitoring is being done, documented, and publicly shared to ensure these pre-construction activities are protective of marine life? If monitoring to protect marine life is poorly conducted or lacking, what promise does that hold for monitoring planned during construction and operation?

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<sup>2</sup> Bureau of Ocean Energy Management. *Empire Offshore Wind Draft Environmental Impact Statement Volume 1*, November 2022, page S-5.

[https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire\\_Wind\\_DEIS\\_Vol1.pdf](https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire_Wind_DEIS_Vol1.pdf)

<sup>3</sup> National Oceanic and Atmospheric Administration, Incidental Take Authorizations for Other Energy Activities (Renewable/LNG), as seen 1/9/2023,

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable>.

Importantly, New Jersey's environmental and economic resources will be impacted by this project yet, according to the list of coordinating agencies in the DEIS, the New Jersey Department of Environmental Protection (“NJDEP”) is noticeably absent.

### ***Lack of Information***

Scientists, including federal scientists, note there is a lack of information about species as well as impacts of OSW energy development on species. Studies and agency letters underscore that BOEM has not conducted the biological and ecological assessments needed to determine the effects and impacts of the extensive development, and information is not yet available. As such, the DEIS is deficient and BOEM will be unable to appropriately evaluate individual OSW projects, such as Empire Wind 1 and 2, as well as the cumulative effects or harm from all the projects in this region. For example:

- A New York State Environmental and Technical Working Group report that is the culmination of over 200 scientists considering the state of science in seven areas (environmental change, fisheries and mobile invertebrates, bats, birds, sea turtles, marine mammals, and benthos) make it clear that there is a lack of comprehensive science to determine the effects and impacts of offshore wind energy.<sup>4</sup> Thus, it is premature for EIS’ for individual projects, including Empire Wind 1 & 2, to be considered and reviewed, as well as finalized. Moving forward without the necessary scientific information will mean damage will be done too late to avoid, reduce, or mitigate the harm to wildlife and the marine ecosystem.
- The National Oceanic and Atmospheric Administration (NOAA) and National Marine Fisheries Service (NMFS) are charged under the Magnuson-Stevens Fishery Conservation and Management Act to protect important habitats of federally managed marine and anadromous fish species, including by protecting Essential Fish Habitat. It appears the repeated requests by this federal agency have been ignored or not fully complied with as evidenced in a NOAA/NMFS March 29, 2021<sup>5</sup> letter:

*“As we discussed in our May 27, 2020, letter to you, we have found that the existing Bureau of Ocean Energy Management (BOEM) benthic survey guidelines for collecting acoustic and benthic data across a lease area **have not been applied consistently and are inadequate** to ensure the collection of sufficient site-specific baseline data for our consultations. While your guidelines state that consultation with our agency is recommended prior to conducting these surveys, applicants have not consistently done so and, as a result, **our recommendations have not been incorporated consistently across all projects**. We hope that these recommendations will help to alleviate that inconsistency.*”

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<sup>4</sup> State of the Science Workgroups, State of the Science Workshop on Wildlife and Offshore Wind Energy 2020: Cumulative Impacts, [2020 State of the Science Workshop Work Groups | ETWG \(nyetwg.com\)](https://www.nyetwg.com/).

<sup>5</sup> March 29, 2021 Letter from Louis A. Chiarella, Assistant Regional Administrator for Habitat Conservation, National Oceanic and Atmospheric Administration, National Marine Fisheries Service to Michelle Morin, Chief, Environmental Branch, Office of Renewable Energy Programs, Bureau of Ocean Energy Programs, RE: “Updated Recommendations for Mapping Fish Habitat,” available at [Mappings Recs FINAL \(squarespace.com\)](https://www.squarespace.com/).

*The attached updated document provides additional information for each step in the mapping process, includes details on sampling frequency, and incorporates recommendations for mapping inshore habitats, such as submerged aquatic vegetation. In addition, as we have discussed with your staff, we understand that in many cases, benthic sampling is conducted concurrently with the collection of acoustic data. However, **this method is not consistent with standards for habitat mapping**. We strongly recommend that you work with the developers to ensure that they use the 2 acoustic data to focus and refine additional, targeted benthic sampling to characterize habitat delineations. Incorporating these recommendations will provide the level of accurate and precise baseline habitat data necessary for an efficient and effective consultation process.”<sup>6</sup>*

The letter continues:

*“We encourage BOEM and developers to meet with us early in the process, prior to developing benthic survey plans, to facilitate an understanding of our resource concerns and information needs for the consultation process.”<sup>7</sup>*

Enclosed in the letter is NMFS’ “Recommendations for Mapping Fish Habitat” document. The fact that the agency must make repeated efforts to obtain cooperation and compliance by applicants and even BOEM is unacceptable and is evidence of a reckless approach by BOEM in OSW development.

- A study included as a reference for base-line assessment conducted for the New Jersey Department of Environmental Protection’s (NJDEP) on offshore wind was completed in July 2010 – over 13 years ago. These studies are out-dated. It is also unlikely that they would meet the NMFS’s Recommendations for Fish Habitat assessments.
- Sean Hayes, PhD, NOAA’s Chief of Protected Species, alerted BOEM’s Lead Biologist in a letter dated May 13th, 2022, that “The development of offshore wind poses risks to these [protected] species” and that “these risks occur at varying stages including construction and development and include **increased noise, vessel traffic, habitat modifications**”<sup>8</sup> (emphasis added).
- A recent Rutgers University Work Group report summarizing the findings from scientific experts convened by the State of New Jersey to evaluate the state of the science on offshore wind concluded, “The pace of offshore wind development is faster than the pace of fisheries science.”<sup>9</sup>
- A presentation at a January 12, 2023, symposium at Rutgers University states that “several serious problems must be overcome” with regard to materials for offshore wind development. Further, “millions of dollars of materials comprise an

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<sup>6</sup> March 29, 2021, Letter from Louis A. Chiarella, Assistant Regional Administrator, NMFS to Michelle Morin, Environmental Branch Chief, BOEM, at 1-2 (emphasis added).

<sup>7</sup> See *id.*, at 2.

<sup>8</sup> Letter from Sean A. Hayes, PhD, Chief of Protected Species, NOAA NEFSC, to Brian R. Hooker, Lead Biologist Bureau of Ocean Energy Management, Office of Renewable Energy Programs, dated May 13, 2022.

<sup>9</sup> Final Report Partners in Science Workshop: Identifying Ecological Metrics and Sampling Strategies for Baseline Monitoring During Offshore Wind Development Authors: Joseph Brodie, Ph.D. (RUCOOL) Josh Kohut, Ph.D. (RUCOOL) Douglas Zemeckis, Ph.D. (NJAES), September 8, 2021.

OSW generator (OSWG),” and “wind energy generator manufacturing generates more carbon dioxide than they avoid.” Further, the presenter stated that “wind energy generator materials are not recyclable,” and “wind energy materials are not inexpensive to manufacture.” The presenter noted that “materials are in scarce supply” and “the first generation of OSWGs deplete all magnet mineral sources.” Finally, the presentation showed that “no extraction technologies [exist] for the next generation of minerals.”<sup>10</sup> All of these statements are concerning within the context of such massive plans for offshore wind energy development in this region, and beyond.

- It is clear that the monitoring and response systems in place to ensure marine protections are insufficient or not functioning even during pre-construction activities. The current unprecedented wave of whale deaths along the NY/NJ coastline is an example. In less than 40 days, seven dead whales – all endangered or protected species – washed-up on New York and New Jersey beaches. This incident highlighted the fact that there is a lack of clear, transparent, and inclusive monitoring regarding the current OSW activities by federal and state agencies and a lack of standardization for responses that can determine potential links to OSW activities. Absent such systems, there is deniability by the OSW industry and responsible suspicion by a concerned public.
- It is clear the state of knowledge and science on the impacts to the marine ecosystems from one, or in this instance a double-wide project, is lacking. Knowledge on cumulative impacts and consideration of the 11 currently proposed projects is non-existent.

Thus, without the knowledge of marine life and potential causes for harm, BOEM lacks the science to determine how effects and impacts can be avoided, reduced or mitigated, and therefore bad decisions are likely.

### ***Fast-Tracking of Offshore Wind***

While the studies and baseline information on offshore wind impacts is profoundly lacking, federal and state officials are fast-tracking processes and changing regulations to quickly advance offshore wind energy development off the coast of New York and New Jersey, and beyond. This is leading to a lack of good government and due diligence to protect public interest and the environment. The federal fast-tracking initiative “Fast 41” created a new governance structure, set of procedures, and funding authorities to advance the federal environmental review and authorization process for covered infrastructure projects. All of the current proposed offshore wind projects off the NY/NJ coast, including Empire Wind 1 and 2, are listed as “FAST-41” projects, giving these projects the green light to advance quickly. The federal agreements and initiatives designed to fast-track and streamline large projects essentially make it easier for private companies to control and develop our public resource: the ocean. In short, these agreements and initiatives violate the federal government’s obligation to protect offshore resources under the public trust, especially in the form of limiting due process. Racing quickly and carelessly through these processes will prove devastating to marine life, with serious repercussions for onshore communities as well. In addition, at the state and local levels, New

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<sup>10</sup> Rutgers University Offshore Wind Energy Symposium, “Lightning Talks Session 1,” Slide 11, January 12, 2023, [https://osw.rutgers.edu/wp-content/uploads/sites/930/2023/01/OSW-Symposium\\_PM-lightning-session-1.pdf](https://osw.rutgers.edu/wp-content/uploads/sites/930/2023/01/OSW-Symposium_PM-lightning-session-1.pdf).

Jersey passed a law at the state level limiting local government input on the placement of offshore wind infrastructure in their communities.

Further, even with these and other extreme measures to expedite permitting of projects, it is apparently not fast enough for the Biden Administration. This past week, the U.S. Department of Interior announced forthcoming regulations to overhaul offshore wind regulations to “streamline ‘burdensome’ processes for wind farm deployment.”<sup>11</sup> The new regulations would include specific measures such as:

*eliminating unnecessary requirements for deployment of meteorological buoys, increasing survey flexibility, improving the project design and installation verification process and establishing a public Renewable Energy Leasing Schedule...[as well as] reforming BOEM’s energy auctions, tailoring financial assurance instruments and clarifying safety management system regulations.*<sup>12</sup>

Also, the race to have the turbines first deployed is being driven by new information that suggests “wind theft” will be a problem for offshore wind energy facilities. Researchers note:

*no regulatory mechanism for resolving cross-border disputes over wind resources...[and in] the absence of coordination, wind theft could easily prompt legal disputes between wind farm operators, or between coastal states. There is real money at stake, since wind farms cost billions to build and are financed with an expectation that they will produce a specific amount of power. When they produce less power than planned, the levelized cost of energy for the consumer goes up, and the economic competitiveness of the wind farm goes down.*<sup>13</sup>

Moreover, “the research team warned that this could also lead to a ‘rush to the water,’ in which coastal states expedite wind installations in order to get towers up before other states lay claim to wind resources. Indeed, the federal government is also working to expedite offshore wind development, and states including New York and New Jersey have passed laws to limit local governments from objecting to onshore infrastructure related to offshore wind development. Thus, combining Empire Wind 1 and 2 in the same DEIS and application process, new federal regulations governing offshore wind energy development, and state actions to fast-track offshore wind without baseline information and impacts are all forms of fast-tracking that can adversely impact the resources federal and state agencies are charged with protecting.

## **II. Environmental Impacts from Offshore Wind Development**

The NY/NJ Bight is rich with diverse species and extraordinary natural features. Species diversity include over 30 species of whales and dolphins, including the endangered Northern Atlantic right whale; 5 species of sea turtles; 300 species of fish; 350 species of birds; 4 species

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<sup>11</sup> “US plots offshore wind regulations overhaul,” Renewables, January 13, 2023. As seen 1/17/2023, <https://renews.biz/83101/us-plots-offshore-wind-regulations-overhaul/>.

<sup>12</sup> See *id.*

<sup>13</sup> “Offshore ‘Wind Theft’ Could Prompt Legal Conflicts Between Developers,” The Maritime Executive, January 12, 2023, <https://www.maritime-executive.com/article/offshore-wind-theft-could-prompt-legal-conflicts-between-developers>

of seals; hundreds of invertebrates<sup>14</sup>, and other species; and 20 threatened and endangered species. In fact, “Equinor Wind notes that 39 marine mammals and 5 sea turtles are known to occur within the waters of the NY Bight and the lease area. All 39 marine mammals are protected by the MMPA, and some are protected by the ESA or NY State Law.”<sup>15</sup> Equinor should acknowledge those species protected by New Jersey State Law as well since the projects are located just 19 miles from New Jersey’s coast.

From pre-construction to decommissioning (conceptual decommissioning according to the DEIS, there are offshore, nearshore, and onshore environmental impacts from the Proposed Action. These impacts, including cumulative, include those to fish, benthic species, marine mammals, birds, bats, as well as water quality. Further, there are impacts on navigation and to marine ecosystems and coastal resources.

Many species in the waters and migratory corridors surrounding and within the project area could be vulnerable to interruptions in foraging, migration, or other effects of the foundations, cables, and all submerged gear. With these diverse marine resources and wildlife in mind, the ecological and socioeconomic impacts to include, assess, and address in Empire Wind’s EIS are described in the following sections.

### ***Impacts to Marine Ecosystems***

The NY/NJ Bight experiences intense ocean mixing, called a “Cold Pool” effect, that stimulates massive phytoplankton blooms central to the structure of all NY/NJ Bight ecosystems. Due to its relative warmth, heavy flows of freshwater and inland nutrients from the Hudson River, and unique bathymetry, the NY-NJ Bight holds rich habitat for whales and other species. Ocean currents wash over these bottom features and stir up nutrients that are absorbed by phytoplankton. In essence, the NY/NJ Bight has unique features that are ideal for a vast variety of ocean life, ranging from deep sea corals to over 300 fish species.<sup>16</sup>

The Cold Pool in the Mid-Atlantic Bight supports some of the richest ecosystems and fisheries in the nation, including the most profitable shellfish fisheries and “second-most lucrative single-species fishery, sea scallops, in the western Atlantic.”<sup>17</sup> The Bight is also vital to the migratory patterns of many different species, ranging from deep sea corals to invertebrates.<sup>18</sup> The Atlantic sea scallop (*Placopecten magellanicu*), Atlantic surfclam (*Spisula solidissima*), and

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<sup>14</sup> Hutchison *et al.*, The Interaction Between Resource Species and Electromagnetic Fields Associated with Electricity Production by Offshore Wind Farms, 96 *Oceanography* Vol. 33, No. 4 (December 2020).

<sup>15</sup> Bureau of Ocean Energy Management. *Empire Offshore Wind Draft Environmental Impact Statement Volume 1*, November 2022, page F-13.

<sup>16</sup> New York Ocean Action Plan, Department of Environmental Conservation (2016-2026), available at [https://www.dec.ny.gov/docs/fish\\_marine\\_pdf/nyoceanactionplan\\_final.pdf](https://www.dec.ny.gov/docs/fish_marine_pdf/nyoceanactionplan_final.pdf)

<sup>17</sup> Travis Miles, Josh Kohut, and Daphne Munroe *et al.*, Could federal wind farms influence continental shelf oceanography and alter associated ecological processes? A literature review, Rutgers University and Science Center for Marine Fisheries (SCEMFIS) (Dec. 1, 2020), available at <https://scemfis.org/wp-content/uploads/2021/01/ColdPoolReview.pdf>

<sup>18</sup> New York Ocean Action Plan, Department of Environmental Conservation (2016-2026), available at [https://www.dec.ny.gov/docs/fish\\_marine\\_pdf/nyoceanactionplan\\_final.pdf](https://www.dec.ny.gov/docs/fish_marine_pdf/nyoceanactionplan_final.pdf)



ocean quahog (*Arctica islandica*) habitat along the Mid-Atlantic Bight is consistently among the most profitable fisheries in the world.<sup>19</sup>

Further, water column stratification could affect a number of species vital to fisheries and local ecosystem health, including summer flounder.<sup>20</sup> The health of habitat for these and other species is closely associated with Mid-Atlantic Ocean conditions. Further, increased mortality and reduced reproductive success of shellfish and other species has been associated with warming-induced shifts to the stratification of cycles in oceanographic conditions.<sup>21</sup> This indicates that further alterations to ocean mixing may lead to changes in vital species activities across the board. Turbine arrays may directly or indirectly affect seasonal processes that dictate water column nutrient transfer among ecosystems and species.<sup>22</sup>

Building arrays of offshore wind turbines off the Mid-Atlantic states could have effects on the annual cycle of ocean water temperatures that are critical to the region's fish and shellfish habitat. In addition to impacts on the Atlantic cold pool and the high regional fishery productivity that it supports, heat absorbed by Ocean Wind 1's steel monopoles will warm the surface water and water column, including local benthic areas, and this may extend to cumulative effects from the heat dissipated by the entire 98-turbine array.<sup>23</sup> This would have significant and serious impacts on the ecosystem, including cumulative impacts.

The DEIS fails to fully assess the impacts of these combined projects to these unique ecosystems and therefore cannot avoid, reduce, or mitigate effects that threaten the sustainability of marine resources.

The combined projects are in close proximity to the New York/New Jersey Estuary, which is nationally recognized and protected. The estuary flows into the now flooded continuation of the Hudson River known as the Hudson River Canyon area, an additionally protected area, and the largest canyon in the Atlantic Ocean, for which a Marine Protected Area is proposed. These unique marine and geologic features support a dynamic ecosystem which also serves as the gateway to the Hudson River. Construction, operation, and maintenance and associated activities that will occur for many years of the Empire Wind 1 and 2 can substantially disrupt migration of the many species which are dependent on this underwater river to find the path to the estuary waters to complete their life cycles. These include marine, estuarine, and

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<sup>19</sup> National Marine Fisheries Service, 2020: Fisheries of the United States, 2018. U.S. Department of Commerce, NOAA Current Fishery Statistics No. 2018.

<sup>20</sup> T.M. Grothues and E. A. Bochenek, 2011: Fine scale spawning habitat delineation for winter flounder (*Pseudopleuronectes americanus*) to mitigate dredging effects –Phase II (Cycle 8), 2/2011.

<sup>21</sup> D. A. Narvaez, D. M. Munroe, E. E. Hofmann, J. M. Klinck, and E. N. Powell, 2015: Long-term dynamics in Atlantic surfclam (*Spisula solidissima*) populations: the role of bottom water temperature. *Journal of Marine Systems*, 141, 136-148.

<sup>22</sup> Travis Miles, Josh Kohut, and Daphne Munroe *et al.*, Could federal wind farms influence continental shelf oceanography and alter associated ecological processes? A literature review, Rutgers University and Science Center for Marine Fisheries (SCEMFIS) (Dec. 1, 2020), available at <https://scemfis.org/wp-content/uploads/2021/01/ColdPoolReview.pdf>

<sup>23</sup> Travis Miles, et al, Could federal wind farms influence continental shelf oceanography and alter associated ecological processes? A literature review., SCEMFIS (2020), <https://scemfis.org/wpcontent/uploads/2021/01/ColdPoolReview.pdf>

anadromous fishes. Creating noise, electromagnetic fields, increased turbidity, and additional negative impacts caused by OSW activities can undermine native fish populations. This includes endangered species such as the anadromous Shortnose and Atlantic Sturgeon, as well as other species that are at risk, including the American eel.<sup>24</sup> Other species that would be threatened by limited access to the estuary include the iconic striped bass, winter flounder, and fluke. Importantly, critical anadromous fishes such as river herrings and menhaden are essential to the survival of many species, including whales. As essential prey, if these fish get blocked or frightened from going into the estuary to spawn, it will be devastating to the entire ecosystem.

The DEIS fails to adequately describe and address the multiple impacts from the project and to identify measures to avoid, reduce, or mitigate harm to these marine resources.

### ***Impacts to Marine Mammals***

The NY/NJ Bight is habitat for numerous marine mammals, many of which are threatened or endangered. Whales, dolphins, porpoises and seals can be found in the Bight, including the endangered North Atlantic Right Whale, the Blue Whale and the Sperm Whale.<sup>25</sup> According to whale detection data, as presented by Wildlife Conservation Society in collaboration with the applicant Equinor and Woods Hole Oceanographic Institute, the number of whales detected in the region of Empire Wind 1 and 2 is extraordinary. Indeed, 961 detections of whales were observed to date in 2023.<sup>26</sup> COA is concerned about the impacts that this project will have upon these animals. Indeed, COA appreciates the collaboration and the publically available data as has highlighted the incredible diversity, quantity and activity of whales in this region, including the North Atlantic Right Whale.

Thus the DEIS must ensure the protection of these mammals. It seems implausible that construction of Empire Wind 1 and 2 could co-exist with the diversity, quantity and activities of whale activity. Indeed, the DEIS fails to provide evidence of a symbiotic existence.

Some more specific deficiencies in the Draft EIS review of marine mammal impacts include:

- (1) **Noise Pollution from Pre-construction and Construction activities:** Primary noise-generating activities during construction have been identified as impact pile driving during wind turbine foundation installation, vibratory pile driving during cofferdam installation and bulkhead repair, and impact pile driving of small piles used for bridge foundations and for temporary HDD “goal posts.”
  - a. Studies have shown that construction noise related to offshore wind farms (especially pile driving) may cause behavioral changes and negative impacts on seals, porpoises, dolphins, and whales.
  - b. Research on Beaked Whale strandings in the Mariana Archipelago indicate the strandings may be associated with sonar activities. The researchers note that “to investigate the cause of death in sonar-associated strandings, they need to be

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<sup>24</sup> Nation Estuarine Research Reserve System, NOAA Office of Coastal Management, “Transferring Knowledge to Expand American Eel Monitoring,” last modified 7/13/2022, <https://coast.noaa.gov/estuaries/news/american-eel-monitoring.html>.

<sup>25</sup> NYSDEC, Marine Mammals of New York (<https://www.dec.ny.gov/animals/108573.html>)

<sup>26</sup> Wildlife Conservation Society, “Whale Detections and Graphics,” as seen 1/17/2023, <https://whalesofnewyork.wcs.org/Explore-the-Data/Analysis>

reported quickly. Skilled technicians need to be available to promptly examine carcasses before they begin to decompose.” The researchers state, “For many species of animals, including humans, occasional and unpredictable noise is often perceived as a threat. The research found that the likelihood that the strandings were coincidental is less than 1 percent. Also, disruption effects have been measured up to 20 miles from the construction site.

- c. A report regarding acoustic data in the project area is referred to in the DEIS, however the footnote in the DEIS states the results would be reported in June 2022. Where and what are the results of the acoustics report and how will it impact the information being reviewed in this DEIS?

## **(2) Noise from Operation**

- a. This includes both the noise from the turbines themselves, which emit a constant low-frequency noise, and also the increased vessel traffic from operations and maintenance (O&M) activities.
- b. The operational noise stems from vibrations in the tower caused by the gearbox mesh in addition to the generator, causing underwater noise.

## **(3) Vessel Strikes**

- a. Increased vessels and activities by these vessels may result in increased strikes with marine mammals, such as the critically endangered Northern Atlantic right whale. This includes from construction and O&M.
- b. There is also concern that the wind farms will displace other marine commerce and transit funneling those vessels into narrower lanes which may increase strikes.
- c. The COP EIS must account for competing uses and navigation impacts of offshore wind facilities. With increased or altered traffic patterns, the risk of collisions and spills of gas, oil, and chemicals may increase, with negative effects to water quality and marine life. Exposure to oil and other hydrocarbons from oil spills can drastically affect marine mammals and ecosystems. Further, vessel strike mitigation is vital to reducing collision between both commercial and noncommercial vessels and North Atlantic right whales.<sup>10</sup> The COP EIS should also consider spacing between offshore wind turbines and high-traffic areas through either increased spacing or based on consultation with the National Marine Fisheries Service and the United States Coast Guard.

## **(4) More Protective Consideration of the North Atlantic Right Whale**

- a. According to the NMFS not one NARW can be lost without further imperiling the species. This highly endangered species is exceptionally vulnerable to additional barriers in its migratory patterns and prime foraging habitat. While BOEM requires mandatory minimization procedures and marine mammal observers for construction and operation of offshore wind projects, it is not enough. Current minimization measures, including passive acoustic monitoring (PAM) via glider<sup>27</sup> do not account for when marine mammals are not vocalizing. Right whales

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<sup>27</sup> Moscrop *et al.*, Vocalization rates of the North Atlantic right whale, *J. CETACEAN RES. MANAGE.* 3(3):271–282, 2001, available at [https://www.researchgate.net/publication/268273193\\_Vocalisation\\_rates\\_of\\_the\\_North\\_Atlantic\\_right\\_whale](https://www.researchgate.net/publication/268273193_Vocalisation_rates_of_the_North_Atlantic_right_whale)

vocalize frequently. But these vocalizations tend to be “irregular and non-repetitive” and based on activity level.<sup>28</sup> Further, it is likely that most known marine mammal mortalities occur via ship-strike.<sup>29</sup> While PAM, marine mammal observers, shut-down procedures, and other mitigation measures can be useful during construction and building spatio-temporal baseline data, there is uncertainty regarding right whale behavior and offshore wind foundations and vessel activity. The COP EIS needs to address this problem.

- (5) **Mitigation measures:** The DEIS states: “Sound levels can be greatly reduced during pile driving activities using sound attenuation devices... The most commonly considered mitigation strategy is the use of bubble curtains.” However, research has found that Bubble curtains do not work for all marine mammals.

Again, while COA recognizes and commends the whale detection buoys and publically available data, the DEIS fails to adequately assess the impacts to marine mammals to ensure survival of the NARW and other marine mammals.

### ***Impacts to Sea Turtles***

Four species of sea turtles can be found in the waters of the NY/NJ Bight: Atlantic green (*Chelonia mydas*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*) and Kemp’s ridley (*Lepidochelys kempii*) turtles (Morreale, S. and Standora E., 1998, 2005). All of these species are either threatened or endangered at the state and federal levels.<sup>30</sup> The impacts to sea turtles are not adequately addressed in this application. While they may not nest here, sea turtles migrate through the project area and can be expected to experience impacts.

Equinor and BP says “there is sufficient marine mammal and sea turtle data to inform spatial planning and support assessments in the COP and IHA applications.”<sup>31</sup> Yet, research shows there is limited information available on the effects of noise on sea turtles, and the hearing capabilities of sea turtles are still poorly understood.<sup>32</sup> Further, “NOAA Fisheries anticipates behavioral response for sea turtles from impulsive sources such as impact pile driving to occur at SPL 175 dB, which has elicited avoidance behavior of sea turtles (Table M-1-3; Blackstock et al. 2018). COA’s concerns about impacts from the Proposed Action on sea turtles include:

- (1) Expert marine scientists do not know the noise impacts on sea turtles. It is important that this information be known and addressed in the Final EIS, if issued.
- (2) The DEIS notes that sea turtles are at risk from impingement, entrainment, as well as capture from the construction and operation of Empire Wind 1 and 2. Impingement and

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<sup>28</sup> See *Id.*

<sup>29</sup> Ship Strikes and Right Whales, Marine Mammal Commission (last accessed 4/28/2012), available at <https://www.mmc.gov/priority-topics/species-of-concern/north-atlantic-right-whale/ship-strikes/>

<sup>30</sup> Summary Report of the New York Bight Sea Turtle Workshop (Jan 30, 2018).

<sup>31</sup> Bureau of Ocean Energy Management. Empire Offshore Wind Draft Environmental Impact Statement Volume 1, November 2022, page F-17. [https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire\\_Wind\\_DEIS\\_Vol1.pdf](https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire_Wind_DEIS_Vol1.pdf)

<sup>32</sup> See *id.*, page M-1-9.

entrainment of sea turtles due to offshore and inshore dredging activities for cable placement as well as port utilization are a possible risk that needs to be avoided.<sup>33</sup>

- (3) Spatial planning to avoid, reduce or minimize harm is implausible as the footprint of the project is predetermined, and turtles utilize the area. Moving turbines within the area will not change the turtles' need for open habitat devoid of obstacles, noise, turbidity and other impacts which will have negative impacts to these endangered species.

The DEIS fails to adequately address impacts to these endangered species.

### ***Impacts on Fish / Benthic Species***

As stated above, the New York/New Jersey Bight has an abundance of diverse fish and benthic species. Also, according to Equinor and BP, "Three federally-listed endangered fish may occur in the lease area: Atlantic salmon (*Salmo salar*); the Atlantic sturgeon (*Acipenser oxyrinchus*); and shortnose sturgeon (*Acipenser brevirostrum*)." The impacts to fish and benthic species from Empire Wind 1 and 2 include, but are not limited to:

#### **(1) Electromagnetic Fields**

- a. Electricity produced at offshore wind farms is usually transmitted to shore through high voltage alternating or direct current cables. The current in these cables creates electric and magnetic fields (EMF). While the electric field generated by the current is isolated within the cable, the magnetic field is measurable around the cable.
- b. Main cables associated with the Empire Wind projects include 375 miles of interarray cables and export cables. The orientation of fish may be impaired by the magnetic fields surrounding electric cables and thus impact migration patterns.
- c. There has been significant concern about the impact on crustaceans and their sensibility to EMF as it can impact their ability to locate food and may cause avoidance or large areas.
- d. Fish species that employ electrical currents for orientation such as sharks and rays, eels and electric fish are the most sensitive. It has been suggested that many such species may be able to detect EMF at a distance over 1,000 ft.

#### **(2) Habitat Change**

- a. Introducing hard substructures into the marine environment creates artificial reefs leading to the settlement of marine organisms in the area. This can be positive, as well as negative. It increases biodiversity but can also potentially introduce new harmful species (including invasive species) and disrupt food chains.
- b. The creation of these large homogenous changes to the sea floor will change the environment and the impact it has on marine life is uncertain but could result in displacement.

#### **(3) Dredging and Ports**

- a. Impacts on benthic species during dredging for cable placement will disrupt benthic species through impingement, entrainment, and capture. In addition,

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<sup>33</sup> See *id.*, page 3.19-12.

“Habitat disturbance and modification associated with dredging may also affect benthic prey species.”<sup>34</sup> Many benthic species represent the base of the marine food chain.

### ***Impacts to Birds***

Various species of birds live, forage, and breed as well as visit the shores of New Jersey and New York on an annual basis, including the Red Knot, a federally threatened migratory bird. The impacts to birds from the Proposed Action include:

- (1) Displacement of Habitat
  - a. Behavioral responses to offshore wind farms may cause birds to avoid previously used habitats. This phenomenon has been dubbed displacement. At Robin Rigg offshore wind farm in Scotland, the monitoring program showed evidence of a decrease in the number of common scoter (*Melanitta nigra*) one year after construction.
- (2) Risk of Collision
  - a. There is concern for birds colliding with wind turbines. This has been a big issue with onshore wind projects, specifically in the middle of the country.
  - b. Weather increases the risk of collision, and the ocean is an area with some of the harshest weather conditions.
- (3) Migration Barriers
  - a. The barrier effect may have a negative impact on birds. The birds’ behavioral avoidance response to the wind farm may lead to detours circumventing the structures, ultimately extending the total flying distance and energy use. This energy loss is critical for birds experiencing other stressing factors to their populations or for those migrating.
  - b. Furthermore, for species such as the common eider (*Somateria mollissima*) the reproductive success is related to the females’ body reserves during the breeding period. By increasing the energy use for common eiders their body mass may drop, thus affecting the breeding output.
  - c. Results from the monitoring programs at Nysted and Horns Rev offshore wind farms in Europe showed that all birds generally avoid wind farms if they block migration pathways. The specific level of avoidance depends on the species with some going further out of their way to avoid the area. Over 50 percent of the birds avoided passing through the wind farms at half a mile to a mile.

### ***Impacts to Water Quality***

The Empire Wind projects will intersect many impaired waterbodies in the NY/NJ Bight. These waterbodies are impaired by PCBs, dioxin, pathogens, and floatables, to name a few, and as pointed out in Table 4.2-1 in the COP. The NY/NJ Harbor region is notorious for toxic chemicals found in benthic sediments. These sediments will be disturbed in the digging and cable-burying process. According to Empire Wind’s COP,

*Despite improvements in water quality, legacy chemicals in the sediments, including mercury, polychlorinated biphenyls (PCBs),*

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<sup>34</sup> See *id.*, page 3.19-22.

*dichlorodiphenyltrichloroethane, and dioxin, still exceed acceptable levels, and these contaminants can be resuspended in the water column during major storm events or from activities such as dredging.*<sup>35</sup>

These pollutants have found their way into the human food chain and have caused numerous species to be subject to fish consumption advisories.<sup>36</sup> COA recommends sediment quality testing be required in the areas identified for cabling to understand how water quality will be impacted by stirring-up sediments to bury cables.

COA is additionally concerned that the project cables will come ashore at the Brooklyn Marine Terminal. This Terminal was previously found to have a cocktail of pollutants at levels exceeding the Effects-Range Low and Median guidelines.<sup>37</sup> PAHs, PCBs, copper, lead, silver, and dioxins compounds were found to bioaccumulate in clams and worms tested in sediment from the Terminal.<sup>38</sup> The cable-burying process will cause suspension of such pollutants at the Terminal and throughout the NY/NJ Bight.

Further, a baseline for water quality is not known for the NY/NJ Bight (Empire Wind COP, 4-48). For instance, “the surface waters along the onshore export and interconnection cable routes have not been monitored, likely due to their small size.” The project areas including cable areas may also have been exposed to previous ocean dumping activities in the region. The Cellar Dirt Sewage Sludge, and Mud Dump sites, and historic garbage and waste dumping activities are all within the potential area of influence. Therefore, how will water quality impacts be measured if there are no baselines? How can there be mitigations if baselines are not known? The EIS must address this lack of baseline data.

### ***Navigation Impacts & Safety Concerns***

In addition to the many potential impacts to wildlife and marine and coastal resources, Empire Wind’s COP EIS should consider the top-down impacts of the increased vessel activity, increased onshore activity, shifts in recreational and commercial ocean uses, and the foundation, cabling, and interconnection infrastructure associated with the project. The Empire Wind DEIS does not adequately consider changing traffic patterns, navigational safety, and port access conflicts. Specifically:

- a. The siting of the Empire Wind project is squeezed in between busy shipping lanes.
- b. One danger is that vessel density – ships operating within the same sea space – would be increased by the funneling effect of constricting traffic between turbine arrays.

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<sup>35</sup> Bureau of Ocean Energy Management, *Empire Offshore Wind: Empire Wind Projects (EW 1 and EW 2) Construction and Operations Plan*, June 2022.  
[https://www.boem.gov/sites/default/files/documents/renewable-energy/Public\\_EOW%20COP\\_v5\\_Volume%201\\_Redacted.pdf](https://www.boem.gov/sites/default/files/documents/renewable-energy/Public_EOW%20COP_v5_Volume%201_Redacted.pdf)

<sup>36</sup> See e.g., [https://www.nj.gov/dep/dsr/Fish\\_Advisories\\_2018.pdf](https://www.nj.gov/dep/dsr/Fish_Advisories_2018.pdf).

<sup>37</sup> May 1, 2000, Letter from Clean Ocean Action to John R. Hartmann, Operations Division Chief, USACE regarding Permit number Buttermilk-00.

<sup>38</sup> See *id.*

- c. There is also concern that the development of these wind projects in close proximity will displace transit corridors and create narrow lanes where vessels are expected to travel. This could lead to increased accidents and spills.
- d. The Port of New York and New Jersey is a massive economic enterprise that is a hub for vessel traffic. There are four container terminals in the port, whose combined volume makes it the largest on the East Coast. Consider these port statistics: 577,649 vehicles • 6.3 million TEUs of containerized cargo • 730,617 cruise ship passengers • 8,596 deep-sea vessel transits • Over 4,000,000 smaller vessel harbor transits.
- e. Another consideration is the speed and agility of large ships maneuvering a small, competitive space. For example, it can take an ultra large 2.5 miles of full astern to brake to a halt.
- f. A large area of the Outer Continental Shelf (OCS) has been leased for offshore wind development without any comprehensive analysis of the fishing industry's need for safe transit or how the installation of large numbers of offshore structures will impact the operations of fishing vessels.
- g. The port imports petroleum, plastics, chemicals, oils and perfumes, pharmaceuticals, and other materials that if spilled into the ocean would be devastating. The port of NY/NJ is the largest U.S. petroleum product port.
- h. Another consideration is the radar shadow effect of rotating turbine blades that can affect navigation radars.
- i. The distance between the sea surface and the lower edge of the blades of the turbines is a significant cause for concern for ships. The height of a Maersk container ship is 240 feet, and a cruise line is 180 feet. These can potentially lead to accidents, especially given the problems with radar.
- j. During operations and maintenance, Empire Wind has committed to "Periodic inspections of offshore Project components, including foundations, scour protection, and submarine export and interarray cables, to verify integrity of the Project components and to confirm adequate burial." The EIS must require a time frame commitment for inspections, such as every 6 months. This is necessary because sediments and sands shift and can expose cables or other infrastructure related to the Empire Wind projects, causing safety hazards.
- k. Hundreds of whales have been documented in the Empire Wind 1 and 2 lease area,<sup>39</sup> leading to increased potential of vessel strikes with the increased number of vessels related to offshore wind in the geographic area of Empire Wind and to and from associated ports.
- l. Many recreational, commercial and whale watching boats also utilize the area as described more below.

It is the busiest port on the eastern shore of the Atlantic Ocean. It is an irreconcilable challenge to build a massive navigational hazard. The DEIS fails to fully address this critical issue to ensure safety of marine life, human life, and economic uses of the area.

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<sup>39</sup> Wildlife Conservation Society, "Whale Detections and Graphics," as seen 1/17/2023, <https://whalesofnewyork.wcs.org/Explore-the-Data/Analysis>



## ***Impacts from Hurricanes***

COA has repeatedly observed that offshore wind technical challenges in the USA are different from those in other European countries. One of the biggest challenges that has not been given adequate attention is the occurrence of hurricanes and its increasing frequency and severity along the Atlantic Coast in recent years. The risk of damage from individual hurricanes and nor'easters as well as multiple storms over time is concerning. Wind turbines are vulnerable to hurricanes as the maximum wind speeds in those storms can exceed the design limits of wind turbines. This study showed that all categories of hurricanes will impact wind turbines, and impacts are more serious and significant with higher-category hurricanes. The damage caused by Category 3, 4, and 5 hurricanes is important for offshore wind development. In the United States 9 of the 14 states on the Atlantic Coast have been struck by a Category 3 or higher hurricane between 1856 and 2008 (Rose et al., 2012). In fact, this map by the National Oceanic and Atmospheric Administration (NOAA) shows that container ports along almost the entire East Coast of the United States is a high risk for hurricanes.<sup>40</sup> In particular, the port facilities in Brooklyn will be particularly vulnerable to hurricane impacts. It is also important to note that many hurricanes in the Atlantic Ocean follow an offshore path, which can place OSW power plants in more direct contact with high winds and waves. In addition, ships have less control in the ocean during hurricanes and major storms making accidents more likely, especially when factoring the radar shadow effects.

State and federal agencies, including the NYC Office of Emergency Management and NOAA, acknowledge the growing threat from these severe hurricane and Nor'easter events. A 2020 whitepaper<sup>41</sup> clearly outlines that more intense hurricanes will make landfall and storm surges will be more severe; it suggests that an extreme surge event in today's climate may be twice as likely to happen 30 years from now. By 2050, low lying areas in NY Boroughs could be affected by severe flooding (Bhargava, 2017). The U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy recommended that existing models to predict and plan for turbine loading in extreme conditions need to be refined to tackle these challenges.<sup>42</sup> However, the proposed action or its alternatives does not adequately address this critical and urgent need and generalizes that impacts are highly unlikely. This claim is far from accurate and needs scientific evidence to support this foregone conclusion. Additionally, the DEIS fails to describe a resiliency plan for handling the impacts to structures, operation, and maintenance activities in section 2.3.<sup>43</sup>

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<sup>40</sup> NOAA, Map, "Risk of Hurricanes for Global Container Ports, 2019," as seen 1/17/2023 at <https://portconomicsmanagement.org/wp-content/uploads/Map-Hurricane-Container-Ports.pdf>

<sup>41</sup> "Quantifying the Impact from Climate Change on U.S. Hurricane Risk" by Roger R. Grenier, Ph.D., Peter Sousounis, Ph.D., John Schneyer, and Dan Raizman, 2020. [https://www.air-worldwide.com/siteassets/Publications/White-Papers/documents/air\\_climatechange\\_us\\_hurricane\\_whitepaper.pdf](https://www.air-worldwide.com/siteassets/Publications/White-Papers/documents/air_climatechange_us_hurricane_whitepaper.pdf)

<sup>42</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, "Wind Turbines in Extreme Weather: Solutions for Hurricane Resiliency," as seen 1/17/2023, <https://www.energy.gov/eere/articles/wind-turbines-extreme-weather-solutions-hurricane-resiliency>.

<sup>43</sup> Bureau of Ocean Energy Management. Empire Offshore Wind Draft Environmental Impact Statement Volume 1, November 2022, page 2-36, page 84/510, [https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire\\_Wind\\_DEIS\\_Vol1.pdf](https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire_Wind_DEIS_Vol1.pdf).

Additionally, hurricanes could also result in other incidents including the spillage or release of harmful chemicals that could adversely harm the marine environment, which has not been studied in depth. The DEIS generalizes and underplays the economic and environmental consequences of hurricanes in the Geographic Analysis Area and states that:

*Hurricanes that travel along the coastline of the eastern U.S. have the potential to affect the Lease Area with high winds and severe flooding. If severe weather caused a spill or release, the actions outlined above would help reduce potential impacts. Severe flooding or coastal erosion could require repairs, with impacts associated with repairs being similar to those outlined in Chapter 3 for construction activities. While highly unlikely, structural failure of a WTG (i.e., loss of a blade or tower collapse) would result in temporary hazards to navigation for all vessels, similar to the construction and installation impacts.<sup>44</sup>*

The DEIS also does not clearly state what simulation tools were used, the efficacy of simulations, as well as what were the findings.

Therefore, the DEIS fails to adequately address these issues, threats, and impacts and thus does not provide measures to avoid, reduce or mitigate these serious concerns.

### ***Impacts to Competing Ocean Uses***

The NY/NJ Bight is already home to numerous industries and activities that support significant economic and social values, including commercial fishing, commercial shell-fishing, recreational fishing, recreational boating, water recreation, whale-watching, and shore tourism. For example, the summers of 1987 and 1988 provide stark evidence of water quality's link to state and local economies. During this time, raw sewage, medical waste, and dead and dying dolphins washed ashore in the bi-state region. When all indirect effects of the 1988 event are included, losses were estimated at \$820.7 million to \$3.8 **billion** [in 1987\$].<sup>45</sup>

Today, specific economic values of the marine resources of the NY/NJ Bight continue to sustain the region; indeed, they are the backbone of the region's economy:

- **Commercial Fishing:** In 2015, according to the National Marine Fisheries Service, NJ's commercial fishermen harvested over 148,504,000 pounds of fish which sold for nearly \$166,000,000.<sup>46</sup> Overall, NJ's commercial fishing industry generates \$6 billion. In New York, the commercial harvest was over 24,560,000 pounds and valued at \$11,140,000<sup>47</sup>. NJDEP states that New Jersey is the nation's leading supplier of surf clams and ocean quahogs. Cape May, NJ has the second largest commercial fishing dock on the east coast,

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<sup>44</sup> Potential Impacts from a Worst Case Discharge from an United States Offshore Wind Farm, by CDR Tim Gunter, Office of Marine Environmental Response, 2014 International Oil Spill Conference, <https://tethys.pnnl.gov/sites/default/files/publications/Gunter%202014.pdf>

<sup>45</sup> Ofiara, Douglas D. and Bernard Brown, Marine Pollution Events of 1988 and Their Effect on Travel, Tourism, and Regional Activities in New Jersey, referenced as an Invited Paper presented at the Conference on Floatable Wastes in the Ocean: Social Economic and Public Health Implications. March 21-22, 1989, at SUNY- Stony Brook.

<sup>46</sup> [https://www.st.nmfs.noaa.gov/Assets/commercial/fus/fus15/documents/02\\_Commercial2015.pdf](https://www.st.nmfs.noaa.gov/Assets/commercial/fus/fus15/documents/02_Commercial2015.pdf)

<sup>47</sup> See *Id.*

and the 5<sup>th</sup> largest in the nation.

- **Recreational Fishing:** NJ and NY's recreational fishermen took over 7.5 million trips and generated \$2.7 billion. In 2003, the American Sportfishing Association estimated that recreational fishing brought \$724,634,011 in retail sales with a total multiplier effect<sup>48</sup> of \$1,363,259,834 to the state of New Jersey.<sup>49</sup> Recreational fishing accounts for 12,021 jobs in New Jersey, with salaries and wages totaling \$328,359,434.<sup>50</sup> The sport generates \$7,750,295 in New Jersey income taxes and \$56,339,961 in federal income taxes.<sup>51</sup> The same report indicates that recreational fishing in New York generated \$1,116,861,525 in retail sales with a total multiplier effect of \$2,011,716,251.<sup>52</sup> The sport accounts for 17,083 jobs and \$503,486,172 in salaries and wages in New York.<sup>53</sup>
- **Tourism:** According to the NJ Department of Commerce, travel and tourism in New Jersey contributes \$44 billion in economic activities each year and generates over 517,000 direct and indirect jobs (the third largest private sector employer) and keeps growing.<sup>54</sup> New York's coastal economy is valued at \$20 billion<sup>55</sup>.
- **Surfing:** A report conducted in 2011 by Surfrider found that NJ and NY accounted for over \$3.8 million, and that NJ's surfing economic impact is twice NY's.<sup>56</sup>
- **Natural Capital:**<sup>57</sup> According to the New Jersey Department of Environmental Protection, the ecological goods and services provided by the state's marine ecosystems equate to \$5.3 billion/year for estuaries and tidal bays and \$389 million/year for other coastal waters [in 2004\$], including the coastal shelf out to the three-mile limit. New Jersey beaches provide the highest value per acre of any other habitat by far, with an

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<sup>48</sup> "Multiplier" is defined as "An effect in economics in which an increase in spending produces an increase in national income and consumption greater than the initial amount spent. For example, if a corporation builds a factory, it will employ construction workers and their suppliers as well as those who work in the factory. Indirectly, the new factory will stimulate employment in laundries, restaurants, and service industries in the factory's vicinity," *The New Dictionary of Cultural Literacy*, Third Edition, Houghton Mifflin Company, 2002. Available at [Answers.com](http://www.answers.com/topic/multiplier-effect) 26 Oct. 2005. <http://www.answers.com/topic/multiplier-effect>.

<sup>49</sup> American Sportfishing Association, Fishing Statistics, Economic Impacts of Fishing available at [http://www.asafishing.org/asa/statistics/economic\\_impact/state\\_allfish\\_2003.html](http://www.asafishing.org/asa/statistics/economic_impact/state_allfish_2003.html) (last visited July 14, 2005).

<sup>50</sup> See *Id.*

<sup>51</sup> See *Id.*

<sup>52</sup> American Sportfishing Association, Fishing Statistics, "Economic Impacts of Fishing" available at [http://www.asafishing.org/asa/statistics/economic\\_impact/state\\_allfish\\_2003.html](http://www.asafishing.org/asa/statistics/economic_impact/state_allfish_2003.html) (last visited July 14, 2005).

<sup>53</sup> See *Id.*

<sup>54</sup> The Economic Value of Tourism in New Jersey, Tourism Satellite Account, Calendar Year 2016, Tourism Economics, An Oxford Economics Company, <https://www.visitnj.org/sites/default/master/files/2016-nj-economic-impact.pdf>

<sup>55</sup> National Ocean Economics Program.

<sup>56</sup> *A Socioeconomic and Recreational Profile of Surfers in the United States A report by Surf-First and the Surfrider Foundation* by G. Scott Wagner, Chad Nelsen, and Matt Walker, July 2011 [http://public.surfrider.org/files/surfrider\\_report\\_v13.pdf](http://public.surfrider.org/files/surfrider_report_v13.pdf)

<sup>57</sup> "Natural Capital" is defined by the NJ Department of Environmental Protection as "the economic value of goods and services provided by various naturally-occurring assets over an extended period, a period that for some assets is essentially perpetual on any meaningful human time scale."

ecoservices value of \$330 million/yr.<sup>58</sup> New Jersey did not include the economic value of the fish and shellfish present in these ecosystems, nor the important and valuable resources of the OCS, such as the reef and canyon systems, in their analysis. Similar values can be expected for both the northern and southern shores of Long Island, but actual dollar values are not readily available as New York has not conducted a formal analysis of the ecosystem services of their natural resources.

However, all these revenues rely directly on a healthy marine environment and would appear to be highly incompatible with the industrialization of the NY/NJ Bight.

The DEIS does not adequately address the impacts and measures to avoid, reduce, or mitigate harm to these important clean ocean activities to ensure they are sustained.

### ***Coastal Development and Industrialization***

Another area of consideration is the onshore infrastructure necessary to manage this new coastal-dependent industry of offshore wind energy development. Each offshore wind energy project will need operation and maintenance facilities. Further, there is the need for larger manufacturing centers and marshaling ports. As such, COP EIS must include the following for operation and maintenance:<https://porteconomicsmanagement.org/pemp/contents/part6/port-resilience/hurricanes-global-container-ports/>

- a. Type of maintenance approach (ship-based, air support);
- b. Land use requirements;
- c. Proximity to the offshore wind farm;
- d. Storage capabilities for spare components;
- e. Wharf area required bearing capacity;
- f. Ship depth requirements; and
- g. Secondary impacts from influx of workers and support services.

Specifically, COA advocates that the COP-EIS include land-based facilities that:

1. reduce the overall footprint;
2. are climate resilient;
3. are as energy efficient as possible; and
4. sited in environmentally friendly locations.

The COP appendices focusing on port, conditions, operations, and maintenance activities are largely redacted. The COP EIS must be more transparent and require disclosure while understandably protecting sensitive legal and financial information.

Moreover, the impact of sea level rise and increased storm activity including hurricanes leave onshore areas vulnerable and these critical risk assessments were not considered. This is

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<sup>58</sup> Valuing New Jersey's Natural Capital: An assessment of the economic value of the state's natural resources. April 2007 State of New Jersey New Jersey Department of Environmental Protection  
<http://www.state.nj.us/dep/dsr/naturalcap/>

especially important because this region is predicted to be more vulnerable to storms. For example,

*About 38% of all the global container port activity occurs in areas subject to high hurricane risk. Coastal China, South Korea, Japan, and the American Eastern Seaboard are the most potentially disrupted areas with high container port activity levels. In addition to disrupting and stopping port activity, hurricanes can damage port equipment and superstructures. Yard activity can be disrupted with toppled containers and flooder areas, damaging cargo and equipment. Connections with the hinterland can also be damaged, such as with flooded road and rail connectors. On some acute occasions, port infrastructure such as piers can be damaged. A container port usually takes two to three days after a category 1 hurricane to resume full operations. If a container port is a transshipment hub, the disruptions caused by a hurricane can be extensive for the schedule integrity of maritime shipping networks and could favor the use of alternative hubs.<sup>59</sup>*

The DEIS does not adequately identify these required and connected onshore facilities and activities and, therefore, it is incomplete.

#### **“Incomplete & Unavailable Information” - Appendix D**

The DEIS presents serious concerns with foregone conclusions regarding the Analysis of Incomplete or Unavailable Information in Appendix D. The DEIS states:

*When incomplete or unavailable information was identified, BOEM considered whether the information was relevant to the assessment of impacts and essential to its analysis of alternatives based upon the resource analyzed. If essential to a reasoned choice among the alternatives, **BOEM considered whether it was possible to obtain the information and if the cost of obtaining it was exorbitant. If it could not be obtained, or if the cost of obtaining it was exorbitant, BOEM considered the best available scientific information and applied generally accepted scientific methodologies to inform the analysis.**<sup>60</sup> (emphasis added)*

This, in itself, is questionable because it is not clear how the framework for “best available scientific information” has been developed to determine impacts at local and regional levels. Also, how does BOEM determine “exorbitant” costs for finding the most appropriate and relevant information that will help to minimize adverse impacts?

Sub-section D-1, “Incomplete or Unavailable Information Analysis for Resource Areas” acknowledges the following limitations to date:

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<sup>59</sup> Port Economics, Management and Policy, “Risk of Hurricanes for Global Container Ports, 2019,” as seen 1/17/2023,

<https://porteconomicsmanagement.org/pemp/contents/part6/port-resilience/hurricanes-global-container-ports/>

<sup>60</sup> Bureau of Ocean Energy Management. Empire Offshore Wind Draft Environmental Impact Statement, Volume II, page 101 & 722, November 2022,

[https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire\\_Wind\\_DEIS\\_Vol1.pdf](https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire_Wind_DEIS_Vol1.pdf).

- **D.1.1. - Air Quality** - Quantitative emissions inventory analysis of the region, or regional modeling of pollutant concentrations over the next 35 years would more accurately assess the overall impacts of the changes in emissions from the Projects.
- **D.1.2 - Bats** - *“because U.S. offshore wind development is in its infancy, with only two offshore wind projects having been constructed at the time of this analysis, there is some level of uncertainty regarding the potential collision risk to individual bats that may be present within the offshore portions of the Wind Farm Development Area.”*
- **D.1.3. Benthic Resources** - There is *“uncertainty regarding the spatial and temporal distribution of benthic (faunal) resources and periods during which they might be especially vulnerable to disturbance...Uncertainty also exists regarding the impact of some IPFs on benthic resources...Further studies on the effects of underwater noise and EMF and the species-specific responses to these factors are needed, however, before a well-informed understanding can be achieved.”*
- **D.1.6. Commercial Fisheries and For-Hire Recreational Fishing** - *“The commercial fisheries information used in this assessment has limitations...Available historical data lack consistency, making comparisons challenging...A second limitation is that recent annual revenue exposed for for-hire recreational fishing in the Lease Area is not available...The economic analysis conducted by BOEM of recreational for-hire boats, as well as for-hire and private-boat angler trips that might be affected by the overall New York WEA, including the Lease Area, was conducted for 2007–2012.”*
- **D.1.10. Finfish, Invertebrates, and Essential Fish Habitat** - *“Empire’s aquatic resource surveys and other broad-scale studies (e.g., Guida et al. 2017) provided a suitable basis for general predictions of finfish and invertebrate resources with respect to species, densities, and distributions within the geographic analysis area. Additional information related to ESA listed species and EFH will be addressed in the forthcoming BA and EFH Assessment. While impacts on these specific finfish and invertebrate species are not anticipated to vary from the general impacts provided in the EIS, specific impact discussion for ESA-listed species and EFH will be provided in the BA and EFH Assessment.”*
- **D.1.12. Marine mammals** - The DEIS relies on NMFS’s draft 2021 stock status report for the Atlantic OCS and Gulf of Mexico and states that “these studies provided a suitable basis for predicting the species, abundances, and distributions of marine mammals in the geographic analysis area.”<sup>61</sup> And then, in the same sub-section, “However, population trend data from NMFS are unavailable for six

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<sup>61</sup> Hayes, Sean, Elizabeth Josephson, Katherine Maze-Foley, Patricia E. Rosel, and Jennifer Wallace, et. al. *U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments 2021*, May 2022. <https://media.fisheries.noaa.gov/2022-08/U.S.%20Atlantic%20and%20Gulf%20of%20Mexico%202021%20Stock%20Assessment%20Report.pdf>

of the 10 species likely to occur in the Project area. As a result, there is uncertainty regarding how Project activities and cumulative effects may affect these populations. In addition to species distribution information, effects of some IPFs on marine mammals are also uncertain or ambiguous”...On behavioral responses, “studies that examine the behavioral responses of baleen whales to pile driving are absent from the literature...However, uncertainty remains regarding the long-term cumulative acoustic impacts associated with multiple pile-driving projects that may occur over a number of years. **This also applies to other Project activities such as vessel movements, HRG surveys, geotechnical drilling, and dredging activities that may elicit behavioral reactions in marine mammals.** As a result, it is not possible to predict with certainty the potential long-term behavioral effects on marine mammals from Project-related pile driving or other activities, as well as ongoing concurrent and cumulative pile driving and other activities...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. Although new structures are anticipated from multiple offshore wind projects under the planned activities scenario, it is expected that spacing will allow large whales to access areas within and between wind facilities. No physical obstruction of marine mammal migration routes or habitat areas are anticipated, but whether avoidance of offshore wind lease areas will occur due to new structures is unknown”

- **D.1.16 Sea Turtles** - “There is incomplete information on the distribution and abundance of sea turtle species that occur in the Atlantic OCS and the Lease Area...Some uncertainty exists about the effects of certain IPFs on sea turtles and their habitats. The effects of EMF on sea turtles are not completely understood...There is also uncertainty about sea turtle responses to proposed Project construction activities, and data are not available to evaluate potential changes to movements of juvenile and adult sea turtles due to elevated suspended sediments...Additionally, it is currently unclear whether concurrent construction of multiple projects, increasing the extent and intensity of impacts over a shorter duration, or spreading out project construction with lower-intensity impacts over multiple years would result in the least potential harm to sea turtles. There is also uncertainty regarding the cumulative acoustic impacts associated with pile-driving activities. It is unknown whether sea turtles affected by construction activities would resume normal feeding, migrating, or breeding behaviors once daily pile-driving activities cease, or if secondary impacts would continue”.

These are only a few specific examples that clearly demonstrate how scientific evidence is limited or lacking to support the Proposed Action. As stated in these subsections, cumulative effects are not known and there are a lot of uncertainties in accurately determining impacts, both of which are fundamental to proposing any mitigation or management measures. Yet, the DEIS uniformly asserts that adverse impacts are unlikely for all these resources, which is untrue and unfounded. It is also concerning to note that narrative terms like “exorbitant” costs are used to bypass critical data assessment. For example, the DEIS states,

*At present, this EIS has no basis to conclude that these IPFs would result in significant adverse impacts on marine mammal populations. 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. Therefore, to address these gaps, BOEM extrapolated or drew assumptions from known information for similar species and studies using generally accepted scientific methodologies, as presented in Section 3.15 and in the BA submitted to NMFS (BOEM 2022). The information and methods used to predict potential impacts on marine mammals represent the best available information, and the analysis provided in this EIS is sufficient to support sound scientific judgments and informed decision-making. 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.<sup>62</sup>*

### ***New Jersey-Specific Requirements***

The EIS should encompass all applicable protocols for evaluating wildlife impacts of wind turbines located in tidal waters that are set forth in NJDEP’s Technical Manual for Evaluating Wildlife Impacts of Wind Turbines Requiring Coastal Permits. For offshore projects, the NJDEP Technical Manual requires, for instance, a habitat evaluation, including species surveys to establish the movement corridors and distribution of birds, bats and marine organisms at the project site. The surveys are to include information regarding species composition, abundance, distribution, behavior and, for birds and bats, flight patterns and heights. The surveys must further document species diversity, abundance, and behaviors of birds, bats and marine organisms, such as marine mammals, sea turtles, and fish using the habitat, including airspace, where the turbine(s) will be constructed. BOEM should similarly require and review such surveys and other requirements included in the NJDEP Technical Manual.<sup>63</sup>

### **III. Expanding Cumulative Impacts Analysis**

Equinor and BP’s consideration and assessment of cumulative impacts in the Draft EIS is deficient. While cumulative impacts are mentioned briefly in sections, the Draft EIS does not broadly or specifically consider impacts as they relate to the twenty-four (24) other known projects and offshore wind lease areas in the NY/NJ Bight as they relate to Empire Wind 1 and 2. As such, impacts from any and all of these projects will be amplified in the geographic analysis area.

The Draft EIS evaluates the No Action Alternative and eight action alternatives (one of which has sub-alternatives).S.4.7 Alternative F—Wind Resource Optimization with Modifications for Environmental and Technical Considerations (S-8, pg 14/510) states that this “under this Alternative, the wind turbine layout would be optimized to maximize annual energy production and minimize wake loss while addressing geotechnical considerations”. This is

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<sup>62</sup> Bureau of Ocean Energy Management. Empire Offshore Wind Draft Environmental Impact Statement, Volume II, page 101 & 722, November 2022,

[https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire\\_Wind\\_DEIS\\_Voll.pdf](https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire_Wind_DEIS_Voll.pdf).

<sup>63</sup> New Jersey Department of Environmental Protection Technical Manual, available at [https://www.nj.gov/dep/landuse/download/cp\\_013.pdf](https://www.nj.gov/dep/landuse/download/cp_013.pdf).



precisely the concern that COA has been voicing on proposed projects. How will this Project or its Alternatives including Alternative determine what is the best turbine layout and how does the proposed action claim that it will maximize annual energy production? What are the geotechnical considerations that need to be addressed and where can one find this information? How will this Project minimize wake losses when it is clearly documented in research to be a major issue impacting the efficiency of the turbines? With hundreds of turbines co-located in the geographic analysis area, wake loss effects will be significant and could cause adverse consequences and result in economic impacts<sup>64</sup> (Lundquist et al. 2018).

In general, BOEM should utilize an extensive cumulative impact analysis based on the potential harm to sensitive areas in the NY/NJ Bight, especially in consideration of the unprecedented footprint for offshore wind energy proposed across the East Coast. During the leasing and planning phases of offshore wind development, BOEM only reviews impacts that are “reasonably foreseeable.”<sup>65</sup> As a result, cumulative effects and extensive, precautionary steps have taken a back seat. Even though BOEM expanded the scope of their cumulative impact analysis during the Vineyard Wind programmatic review, there could still be cascading effects to vulnerable New Jersey and New York ecosystems, wildlife, and communities along the Mid-Atlantic Bight.

#### **IV. Conclusion**

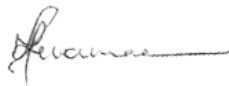
Due to the impacts, Clean Ocean Action supports the No Action Alternative to Empire Wind 1 and 2 projects. In sum, based on the above, the DEIS fails to address key issues essential for ensuring a healthy marine ecosystem while developing this double project. The DEIS is at best incomplete. COA continues to call for a comprehensive, comparable, scientific, independent pilot project as a pathway to developing responsible offshore wind energy development.

COA appreciates the opportunity to submit comments on the Empire Wind 1 and 2 Draft Environmental Impact Statement, and looks forward to your written reply. If you have any questions, feel free to contact COA at [citizens@cleanoceanaction.org](mailto:citizens@cleanoceanaction.org).

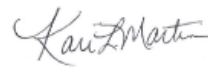
Respectfully Submitted,



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Executive Director



Swarna Muthukrishnan, PhD  
Water Quality Research Director



Kari Martin  
Advocacy Campaign Manager

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<sup>64</sup> Lundquist et al. Costs and consequences of wind turbine wake effects arising from uncoordinated wind energy development, 2018. <https://www.osti.gov/servlets/purl/1484339>.

<sup>65</sup> Vineyard Wind Supplemental Environmental Impact Statement, p 1-2.