OffshoreWindComments@dep.nj.gov

From: Defend Brigantine Beach, Inc

Katie Finnegan, President
Suzanne Moore, Treasurer
Tom Jones, Secretary

RE: Atlantic Shores Federal Consistency Certification Request- DEP is holding a third comment period on this pending request from September 20 through October 19, 2023, due to an inadvertent omission of notice of the prior comment periods from the GovDelivery service. Comments may be submitted

To submit a comment on a DEP application, please complete the form below, select the application you are commenting on, and enter your comments in the space provided. Then click the Submit button to send them.

To submit a comment longer than 20,000 characters (about 10 pages), see instructions below.
Atlantic Shores Offshore Wind Federal Consistency Certificate

Topics: Viewshed, Commercial Fisheries, Recreational Fisheries, Marine Habitat, Avian Bats, , Other

Guidelines for email submissions:	
Document format:	Document must be **MS Word compatible**. The document must not be access-restricted (locked or read-only) in order to facilitate use by the Department of the electronically submitted comment.

Defend Brigantine Beach, Inc represents thousands of beach goers, renters, homeowners, owners and employees of tourist industry related businesses, artists, photographers, owners and employees of businesses related to real estate, owners and employees of fisheries, water sports enthusiasts, recreational fishermen and women and many others who have a vested interested in the health and well being of our ocean, coastal ecology and environment and social and economic conditions in our coastal communities. Our representation spans all along the New Jersey Coast but is mostly concentrated in Atlantic County, namely the island of Brigantine and the ocean front communities of Absecon Island as well as bay front communities.

The lack of rigor in the reviews of the Atlantic Shores LLC project by the NJ Department of Environmental Protection (NJDEP) agency along with its consistent promotion of offshore wind raises serious doubts of its objectivity and unbiased consideration of the regulations it is missioned to uphold. It is essential that the NJDEP remains neutral and does not become a de facto political arm of the federal and state governments.

The Atlantic Shores South, LLC wind energy development project effects on the resources of the NJ State's coastal zone are not consistent with the enforceable policies of the State's coastal management program. The New Jersey Coastal Zone Management Act was written to protect our ocean and coastline and prevent its industrialization. This project will be the poster child for the industrialization of the ocean with its 200 turbines with a height of 1048 feet, up to 10 offshore substations starting 8.7 miles from our beaches. The negative impacts of this experimental project that violate the tenets of the CZMA are numerous and Atlantic Shores' application is grossly incomplete.

We believe that the Atlantic Shores LLC South Project, as determined by the information or lack of information in the COP and DEIS, does not comply with the NJ CZMA regulations or NJ Administrative Code including but not limited to:

Coastal Zone Management Regulations Pertaining to Inadequacies of Application			
7:7	9	Special Areas	
7:7	9.3	Special Areas	Surf Clam Areas
7:7	9.4	Special Areas	Prime Fishing Areas
7:7	9.5	Special Areas	Finfish Migratory Pathways
7:7	9.7	Special Areas	Navigation Channels
7:7	12.7	General Water Areas	New Dredging
7:7	13.10	Requirements for Impervious Cover and Vegetative Cover for General Land Areas and Certain Special Areas	Determining the Development Potential for a Major Commercial or Industrial Development Site in the Upland Waterfront Development Area
7:7	15.4	Use Rules	Energy Facility
7:7	15.4 b	Use Rules	Energy Facility - Standards relevant to siting of new energy facilities, including all associated development activities
7:7	15.4 b5	Use Rules	The scenic and visual qualities of coastal areas shall be maintained as important public resources in the siting of energy facilities
7:7	15.4 c	Use Rules	Energy Facility - Coastal energy facilities construction and operation shall not directly or indirectly result in net loss of employment in the State for any single year.
7:7	15.4 r	Use Rules	Standards relevant to electric generating stations.
7:7	15.7	Use Rules	Industry
7:7	15.7 b	Use Rules	Industrial uses are encouraged in special urban areas. Elsewhere, industrial uses are conditionally acceptable provided they comply with all applicable location and resource rules. Particular attention should be given to location rules which reserve the water's edge for water dependent uses (N.J.A.C. 7:7-9.16 and 9.30); to the buffers and compatibility of uses rule, N.J.A.C. 7:7-16.11, which requires that the use be compatible with existing uses in the area or adequate buffering be provided; and the lands and waters subject to public trust rights rule, N.J.A.C. 7:7-9.48, and the public access rule, N.J.A.C. 7:7-16.9, which places public access requirements upon the use
7:7	16.1	Resource Rules	Purpose and Scope
7:7	16.2	Resource Rules	Marine Fish and Fisheries
7:7	16.3	Resource Rules	Water Quality
7:7	16.8	Resource Rules	Air Quality
7:7	16.10	Resource Rules	Scenic Resources and Design
7:7	16.11	Resource Rules	Buffers and Compatibility of Uses
7:7	16.11 b	Resource Rules	Development shall be compatible with adjacent land uses to the maximum extent practicable

In addition, the information in Table 1 in the Atlantic Shores COP Appendix I-C does not support that the project is fully consistent with the NJ CZMA requirements.

The Prelude – The Disregard for the State's Coastal Management Program When Determining the Wind Energy Area of the New Jersey Coast which will become the Atlantic Shores South, LLC Wind Development Project

In 2004, by Executive Order, the Governor of New Jersey authorized a **State of New Jersey Blue Ribbon Panel on Development of Offshore Wind Turbine Facilities.** Per the Executive Order, "The State of New Jersey has Federal Consistency review authority pursuant to Section 307 of the Coastal Zone Management Act, 16 U.S.C. 1451 et seq., for activities occurring in its coastal zone and in Federal waters where there is a reasonably foreseeable effect on the uses and resources of New Jersey's coastal zone."

In 2006, the Blue Ribbon Panel submitted its final report to the Governor. The following Guiding Principles and Risk Assessments were key recommendations in the report related to the Coastal Zone Management Act.

Table 5

Guiding Principles for Development of Renewable Technologies in New Jersey

Energy	New Jersey can and must address its growing energy crisis through the application of energy efficiency programs and development of renewable energy technologies.
	New Jersey will suffer increasingly high energy costs and the effects of upwind pollution if it looks to out-of-state sources to meet its growing energy demand and so must be a leader in the development of renewable technologies.
	New Jersey must continue to take bold action on several fronts including enactment of conservation/efficiency measures and development of technologies that, • Provide generation capacity near load centers; • Reduce transmission congestion, and • Alleviate upward pressure on energy prices.
Environment	Development of renewable technologies, including offshore wind turbine facilities, must not cause unacceptable adverse impact to wildlife or natural resources.
	Development of renewable technologies, including offshore wind turbine facilities, must not cause unacceptable interference with critical avian or marine mammal lifecycle habits, or cause unacceptable loss of critical habitats.
Tourism/Commercial Ocean Uses	Development of renewable technologies, including offshore wind turbine facilities, must not cause unacceptable economic impact, including unacceptable impact to tourism and related industries, or to the commercial and recreational fisheries.
	Development of renewable technologies, including offshore wind turbine facilities, must not create unacceptable aesthetic impact, particularly in the viewsheds of state or federal parks and natural areas.
Other	Development of renewable technologies, including offshore wind turbine facilities, must not have unacceptable environmental justice implications.
	To ensure the interests of New Jersey are protected, development of renewable technologies such as wind power in waters under federal jurisdiction must proceed as a private/public partnership among developers, state and federal authorities.

Table 7

Areas Requiring Risk Assessment Modeling and Monitoring
Before, During, and After Construction of an Offshore Wind Project

Energy	Amount of electricity generated.
	Impact on transmission congestion and electricity costs to residents and businesses.
	Requirements for decommissioning, abandonment, and repair of turbines.
Environment	Impact on wildlife and natural resources.
	Impact on and disturbance of benthic habitat.
	Environmental Justice Implications.
Economic	Impact on tourism and related industries.
	Impact on ocean-dependent industries (i.e., commercial and recreational fishing).

Blue Ribbon Panel on Development of Wind Turbine Facilities in Coastal Waters Final Report.pdf (nj.gov)

From the very beginning of the offshore wind discussion, the wind energy area for New Jersey was determined to support the business/profit strategies of the offshore wind developers. The 2004 NJBPU Feasibility Study conducted by Atlantic Renewable Energy Corporation defined the wind energy area as “approximately from Sandy Hook to Egg Island Point in the Delaware Bay and extends out to a water depth of 100 feet, the maximum viable depth for purposes of this report. The study area encompasses 2,465 square nautical miles and extends up to 20 miles from shore.” Alas, according to the Rutgers University, the designated wind energy area off the Jersey Coast was found to be the lowest “wind resource potential” for offshore wind energy. Nonetheless, it appears that the depth limit of 100 feet was THE consistent primary factor in determining the offshore wind energy area throughout the decision-making process for the location of the final lease areas.

Table 3: **Sea Breeze** **Wind Resource** (<1km to ~100km)			
Sea Breeze Wind Field Location	**Wind Speed (m/s)**	**Wind Power Class**	**Wind Resource Potential**
Coastline and Adjacent Offshore Waters (0 <5nm)	8.0 to 7.0 m/s	6 to 4	Outstanding to Good
≥5nm to 15nm	7.0 to 4.0 m/s	4 to 1	Good to Poor
≥15nm to 25nm	4.0 to 2.0 m/s	1	Poor
≥25nm to 50nm	2.0 to 7.0 m/s	1 to 4	Poor to Good
≥50nm	7.0 to ≥9.0 m/s	4 to 7	Good to Superb

As a result of decreasing friction at higher altitudes, wind speeds tend to increase with greater heights (rutgers.edu)

After a 24 month ecological "base line" study, a final report was released on July 2010 which captured the characteristics of the distribution and migration patterns of avian, marine mammals and fish species in the WEA. Omitted from the analysis was a discussion on whether to use the outer continental shelf for offshore wind, nor any analysis of its aggregate benefits or costs.

Further wind energy studies (buffer zones, maximizing energy potential, producing zones with similar value, etc….)- with a goal to lure potential bidders for the lease areas - were completed based on a 5 or 6 Mw (final 1/28/13 presentation to the NJ Renewable Energy Task Force was based on 5 Mw wind turbine with a 126M diameter rotor) wind turbine generator as opposed to the much larger, experimental 15 Mw wind turbine generator now being used in the Atlantic Shores project. The Call zone was identified using this data based on the old technology (6Mw). Consistent with the goal of other presentations and studies, the final presentation was focused on attracting wind energy developers. On slide 20 and slide 38, regarding the bathymetry analysis, this goal was accomplished because, "most leasing areas have over 90% of the depths less than 30 meters – shallow enough to support large projects without adding excessive development cost." PowerPoint Presentation (boem.gov)

In 2012 the Environmental Assessment was completed for the wind energy areas off the coast of NJ, DE, MD and VA, also based on much smaller wind turbine size and excluded a defined number of wind turbines, offshore/onshore substations, cabling configurations, or location of onshore cables. For New Jersey, "The proposed area offshore New Jersey begins 7 nautical miles from the shore and extends roughly 23 nautical miles seaward (or the approximate 100 ft depth contour) and extends 72 nautical miles along the Federal/state boundary from Seaside Park south to Hereford Inlet. The entire area is approximately 418 square nautical miles and contains approximately 43 whole OCS blocks and 34 partial blocks."

A major shortcoming of the EA was the fact that its section 3.1.3 on Visual Aesthetics was missing from the Report. In addition, even though the State of New Jersey contracted with Global Insight, Inc. to complete an Assessment of the Potential Costs and Benefits of Offshore Wind Turbines (2008), the report's conclusions concerning a significant economic impact from a reduction in coastal tourism and property values was excluded from the EA.

In regard to Routine Activities related to recreation and tourism, the report states,

"Wind Turbines will be virtually invisible. The few meteorological towers located nearer to shore would be virtually invisible from shore due to the anticipated widths of these structures, and to the nominal atmospheric conditions offshore of the Atlantic coast. It is most likely that vessel traffic associated with Alternative A would use established nearshore traffic lanes. Chapter 5.2.22 of the Programmatic EIS concluded that, as tourism and recreation exists in its current state in the context of existing military, commercial, and recreational water and air vessels that currently traverse these coastal areas, it is unlikely that there would be any detrimental impact on tourism and recreation from the additional vessels associated with Alternative A. No information has been presented that would tend to invalidate the analysis in the Programmatic EIS."

"Due to the distance of the proposed lease areas from shore, the fact that no new coastal infrastructure would be necessary, and the small amount of vessel traffic associated with Alternative A that would be present in any given recreational area (particularly given the existing amount of vessel traffic in these areas), no impacts to coastal recreational resources from routine activities or potential spills are expected. While impacts could occur from marine trash and debris, it is unlikely that any additional trash that could be associated with Alternative A would be perceptible. Potential impacts to recreational fishing are discussed in Section 4.1.3.6 of this EA. "

In regard to employment, "Alternative A is expected to have negligible but positive impacts on the population and employment of coastal counties of Virginia, Maryland, Delaware and New Jersey that would provide support services for Alternative A."

In regard to commercial and recreational fishing, "The increase in vessel traffic, and activities related to the installation/operation of the meteorological towers and buoys would not measurably impact commercial or recreational fishing activities, total catch of fish and shellfish, or navigation over any substantial period of time. Any impacts, such as localized fishing displacement and/or target species availability within the immediate area of activities associated with Alternative A, would be of short duration, limited area, and temporary, and result in negligible, if detectible, impact to fishing."

Throughout the process of determining the location and selling the wind lease areas in 2015, little to no regard was given to the Coastal Zone Management Act and the Guiding Principles and Risk Assessments in the NJ Blue Ribbon Panel Final Report. In addition, the size and number of wind turbines was grossly understated and now has no relevance to the Atlantic Shores LLC's turbine size and scope of project. In addition, Atlantic Shores South, LLC's information in the construction and operation documents and BOEM's information in the DEIS further demonstrates a total lack of consideration for the standards in the Coastal Zone Management Act.

Summary of Atlantic Shores LLC Consistency Certificate and Coastal Zone Management Act

Most of the project is in federal waters but it does have impact on the State's coastal zone, and as discussed in Enclosure III must receive an authorization from the State that it is consistent with the State's Coastal Zone Management (CZMA)
Rules.

Atlantic Shores South COP and BOEM DEIS do not address many key issues with respect to impacts on the States coastal zone. In addition, even with their proposed mitigation for adverse impacts, they have not proven that the mitigation will result in a net gain in quality and quantity of the coastal resource of concern. As

discussed in detail below, there are several provisions in the State's CZMA rules that deal with protecting the character and visual beauty of the ocean vista, that conflict with the visibility of the large turbines. The same is true regarding criteria to disapprove a project based on job loss in the tourism industry, and likewise that is not addressed in the DEIS. Finally, there are provisions regarding protection of marine mammals and the impact of the operational turbine noise in terms of potentially driving whales such as the fin and humpback into the shallower State's coastal waters and on to shore, which is not addressed as well.

In addition, there are secondary impacts on the coastal zone caused by the project, at the foundation construction facility at the Paulsboro port, and the turbine staging area at Alloways Creek that need to be described in the DEIS.

All these and others support that a CZMA consistency finding cannot be justified for this project. A review of why it is not justified are based on the impacts is presented below.

Subsection 7:7-15.7, Industry, requires that (a) Industry uses are uses that involve industrial processing, manufacturing, storage, or distribution activities. These uses include, but are not limited to, electric power production. (b) Elsewhere, industrial uses are conditionally acceptable provided they comply with all applicable location and resource rules. Particular attention should be given to location rules which reserve the water's edge for water dependent uses (N.J.A.C. 7:7-9.16 and 9.30); to the buffers and compatibility of uses rule, N.J.A.C. 7:7-16.11, which requires that the use be compatible with existing uses in the area or adequate buffering be provided; and the lands and waters subject to public trust rights rule, N.J.A.C. 7:7-9.48, and the public access rule, N.J.A.C. 7:7-16.9, which places public access requirements upon the use. (e) Marine resource-dependent industry, such as commercial fishing, is encouraged and shall have priority over other waterfront uses, except for recreation. In the Atlantic Shores Consistency Review, it is stated that the project does not meet the definition of industrial use. Yet the project clearly is used for electric power production and therefore the rule is applicable. The project does not comply with many of the location and resources rules, nor meets the requirements for buffering or compatibility of uses and waters subject to public trust rights. The fishing industry clearly does not have priority over the project. This rule emphasizes the need to comply with the buffers and compatibility of use rules and the public trust and public access rules. The Project clearly do not so comply.

Subsection 7.7-14.2 , Basic Location Rule, requires that (a) A location may be acceptable for development under N.J.A.C. 7:7-9, 12, 13, and 14, but the Department may reject or conditionally approve the proposed development of the location as reasonably necessary to: 1. Promote public health, safety, and welfare; 2. Protect public and private property, wildlife and marine fisheries; and 3. Preserve, protect and enhance the natural environment. (b) Rationale: This rule is intended to afford appropriate discretion to the Department to reject or conditionally approve projects that otherwise meet the applicable rules but may pose a threat to the public, natural resources, property, or the environment. This commonsense approach recognizes that unusual circumstances may result in a project meeting the letter of the rules but not their intent and provides necessary parameters for the Department's review of such projects. In its Consistency Review, Atlantic Shores states that the project will not impact the public wellbeing, safety, welfare, or natural resources and is in the national interest. This project will clearly impact well being and safety such as radar interference, coast guard SAR, navigation, noise on the shore, fisheries, tourism, and viewshed. The project does not address the "otherwise meet the applicable rules" and "emergency" exception.

The Energy Facility rule §7:7-15.4 (b)5 requires that the scenic and visual qualities of coastal areas shall be maintained as important public resources in the siting of energy facilities pursuant to NJAC.7:7-16.10.

Demonstrated throughout these comments, the project will result in adverse impacts to shellfish habitat, surf clam areas, prime fishing areas, migratory pathways, endangered or threatened wildlife, critical wildlife habitat and public open space. The scenic and visual qualities of the coastal areas are not being maintained but adversely impacted. The project will result in many adverse impacts to the ocean environment, ocean users and to the people on the shore.

Visual and other Degradation at the Shore : The coastal zone management rules at subsection 7.7- 1.1 (c) state that the program goals and supplemental policies are to: 1.i, protect, enhance and restore coastal habitats and their living resources to promote biodiversity water quality, aesthetics, recreation, and healthy coastal ecosystems, 2.iii, administer the safe and environmentally sound use of coastal waters and beaches to protect natural, cultural, and aesthetic resources, promote safe navigation and provide recreational opportunities, 3.ii, preserve and enhance views of the coastal landscape to enrich aesthetic and cultural values and vital communities, 5.i. preserve, enhance and restore open space including natural, scenic, historic and ecologically important landscapes that provide opportunities for passive and active recreation, and 6.i, manage coastal activities that sustain coastal economies and create vibrant coastal communities and waterfronts.

The Scenic Resources and Design rule §7:7-16.10(c) requires that new coastal development that is not visually compatible with existing scenic resources in terms of large-scale elements of building and site design is discouraged, where the word “discouraged” per the rule’s definition means that “a proposed use of coastal resources is likely to be rejected or denied as the department has determined that such uses of coastal resources should be deterred. In cases where the department considers the proposed use to be in the public interest despite its discard status the department may permit to use provided that mitigating or compensating measures can be taken so that there is a net gain in quality and quantity of the coastal resource of concern”.

By its very location, the proposed Atlantic Shores project would not and cannot meet the above criteria. Long Beach Island, Brigantine Beach, and Absecon Island Coastal towns are unvarnished barrier islands. The lease developed and natural island with the lowest density of housing is Brigantine, 6.9 miles long. Absecon Island including the coastal towns of Atlantic City, Ventnor, Margate and Longport is 11 miles with 8.1 miles of ocean front property. Long Beach Island is an 18-mile barrier island which is the longest natural seascape existing in the State. North Brigantine Beach is undisturbed beach in New Jersy with over two miles of sandy beach and salt marsh. In addition to Island residents, millions of New Jerseyans and others come to see and enjoy that natural, aesthetic beauty. According to NJ State Tourism Agency’s recent report from Tourism Economics, the visitor volume in Atlantic County was 22.8 million and 10.3 million in Ocean County and the majority of that was related to coastal tourism.

The proposed project would be the closest to the shore and most visible modern (using todays larger turbines three football fields high) wind turbine complex in the entire world. It would have a visual effect on a viewer worse than the Bureau of Ocean Energy Management (BOEM) highest impact category six of a “dominant visual effect” in its Visual Impact Study done for New York State, Renewable Energy Viewshed Analysis and Visual Simulation for the New York Outer Continental Shelf Call Area: Compendium Report OCS Study, BOEM 2015- 044.

The visual distance Table 5.2.21-1 in the BOEM final programmatic environmental impact statement shows that 80 percent of an 853-foot-high Vesta-236 turbine approved by the NJBPU will be visible at distances of 9 to 10 miles, more for 1,048-foot-high turbine.

Atlantic Shores is asking for approval for turbines up to 1048.5 ft high and states in the COP that such turbines will be the "focus of the viewer's attention" up to 15 miles (see the Construction and operations Plan (COP) Volume 1 executive summary p. E-5, COP Appendix 1-A Figure 1, and Appendix II M1 Visual Impact Assessment Wind Turbine, pp 8,9, specifically note insert 1.2-1 Turbine Visibility on p.9 that shows the 1048.5 ft turbines).

Therefore, the turbines will be clearly visible in almost all-weather conditions, in fact dominating the ocean view, and at night from flashing aviation lights, obliterating the natural, scenic, aesthetic and cultural values described above in the CZMA rule above. The Atlantic Shores project and the BOEM still have not disclosed this extreme visual effect to the public by putting forth accurate, representative visible renditions of what the turbines would look like from shore.

The project clearly does not meet the visual, aesthetic and coastal community cultural and economic goals of §7.7-1.1(c), or the scenic and visual preservation criteria in §7:7-15.4 (b)5 and §7:7-16.10 (c). Regarding paragraph 16.10(c) there is no mitigating or compensating measure that can replace the natural seascape of the barrier islands.

Therefore, the State must object to the applicant's request for concurrence in a Federal Consistency Certification and to any future federal consistency determination.

Employment Criteria: The Energy Facility rule §7.7-15.4(c) requires that "coastal energy facility construction and operation shall not directly or indirectly result in net loss of employment in the state for any single year".

Paragraph(c)1 states that "coastal energy facility construction and operation which results in a loss of 200 or more person years of employment in jobs in New Jersey directly or indirectly related to the states coastal tourism industry in any single year is prohibited".

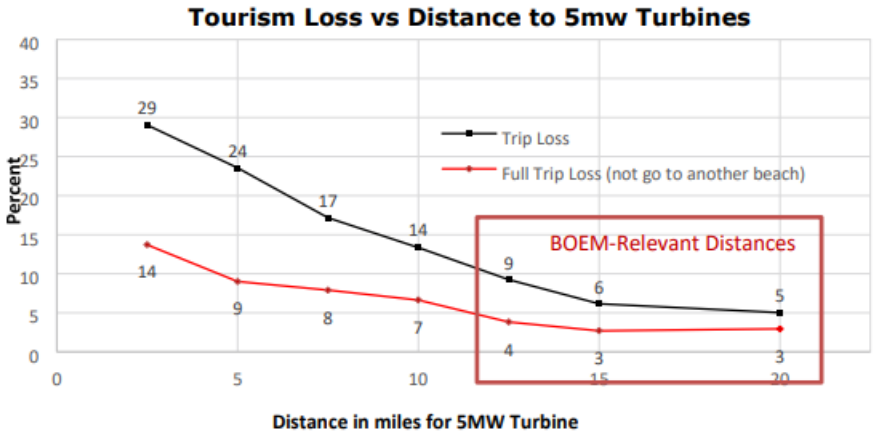
Based on data from previous person surveys and studies depicting closer, smaller turbines with visible effect comparable to the proposal, the project would cause an extreme adverse economic impact on New Jersey coastal towns in terms of lost tourism, rentals and property values.

Based on our preliminary estimates below, the Atlantic Shores project will cause both a net employment loss in the State for any single year, and a loss of more than 200 person years of employment in the state's coastal tourism industry in any single year, and therefore should be prohibited. That comes from losses in Ocean County and Atlantic County because the turbines are clearly visible from and impact the shore economy of both.

Those losses are estimated by applying tourism losses shown in the BOEM sponsored University of Delaware study below to the employment data in Table 7.1-6 of the COP. That Table provides employment data for New Jersey Ocean Economies, based on the NOAA Economics National Ocean Watch database.

From that Table, the number of persons equivalently employed full time in ocean related tourism jobs in all of Ocean County is 95.2% of 15,295 or 14,560. For Atlantic County, the full shoreline is affected, and the number ocean -related tourism and recreation jobs is 10,795. For Ocean County jobs are apportioned to LBI where the turbines will be visible, based on shore-miles. The total shore miles in Ocean County are 44, 18 miles of that in LBI. Assuming then that 41% of the shore employment is from LBI yields a number of 5,970 jobs from LBI tourism.

BOEM/University of Delaware Study, 2018. In March, 2018, the University of Delaware published a report titled Atlantic Offshore Wind Energy Development -Values and Implications for Recreation and Tourism that was sponsored by the BOEM. It assessed the impact on shore visits from visible turbines at various distances. The study interviewed 1,725 shore goers utilizing visuals of 5-megawatt (mw) turbines that were 577 feet high or about 55% the 1048-foot height of the 15 mw Vesta-236 turbines to be used off LBI, based on BPUs power purchase approval. It then determined the tourism loss versus distance to the nearest turbines. To find the right distance in the Delaware Study to use, we picked the distance in the graph below for the 577-foot turbines that would have the line of sight as the 1,048-foot turbine at its distance, as that would result in a similar visual look. For the LBI area we used the distance from Ship Bottom to the turbines of 17.6 miles as an average for the Island. At that distance the 5mw turbine has the same line of sight at 9.7 miles, as the larger turbines at 17.6 miles so we used the 9.7-mile tourism loss data. For Atlantic County the distance to the turbines is 8.9-13 miles which is the same line of sight as the 5 mw turbines at 7.2 miles-so we used that tourism loss data.



The results are shown in the Table below.

Tourism Job Losses

	Ocean-related tourism & recreation jobs-full time equivalent (FTE)	Tourism Loss to Area (%)	Tourism Loss to State (%)	Jobs Lost to Area (FTE or person-years)	Jobs Lost to State (FTE or person-years)
LBI Area	5,970 (1)	14 (2)	7(2)	1168	584

Atlantic County Area	10,795	17 (3)	8 (3)	1835	863
Totals		--	---	3003	1447

(1) Per data base, 11,210 ocean county wide jobs apportioned by LBI shore-miles (41%).

(2 Based on 5 mw turbine at 9.7 miles, equivalent to 15 mw at 17.6 miles

(3) Based on 5 mw turbine at 7.2 miles, equivalent to 15 mw at 13 miles

The number of State-wide ocean-related tourism jobs lost is 1,447, which clearly exceeds the 200-person year job loss criterion.

Based on that total jobs number, a loss of 200 direct jobs would be less than 1% (0.78%) of the total Ocean Economy Tourism and Recreation Jobs in those 2 shore counties. Using multipliers from page 49 of the NJ Tourism Report (the New Jersey Visitor Economy 2022 prepared for Visit NJ March 2023) to also include indirect jobs, a loss of 200 direct and indirect jobs would be less than 0.6% (0.56%). So a relatively small % impact on the near shore tourism industry would cause the single year 200 tourism job loss threshold to be exceeded.

The University of Delaware Study survey includes a question about curiosity trips as follows:

Question to all participants, including beach goers, and nonbeach goers: Would you take a "special trip to see the projects" if it were located on an East Coast Beach.					
Sample = 2050					
Curiosity Trips *		10.6%	yes		
1 trip		75%			
2-5 trips		24%			

The annual equivalent percentage impact of curiosity trips is calculated below. The end result is an equivalent annual impact of 1.6% trip increase.

Calc of Curiosity Trips based on 20 year project life (millions)							
	annual visitors		1 curiosity trip (75%)	3.5 curiosity trips (25%)	curiosity trips over 25 years	Cape May & Atlantic Co Visitors 25 Yr	additional curiosity trips over 25 years, effective annual % rate
Annual Visitors State excluding Cape May and Atlantic Cos.	80.37		6.4	7.5	13.8	855.25	1.6%

2022 NJ Tourism Economics							
	visitors (millions)	day visitation	overnight visitation	jobs	visitors/ job		
Atlantic County	22.83	12.02	10.81	53,021	431		
Cape May County	11.38	4.21	7.17	30,352	375		
Ocean County	10.3	5.29	5.01	27,667	372		
NJ visitors	114.58	62.42	52.16	310,450	369		

Therefore, the project violates the tourism specific employment CZM rule provision, and under that, the project must be prohibited. Consequently, the State must object to the applicant's request for concurrence in a Federal Consistency Certification and to any federal consistency determination.

The DEIS Appendix B Supplemental Information and Additional Figures and Tables page B-83 includes two tables Table B.4-10 Ocean Economy Employment 2019 and Table B 4-11 Jobs during development and construction, and operations and maintenance.

In spite of the results above showing the violation of the tourism employment CZM rule provision, Atlantic Shores LLC and/or BOEM could have easily repeated the University of Delaware study based on updated visual impact studies, but this is another example of their negligence in carrying out their responsibilities. NJDEP should require that another study, based on the actual scope of this project, be completed before any determination of the permit is considered.

The second table lists the jobs associated with the AS south 1 and 2 projects.

Table B.4-11. Jobs during development and construction, and operations and maintenance

Jobs (FTE)[1]	Atlantic Shores South 1 (1,510 MW)	Atlantic Shores South 2 (1,200 MW)	Total
Direct (Development and Construction Phase)	7,445	5,915	**13,360**
Direct (Operation and Decommissioning Phase)	11,105	8,820	**19,925**
Indirect (All Phases)	9,830	7,810	**17,640**
Induced (All Phases)	12,350	9,815	**22,165**
Total	**40,730**	**32,360**	**73,090**

Source: IMPLAN modelling tool drawing from validated government and industry sources including the U.S. Bureau of Economic Analysis, the U.S. Census Bureau, and the Bureau of Labor Statistics: 2019 (COP Volume II; Atlantic Shores 2023.)

[1] Full Time Equivalent (FTE) job-years assuming full-time work of 35 hours a week (1,820 hours per year).

While that table does not give a breakdown for each operating year, table 44 from page 89 of the Levitan report to the BPU in support of its June 2021 decision on Atlantic Shores Project South 1, shows an average of 90 FTE per operating year for the project. That is reasonably consistent to what is guaranteed in the BPU PPA decision (88 FTE per operating year , page 21). While no such figure is provided for AS 2 it can be inferred from table B 4-11 of the DEIS. Applying the same % used in that table for comparing AS2 jobs to AS1 jobs gives a figure of 72 FTE for the smaller AS 2 project. So the total direct FTE for the 2 projects in an average operating

year would be 162. Applying the 2.2 multiple used in the DEIS to include indirect and induced FTE jobs gives 356 direct and indirect jobs added in an average operating year.

Furthermore, 356 direct and indirect jobs added to the NJ economy in a given single year represents less than 0.0062% of total NJ jobs. If the higher electricity costs resulting from these projects caused less than one hundredth of 1% of NJ jobs to be lost in any one year then that total job loss criteria would be exceeded based on that basis alone. How many coastal businesses, that survive on business only during the summer months, will be lost due to higher electric rates?

Important footnote on Project generated jobs. The jobs claims by AS do not specify which will be NJ sourced jobs and which will be foreign workers. This analysis assumes the AS claimed jobs will all be NJ jobs, but that will not be the case. The DEIS references a BVG Associates Limited study (BVG 2017) that the US sourced jobs during initial implementation of US offshore wind projects would range from 35 -55 %. From 2030 through 2056 that range was projected at 65-75%. That reality further supports the net NJ job loss calculation for a given year.

Endangered or Threatened Wildlife:

Endangered or threatened wildlife or plant species habitats rule §7:7-9.36 (b) states that "the development of endangered or threatened wildlife or plant species habitat is prohibited unless it can be demonstrated, through an endangered or threatened wildlife or plant species impact assessment as described at N.J.A.C. §7:7 -11, that endangered or threatened wildlife or plant species habitat would not directly or through secondary impacts on the relevant site or in the surrounding area be adversely affected".

According to the DEIS, the impact for the NARW is negligible to moderate, but cumulative impacts are negligible to MAJOR.

Per the DIES, irreversible impacts on marine mammal populations could occur if one or more individuals of an ESA-listed species were injured or killed or if those populations experienced behavioral effects with severe consequences. With implementation of mitigation measures, developed in consultation with NMFS (e.g., timing windows, vessel speed restrictions, safety zones), the potential for an ESA-listed species to experience behavioral effects with severe consequences or be injured or killed would be reduced. No irreversible high-severity behavioral effects from Project activities are anticipated; however, due to the uncertainties from lack of information that are outlined in Appendix E, Analysis of Incomplete and Unavailable Information, these effects are still possible. Irretrievable impacts could occur if growth of individuals or populations is regarded because of displacement from the Project area. P898 table 4.2-1

Irreversible impacts on sea turtles could occur if one or more individuals of species listed under the ESA were injured or killed; however, the implementation of mitigation measures, developed in consultation with NMFS, would reduce potential impacts on listed species. Irretrievable impacts could occur if growth of individuals or populations is regarded as a result of injury or mortality due to vessel strikes or entanglement with fisheries gear caught on the structures, or due to displacement from the Project area.

The BA for Atlantic Shores South provides a detailed discussion of ESA-listed species and potential impacts on these. A preliminary draft of the BA found that the Proposed Action species as a result of the Project may affect, is likely to adversely affect ESA-listed marine mammal species (i.e., fin whale, NARW, sei whale, and sperm whale) but is expected to have no effect on critical habitat designated for NARW. Consultation with

NMFS pursuant to Section 7 of the ESA is ongoing, and results of the consultation will be presented in the Final EIS. The Offshore Project area lies south of a seasonal management area for NARW and overlaps a biologically important area for NARW migration (December to February) (Figure 3.5.6-2). The DEP cannot effectively rule on Atlantic Shores' certification without this consultation and biological opinion.

Of the 50 species that are known to occur or could occur in the northwest Atlantic OCS, 35 have documented ranges that include the Offshore Project area (Table 3.5.6-1). For the purposes of the description of the affected environment in this Draft EIS, the focus is on the 9 species of marine mammals that would be likely to have regular or common occurrence in the Offshore Project area, as well as two additional ESA-listed species expected to experience acoustic effects of the Proposed Action (i.e., sei whale and sperm whale).

Potential acoustic effects of anthropogenic underwater noise on marine mammals include mortality, non-auditory injury, permanent or temporary hearing loss, behavioral changes, and acoustic masking, with the severity of the effect increasing with decreasing distance from the sound source. These potential effects are described in greater detail in the noise impact analysis in Section 3.5.6. Prolonged or repeated exposure to sounds at levels that are sufficient to induce TTS, without adequate recovery time, can lead to PTS (Finneran 2015; Southall et al. 2007). The intense, impulsive noise associated with impact pile driving can cause behavioral and physiological effects. Behavioral effects may occur up to tens of kilometers from the center of pile-driving activity. Toothed whales and baleen whales show varying levels of sensitivity to mid-frequency impulsive noise.

Multiple construction activities within the same calendar year could potentially affect migration, foraging, calving, and individual fitness.

The conclusion in the DEIS is that Moderate Adverse Impacts on individual marine mammals or their habitat would be detectable and measurable; they would be of medium intensity, can be short term or long term, and can be localized or extensive. Impacts on individuals or their habitat could have population-level effects, but the population can sufficiently recover from the impacts or enough habitat remains functional to maintain the viability of the species both locally and throughout their range and Major Adverse Impacts on individual marine mammals or their habitat would be detectable and measurable; they would be of severe intensity, can be long lasting or permanent, and would be extensive. Impacts on individuals and their habitat would have severe population-level effects and compromise the viability of the species**.**

The underwater noise from operation of the large, 15 MW turbines to be used for the project, per the NJBPU power purchase agreement, will cause exceedance of the 120 decibel (dB) continuous noise criteria all the way to shore , including in State waters. This could potentially block migration of the critically endangered North Atlantic right whale or of other whales traveling closer to shore. Those whales using the closer to shore areas will be driven to New Jersey coastal zone waters as a result of the turbine operational noise, again risking high cumulative noise exposures and hearing loss, confusion, stress, beach stranding, disruption of feeding and other harm or fatality.

In addition, detection studies of the North Atlantic right whale (North Atlantic right whale distribution and seasonal occurrence in nearshore waters off New Jersey, USA, and implications for management, Amy D. Whitt et. al., March 21, 2013), concluded that "North Atlantic right whales are present off New Jersey throughout the year and not only during "typical" migratory periods", and that "nearshore waters off New Jersey are part of a right whale migratory corridor and may also be a feeding habitat for the species". It should also be noted that

NOAA has recently defined a vessel slow down zone off of Atlantic City designed to protect the right whale which begins in New Jersey coastal zone waters.

Endangered fin and humpback whales also frequent areas within the New Jersey coastal zone and out to 11.5 miles offshore. They too will be driven to shore in their attempt to avoid the turbine operational noise, risking high cumulative noise exposures and hearing loss, confusion, stress, beach stranding, feeding disruption and other harm or fatality.

Consequently, the project through a significant noise impact on its surrounding area adversely affects the habitat use of endangered wildlife in the NJ coastal zone, specifically as it affects the North Atlantic right whale and fin and humpback whales. It is inconsistent with this rule provision and the state must therefore object to the request for concurrence in the federal consistency certification and any future consistency determinations.

Endangered or Threatened Wildlife- Birds:

Endangered or threatened wildlife or plant species habitats rule §7:7-9.3 6 (b) states that "the development of endangered or threatened wildlife or plant species habitat is prohibited unless it can be demonstrated, through an endangered or threatened wildlife or plant species impact assessment as described at N.J.A.C. §7:7 -11, that endangered or threatened wildlife or plant species habitat would not directly or through secondary impacts on the relevant site or in the surrounding area be adversely affected".

Overall, 18 of the 40 total tagged birds that provided data over the two years of the study may have crossed the WTA based on direct detections, straight-line connections of points, and modeling, collectively (Feigin et al. 2022). Moderate Adverse Impacts would be unavoidable but would not result in population-level effects or threaten overall habitat function. The preliminary draft of the BA found that the Proposed Action may adversely affect the red knot.

The piping plover is a threatened bird species. Considerable effort has been made at the Edwin P. Forsythe National Wildlife Refuge in southern LBI, in Barnegat Light township, and the North Beach in Brigantine to protect its nesting grounds and allow it to breed. It migrates north-south off the project area and a substantial number would now have to cross the wind turbine complex to get to its nesting ground. Reasonable estimates indicate that 31% of those crossing may die annually in the process.

Therefore, the project adversely affects its population and its nesting ground habitat by obstructing entry to and exit from it. The project development is inconsistent with this rule provision and the State must object to this request for concurrence in the federal consistency certification and to any future consistency determinations.

Other CZMA Issues: §7:7-15.4(b)1: Energy facilities shall not be sited in special areas as defined at NJAC §7:7-9.1 through 9.40. 9.42. 9.44 and marine fish and fisheries areas defined by NJAC §7:7-16.2, unless site specific information demonstrates that such feasibility will not result in adverse impacts to these areas.

Special areas particularly applicable here are: 9.3 surf clam areas, 9.4 prime fishing areas, 9.5 finfish migratory pathways, 9.36 Endangered or threatened wildlife, 9.37 critical wildlife habitat, 9.38 Public open space, NJAC §7:7- 16.2 (b) marine fish and fisheries (see COP Vol II p 7-118 Figure 7.4-18).

7:7-12.24(b) Miscellaneous uses. Non water dependent uses are to be discouraged in all water areas.

7:7-16.11 Buffers and compatibility of uses

The BOEM should have included these impacts in the DEIS and provided an assessment to the public of whether the project is consistent with these provisions.

7:7-16.12 Traffic

(a) Traffic is the movement of vehicles, pedestrians or ships along a route. (b) Coastal development shall be designed, located and operated in a manner to cause the least possible disturbance to traffic systems.

In its Consistency Review, Atlantic Shores responded that there will be no permanent impact, and the temporary impact would be the minimal necessary. The DEIS acknowledges there are options which will cause less disturbance to vessel traffic (see option C). According to the DEIS, impact will be MAJOR, and Irretrievable impacts could occur due to changes in transit routes, which could be less efficient during the life of the Project. Moderate Impacts would be unavoidable. Vessel traffic would have to adjust somewhat to account for disruptions due to impacts of the Project. Major Vessel traffic would experience unavoidable disruptions to a degree beyond what is normally acceptable, including potential loss of vessels and life.

The navigational complexity of transiting through the Project area, including the potential effects of WTGs and OSSs on marine radars, would increase risk of collision with other vessels (including non-Project vessels and Proposed Action vessels), and the risk of vessel allisions with the Project structures. Furthermore, the presence of the WTGs, OSSs, and met tower could complicate offshore SAR operations or surveillance missions within the Project area and lead to abandoned SAR missions and resultant increased fatalities. This would have localized, long-term, continuous, major impacts on navigation and vessel traffic.

BOEM anticipates that the cumulative impacts associated with the Proposed Action when combined with impacts from ongoing and planned activities, including offshore wind would be moderate to major, due primarily to the increased possibility for marine accidents, which could produce significant disruptions for ocean users in the geographic analysis area.

Conclusions:

Based on data and information available at this time, this project is very poorly situated regarding its proximity to shore and endangered species habitat. It is inconsistent with a number of key provisions of the New Jersey CZMA rules. There are no mitigating measures, short of moving the turbines elsewhere that can be taken to make it consistent.

Visual Impact Details (Viewshed)

Atlantic Shores response to CZMA 7.7-9.38, Public Open Space, neglects the project's cause of worsening the public's enjoyment of the nearby shore experience including specially projected areas. It does not address the no adverse impact or net gain criteria. According to the DEIS, the projects impact to Scenic and Visual Resource is MAJOR. Impact is documented on Table 3.6.9-6 which lists national and state parks and nature preserves.

According to subsection 7.7-9.41, Special Urban Areas, development that would adversely affect the economic well being of these areas is discouraged, when an alternative which is more beneficial to the special urban areas is feasible. Per the Consistency Review, Atlantic Shores states that the project provides a net benefit to the regional economy. Neither the COP or DEIS documents the details of the impact to the local economies. Atlantic Shores has not addressed the adverse impact or net gain criteria.

Per subsection 7:7-16.11, Buffers and Compatibility of Uses, (a) Buffers are natural or man-made areas, structures, or objects that serve to separate distinct uses or areas. Compatibility of uses is the ability for uses to exist together without aesthetic or functional conflicts. (b) Development shall be compatible with adjacent land uses to the maximum extent practicable. 1. Development that is likely to adversely affect adjacent areas, particularly special areas, N.J.A.C. 7:7-9, or residential or recreation uses, is prohibited unless the impact is mitigated by an adequate buffer. The purpose, width, and type of the required buffer shall vary depending upon the type and degree of impact and the type of adjacent area to be affected by the development and shall be determined on a case-by-case basis. (c) Rationale: The juxtaposition of different uses may cause various problems. An activity may cause people to experience noise, dust, fumes, odors, or other undesirable effects. Examples of possible incompatible uses include factories or expressways next to housing, residential developments next to farms, and residential, commercial, or industrial development adjacent to wetlands or endangered or threatened wildlife or vegetation species habitat. Buffers serve several important functions, including maintenance of wildlife habitat, water purification, open space and recreation, and control of runoff. In its CZMA Consistency Review, Atlantic Shores does not address its turbines and offshore substations and limits is response to export cables. The project activities present aesthetic and functional conflicts including but not limited to fishing, recreation, and tourism without an adequate buffer and therefore do not comply to the maximum extent practical.

Regulation, 7:7-16.10 Scenic resources and design requires that (a) scenic resources include the views of the natural and/or built landscape. (b) Large-scale elements of building and site design are defined as the elements that compose the developed landscape such as size, geometry, massing, height and bulk structures. (c) New coastal development that is visually compatible with its surroundings in terms of building and site design, and enhances scenic resources is encouraged. New coastal development that is not visually compatible with existing scenic resources in terms of large-scale elements of building and site design is discouraged. (g) Rationale: A project which is of a scale and location that has significant effect on the scenic resources of a region is considered to have a regional impact and to be of State concern. This rule, applies only to developments which by their singular or collective size, location and design could have a significant adverse effect on the scenic resources of the coastal zone. Restoration of areas of low scenic quality, such as abandoned port facilities and blighted urban areas, through large-scale new construction and design that is compatible with the surrounding region, is also encouraged by this rule. Specific issues of concern include those addressed by the rules on Historic and Archaeological Resources, High Rise Structure, Public Access, and Buffers and Compatibility of Uses.

As stated in the Coastal Zone Management Program Consistency Review, Atlantic Shores responded to this regulation by limiting it to export cables even though scenic resources are negatively impacted. The rationale for this rule also specifically references concerns about the impact on Historic Resources, and Buffers and Compatibility Uses. The adverse impact on Historic resources is acknowledged in Apprendix I to the COP and in the DEIS 3.6.2 is judged a MAJOR negative impact. In section 3.6.9, the DEIS judges the impact to be MAJOR as follows: The shore areas within the viewshed of the WTGs are highly developed. Public beaches and tourism attractions in this area are highly valued for scenic, historic, and recreational qualities, and draw large numbers of daytime visitors during the summertime tourism seasons. When visible (i.e., on clear days, in locations with

unobstructed ocean views), WTGs would add a developed/industrial visual element to ocean views that were previously characterized by open ocean, broken only by transient vessels and aircraft passing through the view. WTGs would add a developed/industrial visual element to ocean views that were previously characterized by open ocean. A 2013 study concluded that the predominant focus of visual attention occurs at distances up to 10 miles (16 kilometers); facilities were noticeable to casual observers at distances of almost 18 miles (29 kilometers) and were visible with extended or concentrated viewing at distances beyond 25 miles (40 kilometers) (COP Volume II, Section 5.2.3; Atlantic Shores 2023). Because the proposed Project's WTGs are approximately twice as tall as those described in the study , the WTGs would be noticeable at farther distances during clear conditions. Therefore, even with the removal of the closest WTG positions and the hub height and blade tip restrictions, other WTGs would still be visible.

The DEIS Appendix presents renditions for clear sunny conditions when the observation point is far away and/or obscured by ground cover, but for closer observation points it uses pre-sunrise (Beach Haven) and overcast conditions (North Brigantine, Atlantic City). But even in overcast conditions the turbines are clearly visible. There are two renditions in it for hazy conditions from North Brigantine and Atlantic City, 9 to 11 miles away in Appendix II-M. Even for those conditions the turbines are clearly visible. So, if the turbines are clearly 87 visible in hazy conditions, and would be more visible in sunny conditions, what other conditions are supposed to exist that would make them not visible? Those same visuals in Appendix II-O also show the turbines clearly visible with a stated "visibility" distance of 10 miles.

Visual Impact of Brigantine North Beach (Natural Area)- BC02
20043_VIA_Attachment E - Photosimulations (boem.gov)

"The purpose of the State's Natural Areas System is to protect and preserve ecologically significant lands and resources found on them, including endangered and threatened wildlife and important vegetative communities. The North Brigantine Natural area is part of the longest stretch of undeveloped barrier island beach along the New Jersey coast. It includes approximately 2.5 miles of undeveloped beach, along with coastal dunes, maritime forest and tidal marsh, that provide habitat for several rare species of birds and plants. It is used by the public for bird watching, walking, jogging, sunbathing, and surf fishing.

The existing view lacks any manmade features other than some old pilings at the water's edge outside the selected field of view (to the right). This, along with the lack of people on the beach, gives the view an undeveloped natural character. Rating panel members indicated that the existing view is a relatively pristine water view with a clean simple organization of line in form, that lacks strong focal points. Waves and bird activity at the shoreline may draw some viewer attention, but the primary focus is the uninterrupted expanse of open ocean and the distant horizon line. The KOP feels secluded and conveys a sense of isolation and privacy. Rating panel scores for the existing conditions photographs ranged from 13.8 to 11.2 (average score = 12.8). The rating panel score for this KOP indicates that this view is partially retained. The impact magnitude of the proposed conditions (Installation of 150 wind turbines) is 4.9 or significant. The following is a description of the devastation of the view. Based on discussions with the visual impact consultant, she stated that the entire island of Brigantine will have the same or worse visual impact. Most of Brigantine has no manmade structures, such as boardwalks or amusements, other than a short seawall at the North End of the Island to distract beachgoers. Most houses are far from the ocean behind dunes therefore most of the beaches are surrounded by natural areas. The impact of manmade moving structures will have major negative impact to the beachgoers view of the ocean horizon. Further there are no night visualization to show the impact of the lights. This will further degrade the ocean viewer's experience.

According to Atlantic Shore Visibility Impact Study for Brigantine North Beach Natural Area on BOEM Website, the view of the seascape after the wind turbine project is completed is described as follows:

> "With the proposed Project in place, the view is dominated by a large and highly visible array of WTGs that extend across a large portion of the ocean view to the southeast from this location. Of the 232 degrees of relatively unobstructed ocean horizon, the Project occupies approximately 50 degrees or 22 percent of the view (see Field of View Image, left). Project visibility is enhanced by the relative proximity of the WTGs (9.03 miles) and lighting conditions that make the WTGs appear relatively dark against the light blue sky. Rating panel members had a somewhat variable range of reactions to the impact resulting from the Project WTGs, with the VIA scores ranging from 5.5 to 9.5 (average score = 7.8). These scores indicate an average reduction of 4.9 points and high magnitude impacts. Individual rating panel members scores ranged from 1.7 to 7.0. Panel members indicated that the WTG's become dominant elements in the view. They reduce the view's sense of openness and add a large number of built features to what was previously an open, undeveloped ocean view. The presence of the WTGs tends to enclose the view and adds substantial visual clutter. This effect is enhanced by the transition of the WTGs an orderly arrangement to stacked alignment when the viewer is looking down a row of aligned WTGs, making them appear disorderly. The movement of the rotor blades will also attract viewer attention and make the WTGs the focus of this view. Although the visibility and visual dominance of the WTGs is likely to be reduced under more hazy sky conditions, and when lighting conditions reduce WTG contrast with the sky, proximity of the WTGs will allow them to be visible under most clear sky conditions. With the Project in place, this KOP has low to moderate scenic quality. Considering the scale, compatibility, and spatial dominance factors that influenced the visual impact rating at this KOP, panel ratings indicated that the WTGs present severe scale contrast with the ocean (water resources), land use, and user activity. The panel scores also indicate that the WTGs are not compatible with water resource, landform, land use, and user activity. The WTGs would become the dominant feature in the seascape when compared to the existing water resources, landform, and user activity. Consistent with the anticipated compatibility, scale contrast, and spatial dominance impacts associated with the Project, panel members assigned the Project visibility an average VTL of 6 from this KOP"

BC02 North Brigantine Natural Area (boem.gov)

Appendix II- M1 VIA (boem.gov), page 172/599

Atlantic Shores, LLC states that the project is consistent with Brigantine's Master Plan. The offshore wind development will have a major negative impact on our scenic resources and scenic views in the Brigantine community. The Atlantic Shores development will NOT mitigate our flooding, extreme storm events, and sea level rise. Therefore, the project is inconsistent with the Brigantine Master Plan.

Brigantine Master Plan

An objective identified from the previous planning documents includes an objective to "implement programs and regulatory controls designed to protect the scenic resources of the community ". Previous actions taken to address this objective include zoning control, building height restrictions and setbacks. A "2016 follow-up" within this section of the report identifies public concern for access to scenic resources: "Another aspect of the planning process has been the desire expressed by local residents for scenic views and resources to be protected and accessible to all. The development of the waterfronts, in particular the back bay areas has provided limited public access to street ends and points of access to the bay visually in many locations." It also identifies that there is "…an ongoing concern about visual access and scenic corridors on the Island, and there is a continuing desire to renovate some of the less desirable views…" and a need to promote and preserve access to the Bay and Atlantic Ocean. A general goal "to promote a desirable visual environment through creative development techniques and good civic design and arrangements" is made created in the 2016 General Goals and Objectives Statement section. Provisions are made in subsequent sections to respond to this objective and improve the visual environment through changes to building setbacks, height restrictions,

and similar measures. However, no additional measures intended to protect or enhance visual access and protecting scenic corridors are proposed.

The Resilience Plan Element became a part of the master plan since two major storm events in 2011 and 2012. The reexamination of the Master Plan includes the Resiliency Action Plan that incorporates actions to protect against flooding, extreme storm events, and sea level rise.

Other Examples of Visual Impact of Industrialized Ocean in Other Coastal Areas and Omission of Sufficient Visualizations Throughout the Coastline

The visual impact descriptions for the other coastal towns in Atlantic County are very similar to the example shown for Brigantine. The visualization for Ocean Casino Resort (AC04) is also a significant impact. "The factors that influenced the VTL, include a lack of compatibility, severe scale contrast, and dominance present by the Project relative to the ocean (water resources). Additionally, the panel members indicated the scale contrast would be severe for the land use and user activities associated with this KOP." There is no writeup for Jim Whelan Boardwalk Hall which is an historic site in Atlantic City, but based on the visual simulations, the view of the wind turbines will be significant and will have a major adverse on the beach goers experience. The impact for Lucy the Elephant (MC02), another historic property is classified as somewhat significant, only because it is blocked by the first inland row of built structures. According to the visual assessment, "The overlapping blades of the WTGs create a fence-like visual barrier along the horizon and their movement will attract viewer attention and make the WTGs a focus of this view." There were no visual assessments for other locations in Margate, Ventnor and Longport. Additional visual impact assessments must be done for a variety of locations in Brigantine, Atlantic City, Margate, Ventnor, and Longport before any decision can proceed on the CZMA rules.

In other areas of the Construction and Operations Report (COP) other descriptions support the significant negative impact on the coastal experience.

"The "view is dominated by large array of WTGs…stacked one after the other, appearing like one massive turbine with multiple blades"

" Residences along the shoreline have a consistent view of the ocean that is industrialized"

"Viewers would have to turn away from the projects to eliminate it from their view", and

"At night the 'navigation lights would become the focus of viewer attention and could change the character of night time skies forever ".

In addition, the video here https://vimeo.com/821315215 reveals the truth buried deep within the 4,000-page construction report proving beyond any doubt that the turbines, each the height of the Eifel Tower, will be clearly visible from the majority of New Jersey's beaches and inland bays. Watch the video visual simulations for yourself.

The source of the incorrect statement that the turbines will be visible only under "very clear viewing conditions" is unclear. But past documents have referred to a study done by a group within Rutgers University titled "Initial Visibility Modeling Study for Offshore Wind for New Jersey's Atlantic Shores Offshore Wind Project." and concludes from it that the turbines wouldn't be visible 59 percent of daylight time.

That study was done for Atlantic Shores and its corporate sponsor Electricity de France Renewables, in 2020, and is not available on the web nor is it in the EIS list of references. The study never defines what "visibility" means. It presents "visibility distances" but it never says what object is or is not visible. Obviously, the visibility of a one-thousand-foot-high turbine is something different than a small light source a distance away. It also discusses calculating a visible distance from air property measurements, but those estimates are only accurate to 10 miles. Subsequent discussions with Rutgers staff have confirmed that its results are not pertinent to the offshore wind turbines.

Misrepresentations of the Frequency of Days that Turbines Will Be Visible

The DEIS and the COP continue to incorrectly state the wind turbines will only being visible under rare ,very clear conditions, and will disappear from view under typical or more frequent conditions. These frequency representations of visibility are included throughout Appendix IIM-1 of the COP, and in Appendix H, Attachment H-1 of the draft EIS, claiming that the first rendition done from an observation point shows the turbines visible for rare very clear 32 mile "visibility" (5.2% of the time) and then disappearing as you go to 18 or 20 mile distance visibility , which it also says is still relatively rare (15 -20% of the time), with worse visibility conditions most of the time when the turbines would not be seen at all. To support this (page 99 of the COP Appendix) it refers to a "meteorological study of 2019" with no reference for that study given. It is not clear whether that "study" is the referenced Rutgers Visibility Report (which is now appendix H to the newly revised Appendix II M1 COP), or whether the Rutgers Visibility Report also used that same "study". In either case all the misrepresentations of that Rutgers Report haven't gone away-but are just relabeled and hidden.

The use of that 2019 meteorological data base "study" and the Rutgers Report to represent viewing conditions at the shore is seriously flawed. It is misleading and not appropriate for use in the DEIS. First, the definition of "visibility" in the Report is unknown (the authors are no longer at Rutgers and current Rutgers staff is unwilling to stand behind the Report), but apparently is based on airport visibility estimates from markers placed at limited distances from ground level receptors. It has nothing to do with humans viewing offshore wind turbines that are 1000+foot tall with very long rotating blades which provide a wide target. Those observed visibility estimates are apparently limited to 10 miles out (see page 5 of the Rutgers study), and the COP itself notes that such ground level receptors may not be representative.

Second, the visibility data used in the 2019 Report is from Atlantic City (AC) airport which is of course inland, and from the Ocean City municipal airport which is on the bay. Most (all?) of the data is looking over land that has no relevance to visibility conditions at the shore looking out to sea.

The DEIS and COP do not clearly state how that meteorological data is then converted to visible/not visible (or "obscured") judgments. The newly revised COP mentions the use of Forecast Systems Laboratory (FSL) predictive models with the above mentioned (but suspect) airport data to predict visibility ranges. The Rutgers study reports comparing the FSL model predictions to on land observed visibility using only one day of data (July 19, 2019) – see page 5. The FSL model is used for weather forecasting, and it is not clear how they apply here. Again, how do they define "visibility", how far out in distance do their predictions extend, and how applicable are they for massive offshore structures?

The COP also mentions an Epsilon Associates study (also new to this version of the COP) which apparently takes the 2019-year hourly Rutgers RUWRF temperature, humidity, and dew point data, somehow applies them to the entire geographic area being considered, and then calculates "visibility" over the entire geographic area being considered and over the entire year. That is apparently the source of all the visibility frequency estimates

included in the DEIS and the COP. The COP does not say what modeling formulae are used, nor where they came from (e.g., the Rutgers Study, an FSL model, Epsilon's own model, a combination). In any case there is apparently no observational support involving offshore "visibility" to confirm the modeling formulae used. This is a serious flaw in the DEIS and another reason why the visibility frequency predictions should not be used in the DEIS.

Note that COP claims that the single year of 2019 data is a representative year but does not provide the data to support that claim. The Rutgers Report suggests otherwise.

Misrepresentation and problems with the methodology are confirmed when you look at the actual renditions. They say these are done for rarer, clearer conditions when "visibility" is 32, 20, or 18 miles, using the 2019 data. But for observation points within visible range of the turbines the renditions themselves look cloudy, overcast and as pointed out above some are for just before sunrise. Experience on the beach says the opposite, that most of the summer daylight hours have much better visibility than are shown in the renditions.

Samples of Contradictions and Unsupported Claims in the DEIS and the COP including the Rutgers Study

DEIS Page 3-6.9 – 36 includes some general comments on factors that may affect visual clarity. It concludes with a paragraph on the percentages of time the structures would be visible at different distances (e.g. at 8.7 miles over 50% of the year). Those percentages are lifted from the newly revised (May 2023) portion of the AS COP Vol II Appendix ll M1. "Over 50%" is consistent but understates the Rutgers Study itself (p.8) - which quantifies that as 60% of the year for over 10 miles and 70% for over 8 miles. The paragraph then refers to Fig 3.6.9 – 7 KOPS Obscured Visibility Comparison for estimating the percentage of the time each month the various KOPS would be "obscured" during the course of the 2019 year saying those figures come from "meteorological data". That table is also lifted from the newly revised COP. "Obscured" is not defined but evidently interpreted by BOEM as meaning "not visible". As mentioned previously neither the DEIS nor the referenced COP clearly describes the source of that data, how it was derived, and how it was used to predict "visibility". Fig 3.6.9-7 itself is unclear in that the y axis is labeled "% in 2019" and it is not totally clear whether that means % of "obscured" time over the entire month (daytime only?) as the title would suggest, or % "visible" which BOEM's numbers mentioned earlier in the paragraph would suggest? The over 50% of the time visible at 8.7 miles statement that BOEM and the COP make is not consistent with what this figure would suggest. As discussed previously, Fig 3.6.9- 7 is based on unsupported data and should be removed from the DEIS, as should any references to specific estimates of % of time "visible" and "not visible".

Also see H-19 of the DEIS which claims without support that "due to coastal meteorological conditions…visibility would be reduced 3 out of 4-5 days". Presumably that is referring to the simulations provided, but it is certainly not apparent what would constitute a "reduced visibility" day (how much in reduced visibility and for what proportion of the day). And it is not apparent how such calculations could be made since the simulations themselves are not completely "clear" and some in fact show significant visual impairment from atmospheric conditions. That comment should be removed from the DEIS or supported with defensible facts.

The AS COP concludes that from the Epsilon study during the tourist season (it uses the months of May, June, and August - but leaves out July, rather than using June, July and August) "no turbines would be visible during more than 80% of the daylight hours" – which does not fit our lived experience. It also appears inconsistent with the Rutgers Study (pages 2 and 6) which reports visibility greater than 20 miles at 23% for the months of July and August. The COP further concludes, that in January (their highest visibility month) "visibility is only expected to occur 50% of the daylight hours" – which is contrary to Fig 3.6.9-7 and the prior BOEM visibility comment that came from the AS COP that reports visibility as over 50% of the year.

The Rutgers Study itself contains such apparent contradictions and misleading methodology. For example, it says that the visibility from the lease area would be greater than 10 miles 41% of the year (pages 2 and 7), and greater than 10 miles from the shore toward the lease area 60% of the daytime hours over the year (70% of the time greater than 8 miles) – page 8. Both statements may be reconcilable, but they show the difficulty it trying to use the work to predict visibility. The Rutgers Study itself mentions a bias in their modeling which understates the "observed visibility" and says that estimating visibility from the shore requires averaging on shore and off shore numbers. It is not clear in the Rutgers study itself when that bias and averaging is included in their reported results, nor is it clear whether/when those are factored into the COP numbers.

Since we are not reviewing the COP itself, we will not go into the other inconsistencies and flaws. But if Agencies are relying on its results it should satisfy itself on its methodology and accuracy. In particular we mention the "Rutgers Study" that is Attachment H to this newly revised section of the AS COP. The use of that study to predict "visibility" for offshore wind projects is not supported by the science. The methodology is not clear, its results are inconsistent, and even the study itself warns of conclusions that are not supported by the data (page 9). Included in our references is a detailed critique of the "Rutgers Study" that we sent to Rutgers V7. It identifies a host of shortcomings in the study that essentially make it worthless for the application for which it is being used in the COP, i.e., to predict visibility at various offshore distances and conditions. The response from Rutgers (the authors are no longer affiliated with Rutgers) was that this was not a Rutgers sponsored study and they would not reply to our questions or concerns. They acknowledged our concern for the potential misuse of their basic meteorological data (temperature, humidity, dew point) which they make available to the general public.

Night time Visibility Issues: DEIS Page 3-6.9 – 32 (and repeated elsewhere) describes the effects of project lighting. Clarification is needed on navigation lighting vs aircraft hazard warning lighting, including the heights, required illumination, and impact of the required navigation lighting for WTGs and the OSSs and whether or not that is covered by the proposed ADLS system. As written, it appears the navigation lighting will also be part of the proposed system, but that is not likely as ship traffic must also be warned. It is not clear that if ADLS is used that the estimated frequency numbers also include military aircraft operations and not just civilian. Since ADLS is proposed, but apparently not yet approved by the FAA, how is this relevant to a decision now? Will it be a license requirement?

Adverse Impact to Historical Properties

Per subsection 7.7-9.34 Historic and Archeological Resources, b) Development that detracts from, encroaches upon, damages, or destroys the value of historic and archaeological resources is discouraged.

New Jersey's cultural heritage has become an important component of the coastal tourism economy, as more and more people visit these historic sites. Public interest in these historic and archaeological resources translates to significant commercial and economic contributions throughout the coastal zone, as manifested in hotel stays, sightseeing, food service patronage, historical tours, museum visits, recreational diving, and other historic/archaeological tourism related activities.

Atlantic Shores addresses export cables only in the certification. In the certification AS does not address the offshore visual impacts on historic sites. Those impacts are addressed elsewhere in the DEIS 3.6.2 with the admission of MAJOR adverse impacts. A full 27 above ground historic properties are in the visual impact region, including 2 where a NHL will be necessary to compensate for the adverse effects (see Appendix I of

DEIS and Appendix G G-71 for the required financial compensation plan). There is no attempt to address the no adverse impact and net gain criteria.

According to the DEIS the impact to historical properties is major and described as follows: The Project would also cause visual effects and contribute to cumulative effects from Offshore Project component visibility on 27 historic aboveground resources that are historic properties in the visual portion of the APE (COP Volume II, Appendix II-O; Atlantic Shores 2023; BOEM 2023). These resources have ocean views that are character-defining features contributing to their NRHP eligibility; these ocean views are subject to adverse effects by the Project. For compliance with NHPA Section 110(f) at 36 CFR 800.10, which applies specifically to NHLs, BOEM has determined that two NHLs (i.e., Atlantic City Convention Hall and Lucy, The Margate Elephant) would be adversely affected by the Project, and as such, BOEM, to the maximum extent possible, will undertake planning and actions as may be necessary to minimize harm to the NHLs (COP Volume II, Appendix II-O; Atlantic Shores 2023; BOEM 2023).

Major Impact
Adverse effects on historic properties as defined at 36 CFR 800.5(a)(1) could occur. Characteristics of historic properties would be affected in a way that diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association to the extent that the property is no longer eligible for listing in the NRHP. As compared to Moderate Impacts: A. Destruction of or greater extent of damage to cultural resources from ground- or seabed disturbing activities; or B. Disturbances are minimized or mitigated but do not reduce or avoid the destruction or loss of scientific or cultural value from the cultural resources; or C. Disturbances are not minimized or mitigated resulting in the destruction or loss of scientific or cultural value from the resources. As compared to Moderate Impacts: A. Physical impacts on cultural resources (for example, demolition of a cultural resource onshore); or B. Greater extent of changes to the integrity of cultural resources or visual disruptions to the historic or aesthetic settings from which resources derive their significance, including long-term and/or permanent impacts; or C. Disruptions to settings are not minimized or mitigated. 3.6.2.3

The presence of structures in the WTA, including foundations and scour protection for WTGs and OSSs, could have impacts on cultural resources. Atlantic Shores' Historic Resources Visual Effects Assessment (HRVEA) for Offshore Project components also determined that the Proposed Action could adversely affect up to 27 aboveground historic properties, including historic districts, individual historic aboveground resources, and two NHLs, in the visual APE for Offshore Project components (see Appendix I for a complete list of historic views and vistas of the Atlantic properties) (COP, Appendix II-O; Atlantic Shores 2023). The study determined that Ocean views and vistas, free of modern visual elements, are a contributing element to the NRHP eligibility of the historic homes and structures, recreational properties, lighthouses and navigational aids, and maritime defense facilities. A location near the water or a historic functional relationship with the sea is also an element of the latter three aboveground property types.

Historic properties with unobstructed views toward the ocean would be subject to the largest scale impacts due to theoretical visibility of portions of the up to 1,021 WTGs within the geographic analysis area (BOEM 2023). WTGs associated with the Project would represent 22.8 to 35.9 percent of the total WTGs theoretically visible from each property, with the closest Project WTG approximately 9.91 miles (15.95 kilometers) away from the closest historic property. WTGs associated with other offshore wind energy development activities would represent 64.1 to 77.2 percent of the total WTGs theoretically visible from each property, with the closest WTGs approximately 8.62 miles (13.87 kilometers) away from the closest historic property. As such, the

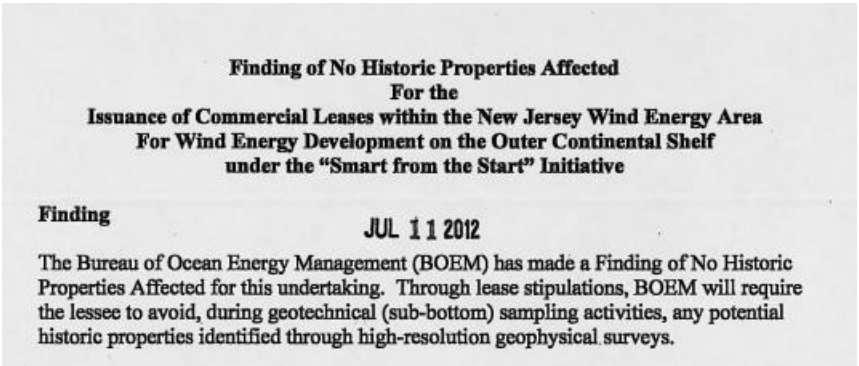
proposed Project is a large-scaled development when compared to other developments planned nearby (BOEM 2023).

BOEM anticipates that the impacts on cultural resources associated with the Proposed Action and other ongoing and planned activities would be major due to the long-term or permanent and irreversible impacts on archaeological (terrestrial and marine) resources and ASLFs if they cannot be avoided, and long-term impacts on historic aboveground resources, including the 27 historic properties identified in Appendix I, Table I-6. 3.6.2.6

In July 11, 2012, BOEM made a Finding of No Historic Properties Affected for the Commercial Lease Areas. NJ_Documentation-in-Support-of-a-Finding-of-No-Historic-Properties-Affected.pdf (boem.gov)

In the Certification, the offshore visual impacts on historic properties are not addressed, although according to the DEIS 3.6.2, the conclusion is that they are MAJOR adverse impacts. There is no attempt to address the no adverse impact and net gain under CZMA 7.7-9.34.

What facts changed from 2012 to 2023 to result in the dramatic change in the Finding of Adverse Effect for the Atlantic Shores Offshore Wind South Project Construction and Operations Plan as a result of adversely affecting 37 ancient submerged landform features, one terrestrial archaeological resource, and 28 historic aboveground resources? Atlantic Shores Offshore Wind South Draft Environmental Impact Statement: Finding of Adverse effect for Construction and Operations (boem.gov) The 2023 Finding is completely inconsistent with the 2012 Finding. What new information is known as of May 2023 that was not known in July of 2012 that would changed the finding? The Atlantic Shores project will be visible from many historical properties in Atlantic, Cape May and Ocean Counties as listed in the following tables.



Finding of No Historic Properties Affected
For the
Issuance of Commercial Leases within the New Jersey Wind Energy Area
For Wind Energy Development on the Outer Continental Shelf
under the "Smart from the Start" Initiative

Finding

JUL 11 2012

The Bureau of Ocean Energy Management (BOEM) has made a Finding of No Historic Properties Affected for this undertaking. Through lease stipulations, BOEM will require the lessee to avoid, during geotechnical (sub-bottom) sampling activities, any potential historic properties identified through high-resolution geophysical surveys.

Table 4 Summary of theoretically visible WTGs by project from historic properties

Historic Property	Maximum Number of Theoretically Visible WTGs and Hubs per Project Presented as: WTGs (up to blade tip); Hubs									
	Atlantic Shores South (the Project)	Atlantic Shores North	Ocean Wind 1	Ocean Wind 2	Garden State	Skipjack	Bight Wind Holdings	Atlantic Shores Offshore Wind Bight	Invenergy Wind Offshore	Total
Atlantic City Boardwalk Historic District	200; 200	148; 148	98; 98	111; 111	60; 30	41; 0	32; 0	95; 80	91; 13	876; 680
Atlantic City Convention Hall NHL	200; 200	148; 148	98; 98	111; 111	59; 0	5; 0	0; 0	93; 3	35; 0	749; 560
Brigantine Hotel	200; 200	148; 148	98; 98	111; 111	11; 0	0; 0	7; 0	95; 26	52; 0	722; 583
Brighton Park	200; 200	148; 145	98; 98	111; 111	0; 0	0; 0	0; 0	0; 0	0; 0	557; 554
Central Pier	200; 200	148; 148	98; 98	111; 111	4; 0	0; 0	0; 0	0; 0	31; 0	592; 557
Colonial Revival Residence at 120 Atlantic Avenue	200; 200	148; 148	98; 98	111; 111	0; 0	0; 0	0; 0	0; 0	40; 0	597; 557
Folk Victorian Residence at 5231–5229 Central Avenue	200; 195	143; 25	98; 98	111; 111	60; 2	16; 0	0; 0	0; 0	0; 0	628; 431
Gillian's Wonderland Pier	200; 200	148; 102	98; 98	111; 111	59; 0	0; 0	0; 0	0; 0	0; 0	616; 511
John Stafford Historic District	200; 200	148; 147	98; 98	111; 111	11; 0	0; 0	0; 0	7; 0	0; 0	575; 556
Little Egg Harbor U.S. Life Saving Station #23	200; 200	148; 148	98; 98	111; 94	0; 0	0; 0	1; 0	91; 0	10; 0	659; 540
Lucy, The Margate Elephant	200; 200	148; 120	98; 98	111; 111	11; 0	0; 0	0; 0	0; 0	0; 0	568; 529
Margate Fishing Pier	200; 200	148; 132	98; 98	111; 111	7; 0	0; 0	0; 0	0; 0	0; 0	564; 541
Missouri Avenue Beach (Chicken Bone Beach)	200; 200	148; 136	98; 98	111; 111	0; 0	0; 0	0; 0	0; 0	0; 0	557; 545
Music Pier	200; 200	148; 101	98; 98	111; 111	59; 0	0; 0	0; 0	0; 0	0; 0	616; 510

Historic Property	Maximum Number of Theoretically Visible WTGs and Hubs per Project Presented as: WTGs (up to blade tip); Hubs									
	Atlantic hores South (the Project)	Atlantic Shores North	Ocean Wind 1	Ocean Wind 2	Garden State	Skipjack	Bight Wind Holdings	Atlantic Shores Offshore Wind Bight	Invenergy Wind Offshore	Total
Ocean City Boardwalk	200; 200	148; 51	98; 98	111; 111	32;	0;	0; 0	0; 0	0; 0	589; 460
Residence at 114 South Harvard Avenue	200; 200	148; 143	98; 98	111; 111	11; 0	0; 0	0; 0	0; 0	0; 0	568; 552
Residence at 125 S Montgomery Avenue	200; 200	148; 143	98; 98	111; 111	4; 0	0; 0	0; 0	0; 0	0; 0	561; 552
Ritz Carlton Hotel	200; 200	148; 148	98; 98	111; 111	60; 11	27; 0	6; 0	95; 33	62; 0	807; 601
Riviera Apartments	200; 200	148; 129	98; 98	111; 111	0; 0	0; 0	0; 0	0; 0	0; 0	557; 538
Saint Leonard's Tract Historic District	200; 200	148; 148	98; 98	111; 111	60; 4	14; 0	0; 0	82; 0	18; 0	731; 561
Seaview Golf Club, Clarence Geist Pavilion	200; 200	148; 148	98; 98	111; 111	11; 0	0; 0	0; 0	80; 0	7; 0	655; 557
Two-and-a-Half-Story Residence at 124 Atlantic Avenue	200; 200	148; 148	98; 98	111; 111	0; 0	0; 0	0; 0	37; 0	0; 0	594; 557
Two-Story Residence at 108 South Gladstone Avenue	200; 200	148; 139	98; 98	111; 111	20; 0	0; 0	0; 0	0; 0	0; 0	577; 548
Two-Story Residence at 114 South Osborne Avenue	200; 200	148; 136	98; 98	111; 111	20; 0	0; 0	0; 0	0; 0	0; 0	577; 545
U.S. Coast Guard (USCG) Station Atlantic City	200; 200	148; 148	98; 98	111; 111	0; 0	0; 0	0; 0	46; 0	1; 0	604; 557
Vassar Square Condominiums	200; 200	148; 148	98; 98	111; 111	60; 22	35; 0	2; 0	95; 25	51; 0	800; 604
Ventnor City Fishing Pier	200; 200	148; 143	98; 98	111; 111	21; 0	0; 0	0; 0	0; 0	0; 0	568; 552

Notes: Percentages are rounded to the nearest tenth place decimal.

Table 1 Historic properties adversely affected by the Project

Property Name	Address/Location	NRHP Status	Distance To Nearest Project WTG
Atlantic City Boardwalk Historic District	Atlantic City, NJ	Eligible (Determined by NJ HPO)	10.47 miles
Atlantic City Convention Hall NHL	2301 Boardwalk, Atlantic City, NJ	National Historic Landmark	11.4 miles
Brigantine Hotel	1400 Ocean Avenue, Brigantine City, NJ	Potentially eligible	9.91 miles
Brighton Park	1801 Boardwalk, Atlantic City, NJ	Potentially eligible as a contributing element to the Atlantic City Boardwalk Historic District	11.16 miles
Central Pier	1400 Boardwalk, Atlantic City, NJ	Eligible (Determined by NJ HPO)	10.85 miles

Property Name	Address/Location	NRHP Status	Distance To Nearest Project WTG
Two-Story Residence at 114 South Osborne Avenue	114 South Osborne Avenue, Margate City, NJ	Eligible (Determined by BOEM)	14.11 miles
U.S. Coast Guard (USCG) Station Atlantic City	900 Beach Thorofare, Atlantic City, NJ	Eligible (Determined by NJ HPO)	11.46 miles
Vassar Square Condominiums	4800 Boardwalk, Ventnor City, NJ	Eligible (Determined by BOEM)	12.45 miles
Ventnor City Fishing Pier	Cambridge Avenue at the Ventnor City Boardwalk, Ventnor City, NJ	Potentially eligible	12.83 miles

Source: Atlantic Shores 2023.
Notes: BOEM = Bureau of Ocean Energy Management; NJ = New Jersey; NJ HPO = New Jersey Historic Preservation Office.

Property Name	Address/Location	NRHP Status	Distance To Nearest Project WTG
Colonial Revival Residence at 120 Atlantic Avenue	120 Atlantic Avenue, Atlantic City, NJ	Potentially eligible	10.65 miles
Folk Victorian Residence at 5231–5229 Central Avenue	5231–5229 Central Avenue, Ocean City, NJ	Potentially eligible	20.82 miles
Gillian's Wonderland Pier	600 Boardwalk, Ocean City, NJ	Eligible (Determined by NJ HPO)	17.01 miles
John Stafford Historic District	Ventnor City, NJ	NRHP Listed	12.47 miles
Little Egg Harbor U.S. Life Saving Station #23	800 Great Bay Boulevard, Little Egg Harbor Township, NJ	Eligible (Determined by NJ HPO)	11.95 miles
Lucy, The Margate Elephant	Decatur and Atlantic Avenues, Margate City, NJ	National Historic Landmark	14.4 miles
Margate Fishing Pier	121 S. Exeter Avenue, Margate City, NJ	Potentially eligible	13.6 miles
Missouri Avenue Beach (Chicken Bone Beach)	Atlantic City, NJ	Eligible (Determined by NJ HPO)	11.2 miles
Music Pier	825 Boardwalk, Ocean City, NJ	Eligible (Determined by NJ HPO)	17.2 miles
Ocean City Boardwalk	Ocean City, NJ	Eligible (Determined by NJ HPO)	16.9 miles
Residence at 114 South Harvard Avenue	114 South Harvard Avenue, Ventnor City, NJ	Eligible (Determined by NJ HPO)	13.01 miles
Residence at 125 South Montgomery Avenue	125 S. Montgomery Avenue, Atlantic City, NJ	Potentially eligible	12.4 miles
Ritz Carlton Hotel	2715 Boardwalk, Atlantic City, NJ	Eligible (Determined by NJ HPO)	11.66 miles
Riviera Apartments	116 S. Raleigh Avenue, Atlantic City, NJ	Eligible (Determined by NJ HPO)	12.3 miles
Saint Leonard's Tract Historic District	Ventnor City, NJ	Eligible (Determined by NJ HPO)	12.69 miles
Seaview Golf Club, Clarence Geist Pavilion	401 South New York Road, Galloway Township, NJ	Potentially eligible	15.6 miles
Two-and-a-Half-Story Residence At 124 Atlantic Avenue	124 Atlantic Avenue, Atlantic City, NJ	Potentially eligible	10.65 miles
Two-Story Residence at 108 South Gladstone Avenue	108 South Gladstone Avenue, Margate City, NJ	Eligible (Determined by NJ HPO)	13.82 miles

https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Atlantic-Shores-South-CHRVEA.pdf

Other Degradation of the Coastal Experience Details

ASOWNJ and BOEM DEIS Visual Impact Studies Rotating Blade Effect

The visual impact of the stationary turbines is just part of the impact to the shore. The physiological impact of any prolonged view of the rotation is unclear, but because of the disparity between what the brain expects to see at the seashore and the actual view, it could cause visible induced vertigo or other effects. Offshore Wind Turbine Visibility and Visual impact Threshold Distances, Robert Sullivan, Argonne Labs

Audible and Inaudible Airborne Noise Impact at the shore

The airborne noise level emanating from today's larger turbines is significant. Therefore, offshore wind projects often assess airborne noise and its propagation to the shoreline. Notwithstanding the proximity of the projects proposed off Long Beach Island, Brigantine, and Absecon Island, NJ, no such assessment was prepared by any government agency. Given the extreme proximity of this project to the shore, compared to other modern projects worldwide, this seemed an odd omission and raises concerns that the issue is not being given the proper attention. When such assessments are done, they use a standard modeling approach that considers noise dissipation and attenuation in the air, but does not consider the magnifying effect of sound propagation over water due to inversion conditions of increasing air temperature and increasing wind velocity with height.

Therefore another organization representing concerned citizens in New Jersey, Save LBI, conducted its own full assessment. (*Airborne Noise Impact from the Wind Project Proposed off of LBI*, Save LBI, June 24, 2023) To get the full noise levels at the shore, Save LBI used measured values of noise loss over water from studies and subtracted that from the source noise level provided by the turbine manufacturer.

The results are summarized below.
1) Noise propagates more effectively over water than land.
2) The airborne noise source level from one operating turbine is 118 decibels (dB), per the Vesta-236 15-megawatt turbine Specification Sheet. This is an average number, so much higher sound levels can be produced as the blades swing through discontinuities in wind, speed and direction.
3) Based on measured noise loss data applied over the distance from the turbines to the shore, the continuous noise level to a receiver at the shore from the full anticipated 357 turbine wind complex will be 66.9 dB, and for the 200 turbines of projects 1 and 2, 64.4 dB.
4) Those levels will clearly exceed the New Jersey outdoors night time residential noise standard of 50 dB at the property line, and at times the 65 dB outdoors daytime standard as well.
5) Noise attenuation from outdoors to indoors is approximately 10 dB, so the noise from both turbine operation and pile driving will exceed the NJ night time property line residential standard of 50 dB indoors as well as outdoors.
6) For 24-hour construction pile driving, a noise source level of 137 dB from one operation will result in a 62 dB level at the shore, exceeding the property line night time residential standard of 50 dB.
7) The audible noise will be clearly perceived, pulsating, annoying, and sleep-disruptive.
8) Another concern is noise in the low frequency "infrasonic" range. The estimated sound pressure level of 123 dB at the shore for low frequency infrasonic noise could also cause serious adverse disturbance and health effects. Therefore, this issue of low frequency and infrasonic noise transmission, and human impact needs to be explored in depth.

It is concerning that the impact of audible and inaudible noise at the shore has not been addressed by the Atlantic Shores, LLC or any government agency. The noise frequency spectrum for the Vesta-236 turbine needs to be disclosed, and a full study done and disclosed of audible and infrasonic noise impact at the shore before the project is approved.

Changes in Shore Breeze, Wave Action, Island Temperature and Humidity

The proximity of these turbines also creates the potential for reduced shore wind, wave action and changes in air temperature. Along with the visible and audible impacts, the Atlantic Shores and/or government agencies

should have provided an analysis of the potential impacts of the wind turbine complex on shore wind speed, temperature, humidity and wave action. Several prior measurement studies of such downwind impacts from smaller turbine complexes indicate the potential for reduced wind speeds and higher temperatures. An extrapolation of those results for the wind turbine sizes and atmospheric settings expected here should have been prepared.

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

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

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

Most recently, a report [OS3] by Arc Vera Renewables entitled “Estimating Long-Range External Wake Losses in Energy Yield and Operational Performance Assessments Using the WRF Wind Farm Parameterization” specifically analyzed the potential for large project to project wake impacts for the NY Bight lease areas. It simulated wake effects from turbines with a 150-meter tower height and 240-meter diameter blades, comparable to those to be used by Atlantic Shores.

In simulation three it analyzed the wake effect of 275 such turbines in lease areas 0539, 0541, and 0542. The results in Figure 5 of the Report show a wind velocity reduction 9 miles down flow from the turbines of 2.5 meters per second compared to a free flow velocity of 9.75 meters per second, or a 26 percent reduction. That is the same distance from the Atlantic Shores project to the LBI shore, and the Atlantic Shores project would involve more turbines (357), more closely spaced. So, the wind reduction at the LBI shore from the Atlantic Shores project can only be greater.

A 26 percent or greater wind speed reduction at the shore is an extremely concerning shore impact and should have been considered in the decision making related to the CZMA rules.

Underwater Noise to Persons. The high noise level from these turbines also raises the prospect that persons going underwater at the shore will hear the turbines. Using just a seven-turbine source, the underwater noise level at the shore 10 miles away would be 125 dB. That would be audible to a person [OS4] and above typical background levels of approximately 80 dB.

Underwater noise is received differently than in air, and the impacts of this on a person are not clear. However, this needs to be fully investigated lest diving into a wave at the shore becomes a thing of the past. These are important public issues and concerns that deserve a study of the effect of larger turbines so close to shore.

OS1. Wake studies around a large offshore wind farm using satellite and airborne SAR M.B. Christiansena,*, C.B. Hasager a Risø National Laboratory, Wind Energy Department, Frederiksborgvej 399, P.O. Box 49, DK-4000 Roskilde, Denmark – merete.bruun.christiansen@risoe.dk

OS2. LETTERS, Micrometeorological impacts of offshore wind farms as seen in observations and simulations S K Siedersleben1, J K Lundquist2,3 , A Platis4 , J Bange4 , K Bärfuss5 , A Lampert5 , B Cañadillas6 , T Neumann6 and S Emeis1 1 Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research, Atmospheric Environmental Research (IMK-IFU)

OS3 , Stoelinga et. al., " Estimating Long -Range External Wake Losses in Energy Yield and Operational f A U W W z ", A V , 2022

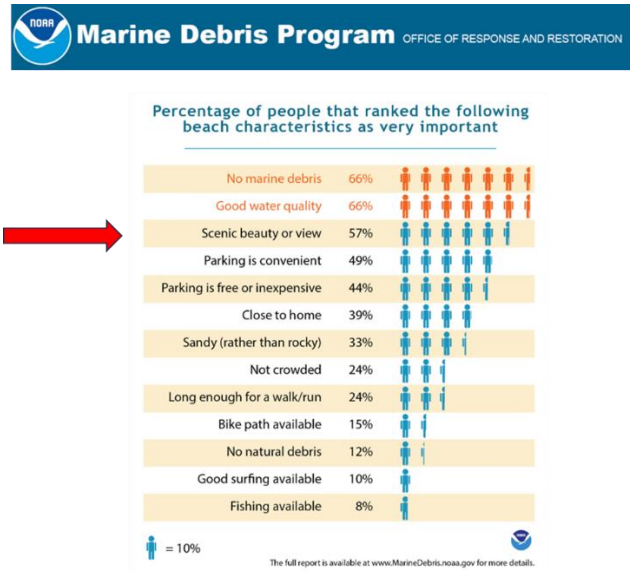
OS4. Schellart, Nico, Underwater Hearing of Human and Aquatic Vertebrates, November, 2012., Figure 2, page 68.

Additional Information to be Considered in Determining Disruption and Harm on Tourism Economy

Under Demographics and the impact of the proposed action on page 3.6.3–20 the DEIS merely states that views of wind turbine generators could have impacts on business serving the recreation and tourism industry but it does not present what those impacts are. It then goes on to trivialize and misrepresent the visual impact of the wind turbines on the shore tourism industry. In fact, as explained below that impact just from the visible impact would be extremely damaging. Other shore effects would impact shore businesses as well. The devastating effect on the shore experience and economy would be exacerbated by audible noise from turbine operation and construction.

Atlantic Shores LLC South project will have a major adverse impact on the viewer experience for 19 KOPs , including Brigantine KOPBC02 and Brigantine Historic Site. Scenic Beauty. Scenic Beauty and Views are top beach characteristics that are important to people.

According to NOAA survey 57% ranked scenic beauty or view as a very important beach characteristic. 2019.07.Econ_.Impacts.Marine.Debris.complete.wFN_30Aug2019_508 (1).pdf



Atlantic Shores ignores any calculation of economic impact and uses studies that have little external validity to the Jersey Shore and BOEM disregards key findings in other studies as justification for doing so.
The tourist data referred to as the 2019 "Ocean Economy" in table B-4.8 (NOEP 2019) is significantly lower than 2019 (comparable year used in DEIS) and 2022 (most recent report) data on tourism economic research analysis reports by the NJ State Government, New Jersey Division of Travel and Tourism, at VisitNJ.org.
Economic Impact (visitnj.org)

The data in the BOEM's NOEP table excludes tourism lodging GDP from the Atlantic City casino industry and may exclude more categories related to the casino industry. ASOWNJ DEIS lacks any explanation on why the data is inconsistent with NJ State Government tourism data which has been consistently analyzed on an annual basis. The New Jersey Division of Travel and Tourism uses the analysis as the basis for all strategic decisions regarding tourism in the State.

The Tourism Economic Impact Studies are listed on the website starting with the 2003 year. The Oxford Economics Company has prepared the report for the NJ Division of Travel since 2012. There is a reasonable expectation that during a rigorous review of the cumulative impact of the 500-850 visible wind turbines off the coast of New Jersey, the BOEM would cross check and verify its tourism data with multiple sources including the State's data.

The data in the following table shows that the Ocean Economy was $600 million in Atlantic County while the NJ Economic Impact report states that visitor tourism is $7.8 billion in the same year. The Ocean Economy jobs column lists only 11, 018 "Ocean Economy" jobs in Atlantic County, but the casino employment data listed in the last Atlantic County Bond Issue Official Statement states that there are 22,796 employees working in the casinos. The employment in the casinos is more than double the entire number listed as jobs related to the ocean economy. Excluding the casino industry which is located on the beaches of Atlantic City uses the half-baked logic that casino industry tourism is not related to nor has any impact to the ocean economy in any way. The presentation of the economic data in the ASOWNJ COP and DEIS is based on the ill-considered logic that if the casino industry was not located in Atlantic City, there would be no other tourism related economy to replace it, hence BOEM tables eliminate any jobs/GDP related to the industry. An analysis of the seasonal room occupancy and room rates and revenues at the casinos would have dispelled BOEM's assumptions. The lack of meaningful GDP and employment data in the ASOWNJ DEIS and COP distorts the true exposure for the tourist industry and economy. This is especially egregious since this data is used to make policy decisions and offshore wind permitting decisions.

2019 Economic Data Comparison			
County	Ocean Economy (1)	Visitor Spending (2)	% of Visitor Spending Ocean Economy
Atlantic County	$599.5	$7,790.0	8%
Cape May County	$627.8	$6,910.6	9%
Gloucester County	$416.8	$524.9	79%
Monmouth County	$835.2	$2,653.9	31%
Ocean County	$707.6	$4,988.6	14%
Salem County	$118.9	$216.9	55%

2019 JOBS Data Comparison			
County	Ocean Economy Jobs (1)	Supported Jobs Direct Employment	% of Visitor Spending Ocean Economy
Atlantic County	11,018	54,697	20%
Cape May County	10,407	26,983	39%
Gloucester County	-	5,658	
Monmouth County	18,483	23,828	78%
Ocean County	14,597	27,166	54%
Salem County	-	1,648	

(1) BOEM ASOWNJ DEIS & COP/NOAA

(2) New Jersey State Government Division of Travel and Tourism , Oxford Economics Company

The casino-hotel employment in the County by number of employees as is as follows:

Casino Name	Dated Opened	Total Employees (as of 12/31/21)	Total Employees (as of 12/31/22)
Resorts Casino Hotel[1]	May 1978	1,593	1,643
Caesars Atlantic City Hotel Casino[2]	June 1979	2,300	2,561
Bally's Atlantic City Casino Resort	December 1979	1,514	1,462
Harrah's Resort Atlantic City	November 1980	2,497	2,441
Tropicana Atlantic City Resort & Casino	November 1981	2,155	2,094
Golden Nugget Atlantic City[3]	June 1985	1,517	1,358
Borgata Hotel, Casino & Spa	July 2003	4,004	4,504
Hard Rock Hotel & Casino	June 2018	3,442	3,448
Ocean Casino Resort	June 2018	2,777	3,285
Total:		21,799	22,796

Source: New Jersey Division of Gaming Enforcement and New Jersey Casino Control Commission

(1) Total Employees for Resorts Casino Hotel include people employed by Resorts Digital Gaming, NJ.

(2) Total Employees for Caesars Atlantic City include people employed by Caesars Enterprise Service and Caesars Interactive Entertainment, NJ.

(3) The figures for Golden Nugget Atlantic City include people employed by Golden Nugget Online Gaming, NJ.

https://emma.msrb.org/P11717276.pdf

We prepared calculations for the impact to the Tourism Industry, we used scientific studies and surveys along with the data in the New Jersey Division of Tourism, 2022 Economic Impact Study for the basis of our calculations. The details of studies and calculations used to back up our conclusions are presented after the summary bullet points in the Footnotes.

- Rental Demand Loss: 50% of prior renters would not rent again with turbines visible regardless of rent discount. Including Atlantic City, Atlantic County annual rental income loss could be $17.2 M (10%) to $68.9 M (30%). Excluding Atlantic City, Atlantic County annual revenue loss could be $4.5M (10%) - $17.9M (40%). Lost rental income NPV over 20 years could be $65M - $250M.[V1, V2]

- Tourism Revenue, Job Losses, and Tax Losses: [V3, V4, V5, V6]
  16.5% - 24% would not visit Atlantic County beach town, which could be a loss of:

- 8,700-12,700 jobs or 175,000 -255,000 job years over the project life
- $1.3 – $1.9B in annual revenue or NPV of $17.4 B - $25.5 B over the project life
- $142 - $206 million government tax loss revenue over the project life

- Casino Contraction: Bricks and mortar operating losses for casinos may cause further contraction in AC, and tourism GDP and job losses and tax impacts will be escalated further.

- Large Energy Cost Increase for residents, RE investors and Fragile Seasonal Tourism Businesses [V8]

- Recreational Fishing Revenue= $19M/ YR to the NJ economy. How will this be impacted during years of construction and operation? [V7]

- The future of the Annual Farley Marina Jimmy Johnson Fishing Tournament, Annual Atlantic City Air Show, and other Beach Concerts, and other Beach Centric Entertainment Events, Bars and Restaurants is uncertain. The airshow alone brings 100,000 tourists to Atlantic City and $50 million to the economy.[V9]

Footnotes: Studies and Calculations for the Calculation of Economic Impact on Tourism

V1. North Carolina State University, the Amenity Costs of Offshore Wind Farms- Evidence from a Choice Experiment, Lutzeyer et. al., August 2017. https://cenrep.ncsu.edu/cenrep/wp-content/uploads/2016/03/WP-2017-017.pdf

This study included nighttime views which increased the visual disamenties and avoidance of rental properties with views of the wind turbines. Participants were divided into categories: 55% never wanted a view from a rental property no matter how much rent was discounted, 23% would tolerate some view along with various discounts, and 21% would rent with a view all the time. No participants would pay more rent to see the wind turbines. This may impact Jersey Shore significantly if increased electric costs based on offshore wind rates increases rental rates. Lastly, the study notes that choices will depend on whether vacationers have an alternative location for their vacation, and this factor will impact the results. Along the eastern seaboard, vacationers have a significantly large number of options for vacation locations within driving distance that will not have 1040 ft high wind turbines starting 9 miles off the beach along with 722 (Brigantine Hotel) turbines in ocean viewshed from the beach. The results from the study used in the calculations on Economic Impact have a 95% confidence level.

V2. Based on Atlantic County Rental Income
The model lists a wide range of income losses because of unknown rental market supply and demand elasticity factors. For example, other tourists may be willing to rent properties at discounted rental rates. The mix of renters who would not return in combination with new renters who may rent properties at various discounts are examined by Lutzeyer et. al., in North Carolina State University Study (V1). The table below has two calculations: one with Atlantic City and one excluding Atlantic City. The percentage of vacation versus full time resident renters is known for Brigantine. Based on Brigantine City Records, in 2022, 2000 properties were listed as “summer” (vacation) rentals. It is not known what portion of the monthly rental income is attributed to these properties in Brigantine in the table.

Vacation Rental Income Losses in Atlantic County									
Coastal City	Rental Properties (1)	Monthly Rental $ (1)	Annual Rental $Millions	NPV 20 YR Loss	Coastal City	Rental Properties (1)	Monthly Rental $ (1)	Annual Rental $Millions	NPV 20 YR Loss
Atlantic City	11,793	$900	$127.4						
Brigantine	1,096	$1,208	$15.9		Brigantine	1,096	$1,208	$15.9	
Long Port	40	$1,677	$0.8		Long Port	40	$1,677	$0.8	
Margate	579	$1,310	$9.1		Margate	579	$1,310	$9.1	
Ventnor	1,579	$1,006	$19.1		Ventnor	1,579	$1,006	$19.1	
Total Atlantic County	15,087		$172.2		Total Atlantic County	3,294		$44.9	
Economic Loss 10%			($17.2)	($250.8)	Economic Loss 10%			($4.5)	($65.3)
Economic Loss 20%			($34.4)	($501.6)	Economic Loss 20%			($9.0)	($130.1)
Economic Loss 30%			($51.7)	($752.3)	Economic Loss 30%			($13.5)	($195.9)
Economic Loss 40%			($68.9)	($1,003.1)	Economic Loss 40%			($17.9)	($261.2)
Assumed Vacation Rental Inflation Rate is 3% and NPV Discount Rate is 6%									
(1) City Data.com									

V3. Global Insight, Inc. an Assessment of the Potential Costs and Benefits of Offshore Wind Turbines, prepared for the State of New Jersey, September. 2008
https://www.state.nj.us/bpu/pdf/announcements/njoswt.pdf

Survey visual information in the report for Atlantic County was based on 3.6MW (model first used in Ireland in 2004) wind turbines, hub height of 73.5M vs. 175M (ASOWNJ) and rotor diameter of 104M vs. 280M (ASOWNJ) or 250 Ft. above sea level compared to 1040 Ft. above sea level for Atlantic Shores Project, 3 and 6 miles off the coast of Atlantic City. The number of wind turbines in the study was 80, compared to 200 turbines for ASOWNJ project with a total cumulative impact of 730 visible turbines. Two pictures, clear and hazy days, were shown to participants. Assumption is that the turbines will not be seen from other shore towns outside of Atlantic County. For wind turbines located 3 miles Offshore, 16.5 % of Atlantic County Visitors are more likely not to visit.

Actual ASOWNJ wind turbines dimensions are 2.7 times (rotor diameter) and 2.4 (hub height), An extrapolation of the hub and rotor heights translates the 3.0 miles to 8.1 miles. This is very close to the 8.7-mile distance from Brigantine, NJ. Factoring in the distance equivalency and more than double the visible wind turbines for the ASOWNJ

project and 9 times more visible wind turbines for future planned offshore wind projects, number of participants' negative responses are conservative and should be even higher**.**

V4. University of Delaware, Atlantic Offshore Wind Energy Development: Values and Implications for Recreation and Tourism, sponsored by the Bureau of Ocean Energy Management (BOEM), Parsons & Firestone, March, 2018 (using the data for smaller, closer turbines with the same line of sight as those proposed for Brigantine)
https://espis.boem.gov/final%20reports/5662.pdf

Survey used visual impact pictures of 100 turbines each with a height of 547 ft. The Atlantic Shores turbine height is 1040 ft. or 1.9 times the height of turbines used in the study. Adjusting the distance through simple extrapolation, equivalent distance of 5 miles would be 9.5 miles, given the difference in turbine size. Atlantic Shores turbine distance is 9 miles. In addition, there will be 750-850 turbines in the view of the Atlantic County beaches (cumulative impact), thus, results in this study are conservative estimates. According to the survey results, there is a

24% trip loss at 5 mile (equivilant 9.5 miles for 1040 height turbine) distance. At 5 miles, positive response is negligible.

***V5. T*ourism Economics, An Oxford Economics Company, The New Jersey Visitor Economy 2022, March 2023 Visit New Jersey.com**, Economic Impact (visitnj.org)

V6.

Atlantic County: Reduction in Tourism						
Atlantic County	**2022 Annual Tourism $**	**Tourism Jobs**	**Fiscal Tax Impacts**	**NPV of Tourism $ over 20 Yrs**	**FTE Job Years over 20 Years**	**NPV of Fiscal Tax Impacts over 20 Yrs**
Current	$ 7.8 billion	53,021	$860 million	$104.7 billion	1 1 million	$11.5 billion
$ Impact (16.5%)	($1.3) billion	(8,748)	$142 million	$17.4 billion	(175,000)	($1.9) million
$ Impact (24%)	($1.9) billion	(12,725)	$206 million	$25.5 billion	(255,000)	($2.7) billion

Assume 2% Growth Rate and 6% Discount Factor

V7 Atlantic Shores Offshore Wind South Draft Environmental Impact Statement: Chapters 1-4 (boem.gov)

Table 3.6.1-31. For-hire recreational fishing revenue in New Jersey in comparison to the combined Project 1 and Project 2 WTAs, 2010–2018[1]

Year	Revenue in New Jersey (thousands of dollars)[1]	Revenue from WTAs (thousands of dollars)[2]	Percentage of Revenue from WTAs
2010	$55,509	$13	0.02
2011	$62,526	$34	0.05
2012	$61,825	$23	0.04
2013	$102,472	$15	0.01
2014	$97,175	$16	0.02
2015	$88,203	$28	0.03
2016	$33,359	$10	0.03
2017	$36,089	$9	0.02
2018	$49,439	--	--
Average	**$65,177**	**$19**	**0.03**

Sources: (1) NMFS 2022d, (2) NMFS 2022b.
Notes:
Available for-hire recreational revenue data for New Jersey were limited to the period of 2010–2018.
Years with no revenue from the WTAs are indicated by "—"

V8 For Release: Revised Cost Estimates Show Energy Master Plan Will Cost $1.4 Trillion, Sending the State Back to the Drawing Board | Affordable Energy For NJ (njaffordableenergy.com)

AENJ Email 2/20/23: Governing By Press Release | Affordable Energy For NJ (njaffordableenergy.com)

AENJ Email 6/5/23: Back Door Gas Stove Ban | Affordable Energy For NJ (njaffordableenergy.com)

V9. Atlantic City Airshow to return Aug. 24 (pressofatlanticcity.com)

Offshore Wind Development Located at Farely Marina in Atlantic City Will Interfere with the Marina Boaters.

Farley Marina is next to the Golden Nugget Casino and visible to the Borgata (MGM) Casino and respective restaurants. The Marina is a thriving and successful tourist attraction and promotes boating and recreational

fishing activities. Construction and vessel traffic and air pollution from the ASOWNJ project and cumulative impact of other planned offshore wind projects will harm the tourist industry. It appears that the Atlantic Shores Facility will be located in the parking lot next to the Marina, which is used by boaters and tourists. The wind developers' ocean vessel traffic will interfere with the Marina traffic. Since Ocean Wind maintenance facility is in the same area, this will further increase the traffic near the Marina. Will the combined Wind Developer ocean vessel traffic potentially close the Marina by making it less desirable for boaters to rent slips at the Marina?

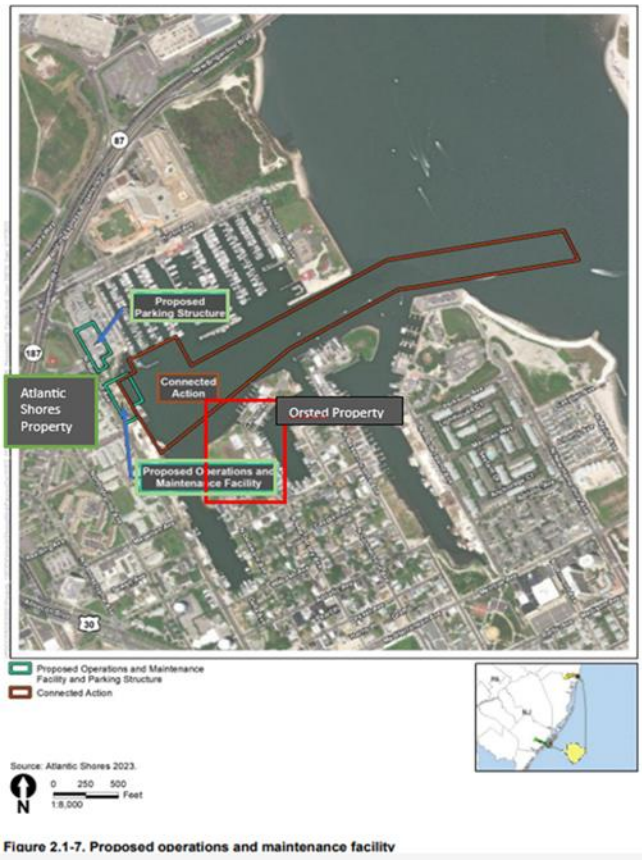


Figure 2.1-7. Proposed operations and maintenance facility

ASOWNJ Impact to AC Casinos

- The projects impact to the casino tourism are ignored but have the potential to be very damaging to the industry. The beaches and ocean view are an attraction and provide a competitive advantage for Atlantic City casinos. Atlantic City is known as a waterfront destination city for casino tourists as a result. Atlantic City remains the 2nd largest casino industry behind Las Vegas. ASOWNJ project and other planned offshore wind projects will have a major adverse impact on the view from the casino ocean front rooms, restaurants, beach bars and other ocean front activities which will be dominated by a large and highly visible array of wind turbine generators. The state of the "bricks and mortar" casino industry in Atlantic City is fragile. First, the onslaught of online gaming has cannibalized the bricks and mortar casino tourists in Atlantic City. Second, there are 14 licensed casinos in Pennsylvania. Several are in scenic areas such as ski resorts. Others are adjacent to large urban and suburban areas such as Philadelphia. A new, 510,000 square foot casino with 200 hotel rooms was built next to the sports stadiums in Philadelphia. Pennsylvania casinos offer the same entertainment and fine dining as Atlantic

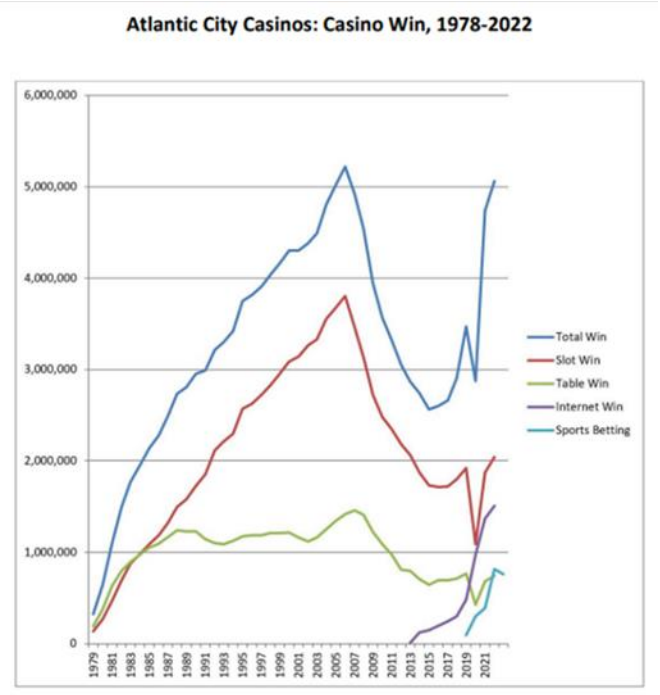
City casinos. Lastly, the NY State casino market is expanding which will bring more competition to the industry. Local industry experts proposed a solution to invest in Atlantic City's ocean front experience. The ASOWNJ project is in direct conflict with this solution. Atlantic City investments a must as New York casinos loom, gaming panel says (pressofatlanticcity.com).

- Not only do the Casinos add billions to the tourist economy, but they have also supported billions of dollars in other related industries including construction and manufacturing. Just in the last several years, Casinos have invested $1 billion in hotel room renovations, constructing new restaurants and updated amenities. If the Casino management and leadership continue to believe that the Atlantic City casino market is sustainable, they will continue to invest in and expand their facilities. The construction created thousands of jobs over the years. The ASOWNJ DEIS and the COP do not provide any statistics related to the employment of construction of construction employees, many of them union members related to casino renovation and construction projects. Atlantic City Casino Owners Still Spending Millions On World Class Resort (playnj.com)

- Casino contraction in 2014-16 resulted in a reduction of casino revenues from $5.2 billion to $2.6 billion. This had a significant impact on the local economies. As a result of this contraction, Atlantic City was on the verge of bankruptcy and taken over by the State in 2016. The takeover was renewed by the Governor in 2021. The Atlantic County government debt rose from $132 million to $203 million and the equalized value of property fell from $56 billion to $35 billion. Atlantic County tax rate is now double the Cape May County rate. The residents now have the burden of filling the gap in taxes caused by the casino contraction. In 2016 the Casino Property Tax Stabilization Act replaced casino property taxes payments in lieu of taxes (PILOT). Currently Casinos are involved in a lawsuit to get the online gaming and sports betting revenues excluded from the PILOT program therefore there is a possibility that future taxes would only apply to bricks and mortar gambling revenues. The final decision will increase the importance of closely examining the impact ASOWNJ projects will have on gambling tourism bricks and mortar operations in Atlantic City.

- The casinos are owned by national and industry brand casino industry corporations. If the bottom line of the bricks and mortar activities no longer makes business sense, the casino investors will cut their losses in Atlantic City, concentrate on their other casino locations, and there will be further contraction in Atlantic City.

- Atlantic Shores LLC ignores any impact their project's visual impact will have on the casino tourism industry. The OCEAN Economy Data on table B. 4-8 excludes Casino tourism lodging and may exclude other casino industry GDP. This grossly misrepresents the true financial impact of ASOWNJ on tourism jobs in Atlantic County.



State of Casinos in Atlantic City

- 2006 Peak Revenue at $5.2 B
- Interstate Competition and AC Casino Retrenchment 2014-16: Reduction to 7 from 12 Casinos = Revenue of $2.6B
- 2021 Bricks and Mortar = $2.6B
- 2021 Internet and Gaming = $2.1B (45%), Cannibalizing Brick and Mortar Revenue
- 2023: NY State Casino Market Expansion and **Proposed Solution to Invest in AC Ocean Front Experience** Atlantic City investments a must as New York casinos loom, gaming panel says (pressofatlanticcity.com)

AC History (unlv.edu)

Fish and Fisheries

Subsection NJAC 7:7-16.2 states that adverse impacts on fish and fisheries or "access thereto" is "discouraged". And the DEIS acknowledges there will be adverse impacts on Fish, Fisheries and access thereto – adverse enough to consider an alternative C as a mitigating measure and to specify a fishermen's compensation fund. And while there may be mitigating measures, they clearly will not result in a "net gain in quality or quantity of the coastal resource of concern." Therefore, the certification should be denied.

Subsection 7:7-15.4 states, "energy facilities shall NOT be sited in "special areas"…. and marine fish and fisheries areas….unless site-specific information demonstrates that such facilities will not result in adverse impacts to these areas." Again the DEIS points to such adverse impacts to multiple (10) "special areas" and to marine and fisheries areas.

Subsection 7:7-9.3 states that "development which would result in the destruction, condemnation, or contamination of surf clam areas is prohibited except for the following 1. Development that is of national interest provided i. There are no produnt and feasible alternative sites; impacts to the surf clam area are minimized. Atlantic Shore's response limited to export cables. Also it acknowledges that there will be substrate disturbances. Atlantic Shores claims that the Projects are consistent with the national interest but does not attempt to assert compliance with the two specified requirements for that exemption. Therefore, Atlantic Shores admits that the project is not fully consistent with the state program. Atlantic Shores has not demonstrated that there are no feasible sites outside the surf clam areas, nor that there will be "no adverse impacts" nor that here will be a "net gain in the quantity or quality" of the resource.

One of many statements made in section 3.5.2 of the DEIS, "The presence of the Offshore Project structures would convert soft-bottom habitat to hard-bottom habitat. This would result in permanent losses of soft-bottom habitat present at some proposed WTG locations within the Project area, including the ecologically

important complex sand ridge habitat. Loss of soft-bottom habitat would displace soft-bottom associated species (e.g., Atlantic surf clam, squid, and winter flounder)" conclude that the project will have an adverse impact to the benthic resources.

According to section 3.5.5 in the DEIS, BOEM is preparing an expanded EFH Assessment for the Proposed Action ……..the results of this consultation will be included in the FINAL EIS. The DEP should require that this report is completed before a consistency certification is made.

The Cold Pool, which is not adequately addressed in section 3.5.5 of the DEIS. DEP should assure that the potential impact is fully explored and understood, especially in view of the hundreds/thousands of massive turbines planned for operations**.** The amount of cable laying stated in section 3.5.5 is significant, but there is no statement about its impact. Other statements in 3.5.5 applicable to the Prime Fishing Areas, Migratory Fish Pathways are as follows**:**

The Project area also contains finfish and invertebrates that are not federally managed (i.e., no EFH), but that provide a **valuable forage resource** for species that do have designated EFH in the area.

Habitat Areas of Particular Concern (HAPCs) are a component of EFH that are defined as high priority areas for conservation, additional management focus, or research because they are rare, sensitive, stressed by development, or important to ecosystem function (50 CFR Part 600).

Moderate Adverse Impacts on species would be unavoidable but would not result in population-level effects. Impacts on habitat may be short term, long term, or permanent, and may include impacts on sensitive habitats but would not result in population-level effects on species that rely on them. These impacts may be widespread and permanent in instances where invasive species are able to establish populations.

Anchoring impacts on finfish, invertebrates, and EFH may include degradation of sensitive habitat, mortality of finfish and invertebrates, and increased turbidity.

New cable emplacement and maintenance would disturb, displace, and injure or kill finfish and invertebrates, release sediment into the water column, and cause habitat alterations.

Further research and monitoring is needed to more fully understand the impacts of EMF on fish behavior (Klimley et al. 2021). Recent studies have also identified physiological impacts of EMF on marine worms (Jakubowska et al) would be moderate.

Future research is needed to explore the cumulative and population-level impacts of EMF on marine organisms (Hutchison et al. 2020b). A recent study found behavioral and developmental impacts of EMF on European lobster (Homarus gammarus) and edible crab that would potentially have population-level impacts (Harsanyi et al. 2022). Offshore cables would emit heat along cable routes. Impacts on most finfish would be negligible considering that most cables from offshore wind development are expected to be buried.

Potential impacts of EMF on finfish, invertebrates, and EFH would <u>not</u> be minimized or eliminated by installing transmission cables with shielding or by burying them. 3.5.5-12

Impulsive, high-source level noise, such as pile-driving noise, may injure, kill, or otherwise disrupt development in early life stages of fish and invertebrates

Closer investigations into the effects of the particle motion component of noise on fish have been recommended

Further research is needed to fully understand the impacts of EMF on finfish, invertebrates, and EFH. In general, noise from pile-driving activities could cause moderate effects on finfish, invertebrates, and EFH; these effects would be short term and localized.

Cable laying from offshore wind activities would occur along up to 13,064 miles

This study, however, found significant reductions in stratification from modeled large-sale installations (i.e., modeled wind farm length of 62 miles [100 kilometers]). Localized reductions in stratification were similarly found in a modeling study that scaled single foundation impacts on a realistic wind farm scenario in the Irish Sea (Cazenave et al. 2016).

Noise: The incremental contributions of the Proposed Action to the cumulative impacts of noise from ongoing and planned activities on finfish, invertebrates, and EFH would be minor to moderate. Noise impacts from construction of the Proposed Action may not be fully cumulative considering that construction of other planned activities would be on a staggered schedule. Operational WTG noise may also have minor impacts if the larger WTGs associated with the Proposed Action produce sound levels that exceed regulatory levels for finfish.

EMF, cable maintenance, and WTG noise impacts would be long term, and EMF, cable maintenance, and WTG would potentially have regional or population level impacts. Some invertebrate species could experience minor beneficial impacts, but not finfish species.

The combined overall impacts on finfish, invertebrates, and EFH would be moderate, driven by long-term impacts of the presence of structures. 3.5.5.6

Subsection 7:7-9.4 Prime Fishing Areas states that (b) Standards relevant to prime fishing areas are as follows: 1. Permissible uses of prime fishing areas include recreational and commercial finfishing and shellfishing, as presently regulated by the Department's Division of Fish and Wildlife, scuba diving and other water related recreational activities. 2. Prohibited uses include sand or gravel submarine mining which would alter existing bathymetry to a significant degree so as to reduce the high fishery productivity of these areas… Atlantic Shores states that that there will be substrate disturbances and sediment suspension. BOEM's conclusion of major impact does not meet the no adverse impact nor the net gain criteria. Atlantic Shore's response for subsections 7:7-9.5, Migratory Fish Pathways, and 7:7 9.7, Navigation Channels is limited to offshore export cables and acknowledges there will be impacts to sensitive habitats including migratory fish pathways. The Moderate Impact in the DEIS also does not meet the adverse impact and net gain criteria for subsection 7:7-9.5, Migratory Fish Pathways and 7:7-9.7 Navigation Channels.

Other adverse impacts described in the DEIS are: The Project area contains spawning habitat for species that are valued in commercial and recreational fisheries. Species that have designated EFH for eggs in the Project area, indicative of having spawning habitat there, include Atlantic butterfish, Atlantic cod, Atlantic sea scallop, Atlantic mackerel, bluefish, longfin inshore squid, monkfish, ocean pout, red hake, silver hake, summer flounder, windowpane flounder, winter flounder, witch flounder, and yellowtail flounder (COP Volume II, Appendix J; Atlantic Shores 2023). The presence Of WTGs would result in a widespread, permanent

navigational risk to commercial and for-hire recreational fishing vessels transiting through and fishing near offshore wind farms. Maneuverability within wind farms depends on several factors including vessel size, fishing gear used. The presence of WTGs could cause long-term changes in transit routes of fishing vessels that actively avoid transiting through the offshore wind lease areas, which could result in increased travel time and trip costs. Collectively, the reduced area available for fishing and the navigational hazards to fishing vessels posed by the presence of structures associated with planned offshore wind projects are expected to have long-term, adverse impacts on commercial and for-hire fisheries. Some fishermen who are displaced from traditional fishing grounds may find suitable alternative fishing areas. BOEM expects that the presence of structures associated with planned offshore wind activities will cause long-term, widespread, moderate to major impacts on commercial and for-hire recreational fisheries, depending on the mitigation measures that implemented by offshore wind developers. BOEM expects that increased vessel traffic associated with planned offshore wind activities will cause long-term, widespread, moderate impacts on commercial and for-hire recreational fisheries. Changes in fishing activity resulting from the presence of offshore wind structures would likely result in impacts on shoreside support services (e.g., seafood processing, fuel, ice). Fishing communities that derive a high percentage of revenue from the Lease Area and have a high reliance on the commercial fishing industry include Barnegat and Cape May in New Jersey. Collectively, habitat conversion caused by the Proposed Action is expected to have localized, long-term impacts that would be adverse for commercial fisheries and beneficial to for-hire recreational fisheries. BOEM anticipates that the cumulative impacts of these activities would result in major impacts on commercial and for-hire recreational fisheries in the geographic analysis area.

Commercial fishing densities are one of the highest in the region in the proposed project lease area and along the Monmouth and Atlantic ECCs. As stated by BOEM,[22] Surf Clam/Ocean Quahog Commercial Fishing Density is medium high to very high; scallop commercial fishing density is medium high to high along the Monmouth ECC; monkfish and squid commercial fishing density is medium high to high near the Monmouth landfall site and along the ECC; herring commercial density is also higher along the Atlantic ECC and near its Landfall site.

The Atlantic Shores Offshore Wind Fisheries Communication Plan NY Bight Lease OCS-A 0541[23] states that three of the top five ports deriving revenue from the Lease Area are in NJ (Cape May, Atlantic City, and Barnegat Light/Long Beach). The top two primary commercial fisheries within the Lease Area are surf clam / ocean quahog (by weight) and Atlantic sea scallops (by revenue). Together, those two fisheries account for 93% of the revenue derived from the area and ~85% of the landings (by weight). Other species harvested from the area include summer flounder, squid sp., monkfish and other finfish species. One of the main strategies described in the FCP (section 5.2) is to schedule and hold regular meetings, open houses and webinars with activities designed to educate the public, share project information and solicit community feedback activities. In Section 5 of Atlantic Shores Offshore Wind Fisheries Communication Plan Lease Area (OCS-A 0499)[24], Atlantic Shores acknowledges these complexities and the challenges they present when attempting to disseminate critical information to large numbers of fishermen in a reliable, timely manner. Engagement efforts must embrace differences in the needs of these fishing communities. The Fisheries Communication Team use specific methods to target both the commercial and recreational users, and sub-groups of the same, in addition to general outreach strategies designed to engage the entire fishing community. Identifying the best ways to communicate with fishermen will be an ongoing process that will evolve over time with the inputs from fishermen, which are encouraged". This is very general and lacks details as evidenced by the yet-to-be

constructed webpages dedicated specifically to “Fish and Fisheries,” “Marine Mammals,” and “Birds and Bats.”[25]

Two recent reports highlight grave concerns for commercial fishing and fisheries populations from proposed offshore wind development in the region. The study on Atlantic surfclam fishery and OSW development by Rutgers University,[26] which is funded by the Research and Monitoring Initiative (NJBPU-NJDEP) showed significant economic losses as high as 25 percent for fishing vessels based in Atlantic City alone while revenue declines ranged from 3 – 15 percent for the whole region. How are the Applicants incorporating these findings in the Fisheries Communication Plan (“FCP”)? Also, the RMI is funding the development of a novel surfclam dredge and the RMI[27] is funding the development and calibration of a novel clam dredge that can be employed within windfarms, which will enable the continuity of the survey and provide critical data for managing the population. How and where are these results and the status of the project being shared with the fishing community as well as the general public? What efforts have been taken by the Applicants towards mitigation as well as communication and outreach as outlined in the FCP on two recent reports, one from Rutgers University that describes significant harm to fisheries and consequently cascading ecosystem impacts.

Of greater concern is the 2023 Report, “Fisheries and Offshore Wind Interactions: Synthesis of Science”[28] which identified significant knowledge gaps and the fast-tracking of OSW projects, leaving many valid scientific questions unexplored:

> The recommendations indicate an enormous amount of research is still needed in order to understand the impact of OSW on our environment and fisheries, but time is limited. A timely, productive regional science plan for offshore wind could have resulted in an enhanced ability to understand the environmental interactions resulting from the first large-scale OSW projects, especially on a cumulative scale.[29]

Two examples of concern in the report that are very relevant (pg. 232, Section 6, Table 1) point to a lack of knowledge on (i) the effect of substrate change on fisheries populations and (ii) how stochastic events, such as Nor’easters and hurricanes factor into variability in distribution and abundance of fish species. These concerns have not been addressed by Atlantic Shores, LLC or in the DEIS thoroughly, rendering it incomplete.

22 BOEM, Atlantic Shores Offshore Wind South Project, Commercial Fishing Density, as seen 7/2/2023, https://www.boem.gov/sites/default/files/documents/renewable-energy/stateactivities/AtlanticShoresSouth_CommFishingDensity.pdf.
23 Atlantic Shores Offshore Wind, Atlantic Shores Offshore Wind Fisheries Communication Plan NY Bight Lease OCS-A 0541, Ver. 1.0, Pg, 13, https://www.atlanticshoreswind.com/wpcontent/uploads/20220826_ASOW_FCP_OCSA_0541_Version_1.0.pdf.
24 Atlantic Shores Offshore Wind, Atlantic Shores Offshore Wind Fisheries Communication Plan Lease Area (OCSA 0499), as seen 7/3/2023, https://www.atlanticshoreswind.com/wp-content/uploads/ASOW_FCP_Version_1.3- rev.pdf.
25 Atlantic Shores Offshore Wind, Virtual Open House, as seen 7/1/ 2023, https://atlanticshoreswind.net/.
26 Andrew M Scheld and others, The Atlantic surfclam fishery and offshore wind energy development: 2. Assessing economic impacts, ICES Journal of Marine Science, Volume 79, Issue 6, August 2022, Pages 1801–1814, https://doi.org/10.1093/icesjms/fsac109.
27 NJDEP, “Offshore Wind: Research & Monitoring Initiative,” as seen July 3, 2023, https://dep.nj.gov/offshorewind/rmi/#projects.
28 https://repository.library.noaa.gov/view/noaa/49151 Hogan et al., 2023. Fisheries and Offshore Wind Interactions: Synthesis of Science” - NOAA Technical Memorandum, NMFS-NE-291.

29 “RODA, federal agencies issue ‘synthesis’ report on fisheries and offshore wind,” by Kirk Moore, National Fisherman, March 30, 2023, https://www.nationalfisherman.com/national-international/roda-federal-agencies-issuesynthesis-report-on-fisheries-and-offshore-wind.

This excerpt below, expresses the concerns of the Mid-Atlantic Fishery Management Council, in their *Atlantic Surfclam and Ocean Quahog Fishery Performance Report, April 2022*:

> “Wind Development The clam advisors are concerned about the BOEM (Bureau of Ocean Energy Management) wind farm leasing process and potential impacts to historically important fishing areas. The industry’s opportunities to engage with developers on wind array siting relative to the most productive clam fishing beds has not been productive. This resistance in cooperation lends to the notion that the clam fishery and the ocean wind developers cannot coexist as the developers have made no attempt to give the clam industry any consideration in their layout of their arrays and the spacing between the turbines which will make it unsafe for clam vessels to work within wind farms. Siting is critical in terms of ensuring reasonable fishing access. It has been the experience of the clam industry that any communications by BOEM, wind energy developers, or state regulators is purely perfunctory and true mitigation efforts will not be made. In the New England and Mid-Atlantic region, offshore wind development is out of control. The industry feels that no matter how hard they try to engage with developers on these issues, their input is not being considered or incorporated into the siting and development process. The spatial and operation requirements of the fishery (considering things like weather, tides, safety, etc.) need to be accounted for to ensure access to the wind arrays, but at present that is not happening. These arrays become de-facto Marine Protected Areas and the Councils and industry have nothing to say about how the fishing grounds are managed within the arrays. Unlike finfish, clams do not move, so once the vessels cannot fish in an area those resources are lost to the fishery and the value it brings to the economy. These areas are also likely to be lost to survey data further impacting the biomass estimates of the fishery. The Council needs to consider the biological impacts on the fishery itself, and other cumulative environmental effects that may occur. These should include things like productivity of the resource, larval displacement, scour and sediment suspension, hydrographic changes, and effects of sounds and other pressures on the zooplankton community (which includes food for clams). In addition, in water structures from offshore wind or other types of closures (e.g., GSCHMA) will result in vessels having to travel further and having a larger carbon footprint.”
>
> d_FPR_for2022_SurfclamOceanQuahog.pdf (squarespace.com)

A paper by researchers in the Institute for Coastal Systems in Germany used numerical modeling to show how wind wakes my change local conditions. In the North Sea paper, researchers say their modeling studies show that expanding offshore wind installations.

> “will substantially impact and restructure the marine ecosystem of the southern and central North Sea. Changing atmospheric conditions will propagate through ocean hydrodynamics and change stratification intensity and pattern, slow down circulation and systematically decrease bottom shear stress.”

Wind turbines will affect base of ocean food chain, study predicts | National Fisherman

Environmental Impacts from Atlantic Shores South Project

The NY/NJ Bight is rich with diverse species and extraordinary natural features. Species diversity in the NY/NJ Bight include over 33 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 of seals; hundreds of invertebrates, [30] eels, and other species; and 20 threatened and endangered species.

The physical features of the region are unique as well. 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.[31] 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."[32] The Bight is also vital to the migratory patterns of many different species, ranging from deep sea corals to invertebrates.[33] The Atlantic sea scallop (Placopecten magellanicu), Atlantic surfclam (Spisula solidissima), and ocean quahog (Arctica islandica) habitat along the Mid-Atlantic Bight is consistently among the most profitable fisheries in the world.[34]

Further, water column stratification could affect a number of species vital to fisheries and local ecosystem health, including summer flounder.[35] The health of the 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.[36] 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.[37]

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 abundant and diverse marine resources and wildlife in mind, COA has concerns for the Draft EIS and its failed attempt to comprehensively identify, assess, and address the ecological impacts of the Proposed Action.

30 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).
31 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
32 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/wpcontent/uploads/2021/01/ColdPoolReview.pdf
33 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
34 National Marine Fisheries Service, 2020: Fisheries of the United States, 2018. U.S. Department of Commerce, NOAA Current Fishery Statistics No. 2018.
35 T.M. Grotius and E. A. Beauchene, 2011: Fine scale spawning habitat delineation for winter flounder (Pseudo Pleuronectes americanus) to mitigate dredging effects –Phase II (Cycle 8), 2/2011.
36 D. A. Narvaez, D. M. Munroe, E. E. Hofmann, J. M. Klenck, 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.

37 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/wpcontent/uploads/2021/01/ColdPoolReview.pdf

Recreational Fishing

Atlantic Shores LLC claims that the project will attract recreational fishing as a result of a "reef affect" as mentioned in a Block Island study, (*Analysis of the Effects of the Block Island Wind Farm on Rhode Island Recreation and Tourism Activities*, BOEM, Smythe, et al. University of Rhode Island, Dec 2018). This is a total misrepresentation of the study in that Block Island project consists of jacket foundations and Atlantic Shores project foundations will be monopiles.

Advantages of jackets (Block Island)

- Can be installed using piles or suction caissons in stiff clays or medium-to-dense sands. Soft-soil installations are possible with longer pile lengths that significantly increase friction resistance.
- **The larger surface area of the lattice configuration may provide an artificial reef location, providing a new habitat for local species.**
- Economical choice using straightforward manufacturing methods.
- Can be moved by barge.

Disadvantages of jackets

- May allow invasive species to establish and spread.
- North Sea installations of jacket foundations have reported ongoing grout joint issues, causing long periods of maintenance downtime to sustain structural integrity.
- Changes to local water patterns may be detrimental to native marine ecosystems.
- Installations using pile drivers can create underwater noise that may injure or kill some marine life.

Advantages of monopiles (New Jersey Coast)

- Work well in sand and gravel soils.
- Have a simple design that installs quickly.
- Adaptable for shallow and deeper installations of various sizes.
- Cost-effective for installations to 40 m.

Disadvantages of monopiles

- Cost and risks associated with fabrication, installation and transport increase for larger monopiles required at deeper installations where hydrodynamic loads are an issue.
- Installation noise can disorient, injure or kill marine life sensitive to pressure waves. This includes humpback whales, loggerhead turtles and manatees.
- Wind, wave and seismic loading can negatively affect monopile foundations. This can cause early fatigue damage to the structure if it is not accounted for during installation.

Comparing offshore wind turbine foundations (windpowerengineering.com)

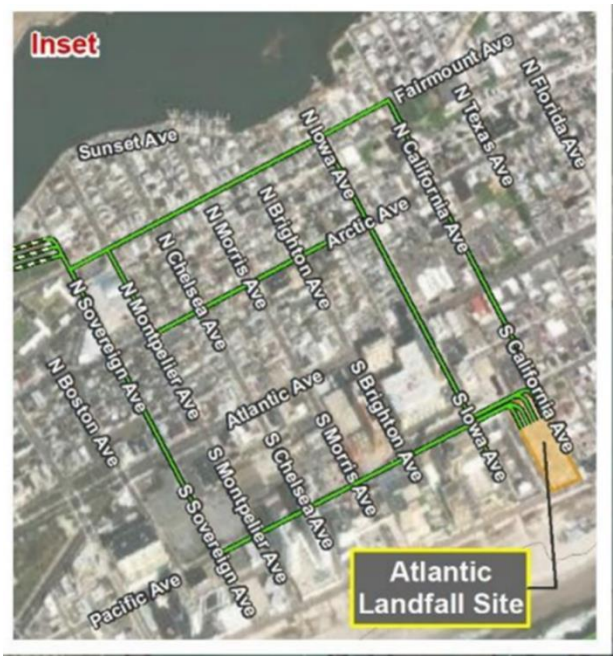
According to the DEIS for the project, the following potential unavoidable adverse impacts will occur:

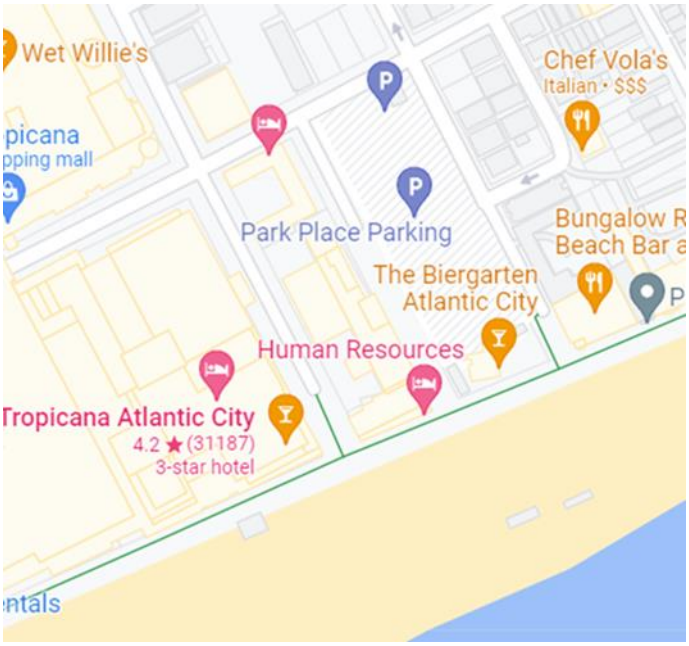
- Restriction in harvesting activities during construction of Offshore Projecct elements and during operations of offshore wind facility
- Changes in vessel transit and fishing operation patterns
- Changes in risk of gear entanglement, navigational hazards, and space-use conflicts associated with the presence of structures
- Changes in the availability of target species because of habitat loss and conversion associated with the presence of structures.

EMF Cables through Tourist District and Atlantic City Chelsea Neighborhood and Public School Building in Atlantic City

The installation of onshore cabling including trenching, horizontal direct drilling and jack and bore will result in the degradation of tourist area and underserved population in Atlantic City. The landfall site will eliminate a parking lot covering an entire block in Atlantic City. According to the NOAA survey, 49% of people ranked convenient parking as very important as a beach characteristic.

2019.07.Econ_.Impacts.Marine.Debris.complete.wFN_30Aug2019_508 (1).pdf





Project Impact on Coastal Residential Property Values

The Study on Block Island (Do Views of Offshore Wind Energy Detract? A Hedonic Price Analysis of the Block Island Wind Farm in Rhode Island, Dong, Lang, University of RI, 2022) is irrelevant to how the Offshore Wind projects will impact real estate at the Jersey Shore. The differences in the BI Offshore Wind project are as follows:

- 5 Wind Turbines, Total Height 659 Ft. 3.8 miles from shore Vs. 200 Wind Turbines, Total Height, 1049 starting 8.7 miles from NJ shore.
- Wind turbines area located at Southern End of Island off Rocky Coasts and Cliffs, small strip of beach in area that is residential with homes on very large lots (3-4 acres).
- Wind turbines are located much further and less visibility from popular beaches and large harbor on the other side of the Island.
- Residential housing significantly less dense compared to Jersey Shore: Example, Block Island: 1400 residences in 9.73 sq miles vs. Brigantine: 5328 SFH residences and 3353 multifamily residences in 6.5 sq miles. Block Island view shed of ocean and natural surroundings is much more expansive with only 5 turbines with a significantly smaller area of the ocean landscape.
- Atlantic County Shore towns and Block Island homeowner experiences are not the same.

Atlantic Shores has not prepared any analysis for the impact of the offshore wind development to residential home values.

It is very logical to use the Lutzeyer et. al., August 2017 study to draw conclusions about consumer behavior in the real estate market, given that the Lutzeyer study examined choices that renters made with properties that had views of wind turbines. This study included nighttime views which increased the visual disamenties and avoidance of rental properties with views of the wind turbines. Participants were divided into categories: 55% never wanted a view from a rental property no matter how much rent was discounted, 23% would tolerate some view along with various rent discounts, and 21% would rent with a view all the time. No participants would pay more rent to see the wind turbines. The results from the study used in the calculations on Economic Impact have a 95% confidence level. (North Carolina State University, the Amenity Costs of Offshore Wind Farms- Evidence from a Choice Experiment, Lutzeyer et. al., August 2017. https://cenrep.ncsu.edu/cenrep/wp-content/uploads/2016/03/WP-2017-017.pdf) The results of this study are a great cause of concern to those who own real estate at the Jersey Shore, especially owners of beach view properties. Yet, the BOEM fails to prepare any analysis of the impact.

Another report supporting the theory that visible wind turbines would impact real estate values was prepared by Global Insight for the State of New Jersey in 2008 based on a survey completed by the Lieberman Research Group, New Jersey Shore Opinions About Off-Shore Wind Turbines. (*Global Insight, Inc. an Assessment of the Potential Costs and Benefits of Offshore Wind Turbines, prepared for the State of New Jersey, September. 2008 https://www.state.nj.us/bpu/pdf/announcements/njoswt.pdf)*

Survey visual information in the report for Atlantic County was based on 3.6MW (model first used in Ireland in 2004) wind turbines, hub height of 73.5M vs. 175M (ASOWNJ) and rotor diameter of 104M vs. 280M (ASOWNJ) or 250 Ft. above sea level compared to 1040 Ft. above sea level for Atlantic Shores Project, 3 and 6 miles off the coast of Atlantic City. The number of wind turbines in the study was 80, compared to 200 turbines for ASOWNJ project with a total cumulative impact of 730 visible turbines. Two pictures, clear and hazy days, were shown to participants. Assumption is that the turbines will not be seen from other shore towns outside of Atlantic County. For wind turbines located 3 miles Offshore, 16.5 % of Atlantic County Visitors are more likely not to visit.

Actual ASOWNJ wind turbines dimensions are 2.7 times (rotor diameter) and 2.4 (hub height), An extrapolation of the hub and rotor heights translates the 3.0 miles to 8.1 miles. This is very close to the 8.7-mile distance from Brigantine, NJ. Factoring in the distance equivalency and more than double the visible wind turbines for the ASOWNJ project and 9 times more visible wind turbines for future planned offshore wind projects, number of participants' negative responses are conservative and should be even higher**.**

The report states that real estate impacts analyzed in the 2003 Renewable Energy Policy Project did not consider the view of premiums which come into play, especially the value of an ocean-view or ocean front house. It is those premiums that Global Insight examined. Global Insight group provides the following analysis:

"The oceanfront premium is examined as, in many surveys and environmental impact statements; it is the impact of wind farms on the view that is considered one of the biggest drawbacks of wind farms. In addition, there exists significant literature stating that an ocean view/oceanfront house adds to the value of that property."

According to the Lieberman Research Group Survey, "of all the disadvantages mentioned, esthetic issues (a wind farm would be "ugly" or an "eye sore" and it would obstruct the ocean view) were mentioned most often. In FACT, OF THE

66% of respondents that mentioned a disadvantage to the wind turbine project, 32% of the total mentioned the impact of the wind farm on the ocean view."

The percentage of respondents who were shown views comparable to 1040 ft high wind turbines, 8.7 miles from the beach, 45% mentioned view issues.

"On Barrier islands, we well as other beachfront communities, the distance from one's residence to the beach is strongly connected to the property price. Although scenic views are desirable, the single most important attribute for vacationing families is: how close is the beach? In a recreation- oriented beach community, this question is answered in blocks or even better, in the number of houses from the beach."

In the 2004 study, buyers were willing to pay 46% premium on a beach block home and 156% premium for a beach front home in Stone Harbor and Avalon. A similar study in Washington State found that oceanfront view added 147% to value, ocean views added 32% and partial ocean views added 10%. A 2000 study for Long Beach Island homes also confirmed that after controlling for all other aspects that add value to an island house, a variable for distance to the beach is included to ascertain the willingness to pay for one additional house closer. (Value of Ocean Proximity on Barrier Island Houses, Appraisal Journal (April 2000); The Beach Study: An Empirical Analysis of Distribution of Coastal Property Values, http://forms.gradsch.psu.edu/equity/mcnair/2003/major.pdf ; Influence of Canadian Investment on U.S. Residential Property Values, Journal of Real Estate Research, 2003)

The views of the offshore turbines impact on real estate values are examined using the Brigantine NJ community as an example. Brigantine tax office property files were used as the basis of the analysis. Records were eliminated that were not single family and multifamily residences. Vacant land, exempt properties, and properties with zero value were eliminated. Through Google Earth and physical inspection, properties were identified that were beach front and beach view, and records were coded according to their category. Single-family homes and multifamily homes were examined in separate files. The multifamily homes could be a unit in a duplex or part of a multistory, multibuilding resort like community. The value of the properties was based on the assessed value of land and property improvements and adjusted for the Equalized Value published by Atlantic County each year. A further adjustment to the values was made to account for the price listed on Zillow website based on the average price difference of a sample of 270 properties. The results of the final base line data are in the table below:

Brigantine Residential Property Analysis				
	Properties	($ Billions)	Avg $	Zillow $
Single Family Residences	5,328	$3.4	638,138	797,673
Multifamily Residences	3,353	$1.2	357,888	447,361
	8,681	$4.6	529,893	662,366
Properties with Beach View				
Beach Front Single Family	116	$0.2	1,724,138	2,155,172
Beach Block Single Family	649	$0.6	924,499	1,155,624
Subtotal	765	$0.8	1,045,752	1,307,190
Beach Front Multifamily	777	$0.3	386,100	482,625
Total	1,542	$1.1	713,359	891,699
Properties without Beach View				
Single Family Residence	4,435	$2.9	653,890	817,362
Multifamily Residence	2,704	$0.9	332,840	416,050
Excludes 187 vacant land properties, $58 million				
Avg$: Property Values = Assessment/.7357 (Eq Value Factor)				
Zillow Property Values are 25% higher on average based on sample of 270 homes				

An analysis was prepared using the method used in the Global Insight Report. The methodology was based on the calculation of percentage increases in real estate based on premiums paid for beach view properties. The premium percentages were based on the 2004 Penn State study of homes in Avalon, New Jersey. Brigantine and the Avalon ocean views and beaches are very similar. Brigantine housing density is somewhat less than Avalon's but overall ocean views are the same. Therefore, the premium percentages can be applied to the Brigantine real estate values to calculate the impact of the 180-degree view of 1040 Ft. high wind turbines, starting 8.7 Miles off the Brigantine beaches.

Using an oceanfront premium of 156% makes the value of a Brigantine single family home residential property worth $2 million (based on Zillow values). A residential ocean view property would be worth $1.2 million and a property in proximity to the ocean would be worth $877,000. Our own data and calculations of average home values for single family homes are very similar to the "premiums" calculated in the Avalon study. The table also lists the calculation for the multifamily premiums.

The assumption used by Global Insight's analysis was that "a property can only 'fall' one category as the result of wind turbines being placed offshore. Said differently, the value of an oceanfront property can drop no lower than the value of an ocean-view property. Similarly, an ocean-view property whose value is affected by the wind farm will drop no lower than a house in proximity to the ocean. Logically this makes sense as the homeowner will still be in proximity to the ocean with its breezes and the easy walk back even if the homeowner's total view is affected by the wind turbines." Since we do not have a count on multifamily homes within proximity to the ocean, the calculation is prepared with both premium amounts to provide an upper an lower range of losses.

Brigantine Residential Property Analysis 2023			
		Equalized Assessed Value	Zillow Value
Residentail Parcels Single Family Homes 2023		5328	5328
Value of Residential Home 2023		$3,400,000,000	$4,250,001,744
Average Value of Residential Home 2023		$638,138	$797,673
Average Value of Ocean Front Property	156% View Premium	$1,633,633.63	$2,042,042.88
Average Value of Ocean View Property	46% View Premium	$931,681.68	$1,164,602.58
Average Value of Ocean Proximity property	10% Premium	$701,951.95	$877,440.30
Ocean Front Housing			116
Ocean View Housing			649
Premium Loss Ocean Front Per Home		-$701,952	-$877,440
Premium Loss Ocean View Per Home		-$229,730	-$287,162
Total Premium Loss		-$230,521,021	-$288,151,395
Residentail Parcels Multifamily Homes 2023		3353	3353
Value of Residential Home 2023		$1,199,998,464	$1,500,001,433
Average Value of Residential Home 2023		$357,888	$447,361
Average Value of Ocean Front Property	156% View Premium	$916,193.28	$1,145,244.16
Average Value of Ocean View Property	46% View Premium	$522,516.48	$653,147.06
Average Value of Ocean Proximity property	10% Premium	$393,676.80	$492,097.10
Ocean Front Housing			777
Premium Loss Ocean Front to Ocean View		-$393,677	-$492,097
Premium Loss Ocean Front to Ocean Proximity		-$522,516	-$653,147
Total Premium Loss Ocean Front to Ocean View	Scenario 1	-$305,886,874	-$382,359,447
Total Premium Loss Ocean Front to Ocean Proximity	Scenario 2	-$405,995,305	-$507,495,266
Possibly Value Loss Maximum	Scenario 1	-$536,407,895	-$670,510,841
Possibly Value Loss Maximum	Scenario 2	-$636,516,326	-$795,646,660

Based on Zillow values, the impact to real estate could be a reduction of $670 - $795 million for Brigantine. For single family homes alone, real estate value reduction is $288 million (Zillow value). The Global Insight analysis includes an additional step assuming that the reduction would be less if a property did not have a 180-degree view of the wind turbines. The calculation assumed that an oceanfront property has a view that covers about 180 degrees. According to Global Insight, "If a wind farm was built directly off the shore only three miles away, it would impact about 45 degrees of that view, or about a quarter of its view. The property would lose 25% of the premium due to the wind farm. To adjust for the "degrees of impact", the total loss maximum was multiplied by 25% to arrive at the reduced loss amount."

In Brigantine, there will be 200 wind turbines from Atlantic Shore South Project and cumulative impact of 730 wind turbines in view, starting 8.7 miles off the coast in Brigantine in all directions. BOEM has not measured "the degrees of impact" for the cumulative effect of the ASOWNJ project and future proposed offshore wind turbines. Therefore no adjustment was made for the degrees of impact.

The results of the calculations have a major impact on the financial wellness of the residents of Brigantine and can be applied to every ocean front community with visible offshore wind turbines in Atlantic County, Cape May County, and Ocean County. The loss of property values will also impact the County and City/Municipal tax revenues as owners appeal the assessed value of their properties, and there will be less incentive to renovate, build and rebuild properties with ocean views. Lastly this study assumes that there will be no impact to properties that do not have a view of the Ocean. In Brigantine, the beach is walkable from at least one half of its homes. The width of the island is on ½ mile. If the homeowners' reason for purchasing a home is to enjoy

the beach's pristine views, this incentive will be eliminated because of the view of 730 wind turbines starting 8.7 miles off the beach in all directions. The impact on the housing market in Brigantine could be much greater than a reduction in value of $670- $795 million.

Our analysis reveals that residential property values are adversely and measurably impacted by the proximity of the industrial- scale ASOWNJ and future planned wind energy turbine projects. There will also be a serious impact on the use and enjoyment of many homes in our communities. The approval of wind energy projects within such a close proximity to occupied homes is tantamount to an inverse condemnation, or regulatory taking of private property rights, as the views and noise are in some respects a physical invasion resulting in a forced reduction in property values.

Endangered Species

Atlantic Shores LLC is not in full compliance with CZMA 7.7-9.36 because it does not address the sufficient buffer requirement, has not provided the required impact assessment, nor addressed the no adverse impact or net gain criteria.

Impacts on North Atlantic Right Whales

The most pressing issue surrounding the ASOWNJ project and BOEM's entire offshore wind energy program along the eastern seaboard, is the project-specific and cumulative impacts on the federally-endangered North Atlantic right whale (NARW), which 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 ASOWNJ 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.

We agree with 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.

The following is a short list of project-related impacts on NARW that the Atlantic Shores COP and BOEM's DEIS failed to analyze sufficiently:

Failure to:

1. provide an accurate or adequate accounting of the number of NARW within the project area, which includes all transit corridors for vessels traveling between the wind development area (WDA) and supply ports.

2. provide an accurate or adequate projection of the number of vessels to be used in the construction, operation, and decommissioning of the project.

3. provide an accurate or adequate projection of the number of miles the various project vessels will travel through NARW habitat during construction, operation, and decommissioning of the project.

4. use the best available commercial and scientific data to establish baseline environmental conditions within the project area. Specifically, the DEIS provides an insufficient assessment of the project area's role in NARW migration, foraging, mating, calving, and other life history stages. The DEIS also fails to provide information on the existence, location, abundance, and aggregation of zooplankton in the project area. This is a critical information deficit, given that NARW feed exclusively on zooplankton.

5. provide sufficient information on the current and anticipated use of the areas near the project site by non-project vessels. This information is necessary to assess the risk of NARWs being hit by vessels or entangled in fishing gear as a result of being pushed out of the project site by pile driving noise. In fact, the DEIS must assess all risks and impacts to NARW resulting from displacement caused by project-related noise, both construction and operational. This includes loss of preferred foraging areas, loss of preferred migratory corridors, increased energy demands to find food or to migrate, increased risk of predation, increased risk of vessel strikes, increased entanglement in fishing gear, and overall loss of body fitness.

6. provide an complete discussion of the current imperiled status of the NARW. For example, it does not adequately address the NARW's sharply declining population, its low calving rate, the continued loss of reproductive females, and its ever decreasing PBR (potential biological removal) rate.

7. provide an adequate analysis of pile driving noise on NARW, and uses a noise dispersion/attenuation model that deviates substantially from industry standard without explaining the justification for this decision.

8. critically assess the proposed measures for protecting NARW from pile driving noise. Instead, the DEIS assumes without analysis that Protected Species Observers (PSOs), along with data from passive acoustic monitory (PAM) equipment, will enable the applicant to detect each and every NARW that may enter the pile driving Level A harassment zone.**1** There is no evidence to support this assumption. PSOs can only see whales on the surface of the water, not at depth. In addition, they cannot see beyond 1,500 meters in any direction. This distance is further diminished during times of poor lighting, rough seas, heavy swells, or fog. PAM systems only detect whales that are actively vocalizing; no-vocalizing whales will not be picked up at all. Baleen whales, including NARWs, are among the least vocal whales in the Atlantic Ocean, often going days, even weeks, without uttering a sound. Further PAM systems have a significant “miss rate” which results in many marine mammals going undetected. **2** This fact is not discussed in the DEIS, even though it bears directly on the efficacy of the mitigation measures and strategies that BOEM believes will protect the whale from project-related impacts. Note that the above-noted limitations on PSOs and PAM systems also apply to their ability to protect whales from project-related vessel strikes.

9. provide an adequate analysis of operational noise impacts on NARW. The Atlantic Shores project will install and operate hundreds of large wind turbines. The noise impacts from such a huge array of large turbines have never been studied. In fact, the only field studies conducted on the issue involved five 6MW turbines off Block Island, RI. The noise signature of the Block Island wind farm simply cannot be compared to the noise signature that will be created by the industrial-scale Atlantic Shores project. In addition, the EIS’s operational noise analysis use sound propagation and attenuation model inputs that are not supported by the best available science and deviate substantially from industry practice, leading to a gross underreporting of the Project’s noise impacts.

10. adequately assess the project's potential to alter water currents and stratification. This issue was raised in a letter, dated May 13, 2022, by Sean Hayes, PhD, of NOAA Fisheries to BOEM. According to Dr. Hayes, the long-term effects of altered stratification will likely affect the aggregation of zooplankton, causing the zooplankton to disperse. This is problematic, given that NARW can efficiently feed on zooplankton only when the zooplankton are aggregated in dense patches.

11. adequately assess the how the ASOWNJ project, plus the other offshore wind energy projects slated for construction within NARW habitat, will affect the species cumulatively, especially when the total offshore wind impacts added to the stressors that already threaten the species (e.g., commercial vessel traffic).

12. In his letter, Dr. Hayes also recommended that all offshore wind projects be moved back at least 20 km from areas where NARW feed and engage in other life history behaviors. The DEIS does not mention this recommendation or consider an alternative consistent with it.

The DEIS's proposed mitigation measures for Project impacts on NARW, including vessel speed limits, include too many exemptions and exceptions to be effective, resulting in significant risks to NARW, including potential injury from vessel strikes and hearing damage from pile driving noise

1 Level A harassment noise is noise that has the potential to cause physical damage to the hearing organs of the animal in question and/or result in permanent threshold shift (PTS), which is a long-term reduction in hearing capability. Level B harassment noise is noise with the potential to disrupt normal species behavior, stimulate avoidance behaviors, and/or result in temporary threshold shift (TTS). However, Level B noise, as defined, is not intense enough to cause physical damage to hearing organs or cause PTS.

2 "PAMGuard Quality Assurance Module for Marine Mammal Detection Using Passive Acoustic Monitoring," by CSA Ocean Sciences, Inc. (August 2020).

Impact on Endangered Birds

Per subsection 7.7 – 9.37, Critical Wildlife Habitat, e) Development that would directly or through secondary impacts on the relevant site or in the surrounding region adversely affect critical wildlife habitats is discouraged, unless: 1. Minimal feasible interference with the habitat can be demonstrated; 2. There is no prudent or feasible alternative location for the development;

In its CZMA Review, Atlantic Shores responds that the section does not apply because it will not be proximate to such areas. Yet the DEIS seems to acknowledge potential impact by saying: "Decommissioning of the Project would reverse the impacts of bird displacement from foraging habitat." 4.2-1 DEIS. This does not address the no adverse impact, net gain, and no alternative criteria.

Piping Plover and Red Knot

Atlantic Shores presents no assessment of the turbine collision risk to the local endangered piping plover and red knot population that nests on the Island and must now cross the wind complexes to get there and back to its offshore migration routes. The DEIS discusses the existence of a preliminary biological assessment (BA) prepared for 112 consultation under the Endangered Species Act but presents no results of that analysis in the DEIS. It says that the final biological assessment will be available in the final EIS but that prevents the public

from reviewing and commenting on this important impact. This is a lack of full disclosure and lack of coordination with the CZMA to the fullest extent practicable.

As of 2015, the region comprised of North Brigantine Natural Area and the Holgate and Little Beach Units of the Edwin B. Forsythe National Wildlife Refuge accounted for the other significant concentration of breeding pairs in the state (43 pairs or 40% of the statewide total).

The Holgate and Little Beach units of E.B. Forsythe National Wildlife Refuge continued as the stronghold of the state's population with the largest percentage of pairs (54 pairs or 46%). Combined with the state's North Brigantine Natural Area, these three sites connect a large portion of New Jersey's undeveloped coastline and play a critical role in the recovery of this species in the state (55 pairs or 47%).

One hundred and eighteen (118) pairs of piping plovers nested in New Jersey in 2022, a 14% decrease in population size compared to 2021 (137 pairs). The population was slightly above the statewide long-term average (117 pairs) and was the second highest recorded pair number over the last decade. Statewide productivity in 2022 (0.85 fledglings/pair) was below the long-term average (1.04 fledglings/pair) and below the federal recovery goal (1.50 fledglings/pair). This was the second consecutive year statewide productivity dipped below 1.00 fledglings/pair since 2013. Little Beach and North Brigantine Natural Area pair numbers both declined over 50% in 2022. 2022 Piping Plover Nesting Results in New Jersey (nj.gov)

Red knots travel 9,000 miles each year from South America to breed in the Arctic. The shorebirds are now stopping in Brigantine to rest and refuel on horseshoe crab eggs. However, populations of the federally threatened species have declined dramatically. In 2021, the U.S. Fish & Wildlife Service proposed to protect habitats used by red knots across coastal areas of the United States. Designating these "critical habitats" would mean federal agencies could not destroy or adversely modify the sites. In April 2023, the agency announced it's expanding its proposed habitats to include 233 acres of shallow water off the shoreline of the Edwin B. Forsythe National Wildlife Refuge in Brigantine.

The red knot, piping plover, and roseate tern are listed species that can migrate through areas developed for offshore wind. BOEM's study program costs $273,374 specifically for the development of a transparent modeling of collision risk for three federally listed bird species to offshore wind development. The final report was due on January 2023. The objective is to develop a user-friendly Collision Risk Model that can inform risk assessments of offshore wind development to three federally listed species (Roseate Tern, Piping Plover, and Red Knot) on the Atlantic OCS. The problem was stated as estimating the number of fatalities of federally-listed birds migrating through offshore wind energy facilities. BOEM states that this information is essential for understanding the potential for rare or uncommon species to encounter conflicts with renewable energy development in these areas for NEPA assessments and ESA consultations. Obviously BOEM does not believe that it has information necessary to determine the impact of offshore wind development on the red knot and piping plover is they are spending $273,374 to develop a new tool to determine the impact. BOEM ESP Ongoing Studies Template

The piping plover migrates offshore, north-south **(1)** and must cross the project area in and out from their nests. If heading toward turbines, it would difficult for a 7-inch bird to first perceive and then avoid rotating blades with a 774-foot diameter and blade tip speeds approaching 200 miles per hour creating highly turbulent conditions. Assuming little avoidance of the entire wind complex to get to its historical nesting location as discussed below, there is the potential for a high number of fatalities (PP2) estimated here at up to 31 percent per year. That is based on reference **(2)** , Figure 2.25, the average of the Chapin, Dead Neck, Avalon, Stone

Harbor results. It is also consistent with the percent of transit area blocked by rotating blades and 2 flights per bird, in and out.

The DEIS presents no assessment of the turbine collision risk to the local endangered piping plover population that nests on the Island and must now cross the wind complexes to get there and back to its offshore migration routes. It discusses the existence of a preliminary biological assessment (BA) prepared for consultation under the Endangered Species Act but presents no results of that analysis in the DEIS. It says that the final biological assessment will be available in the final EIS but that prevents the public from reviewing and commenting on this important impact. This is another example of lack of full disclosure and lack of coordination with other environmental reviews to the fullest extent practicable. This is another impact that must be presented in a supplemental DEIS for public review.

Regarding turbine collision, on page 3.5.3-18 the DEIS purports to minimize the collision risk by pointing to a study by Madsen et.al. in 2012 that showed a 99% avoidance when turbines were spaced greater than 0.6 miles. The avoidance rate used in the DEIS is not well defined but it appears to be the probability that the bird will avoid the entire wind complex, this needs to be clarified. But that study was for a particular bird species (the common elder) and a much smaller wind complex that it was able to fly around, which the modeling then depicted. In the case here, the piping plover, considering both the Ocean Wind and the Atlantic Shores projects, faces a 32-mile long barrier to making landfall. In addition, the ASOWNJ turbines are much more powerful and carry greater pressure changes and turbulence, one cannot just take results from small turbines and assume they hold for large ones. In addition, that study did not show the collision risk to those birds that entered the wind complex which is the critical issue here facing the piping plover as well as the red knot. Further, that study was for much smaller turbines with much different pressure and turbulence characteristics than the larger turbines proposed here. Finally, it is unclear whether the piping plover has similar avoidance traits as the elder bird. Therefore, the relevance of that study to the situation facing the piping plover is highly questionable. There are other studies as shown below that present a much different and much greater risk to the plover which should have been presented in the DEIS.

In either case, the BOEM cannot assume a 99 percent turbine avoidance by simply referencing studies which reference other studies, which in turn are based on much smaller turbines (e.g., 216-foot diameters), other bird species, and different circumstances. On its face it does not seem at all realistic to expect a small bird to easily and often escape multiple rows of rotating turbine blades with diameters more than two football fields long, a rotor swept area 13 times that used in previous studies, and wind tip speeds approaching 200 miles an hour causing significant disruptions in air currents. Prior studies **(2)** acknowledge that the avoidance rate for the piping plover is simply not known. If the BOEM uses an avoidance percentage number it needs to provide a plausible explanation for it. Otherwise, it should be conservative in its analysis. If the avoidance percentage is of the entire complex, then the assumption of 99 percent avoidance is especially unfounded when we know historically that the piping plover's instincts are driving it towards its nesting ground on the Island and the direct path from its migratory routes to it is through the wind complex. There seems no basis to assume it will go tens of miles out of its way from that direct 113 path to get there. So, the avoidance rate is likely to be closer to zero than it is to 99 percent. Rather, for a bird approaching these large turbines and their aerodynamics suggest otherwise. First, it is not clear that the bird can even detect the rotating blades especially the outer part which are now moving at very high speeds. This causes vision blur and paradoxically is now greater with a larger turbine, again because of their outward tip speeds approaching 200 miles an hour. If the bird does detect an obstacle and tries to change course there are additional difficulties. If it is approaching the turning blades against the wind, it will experience a very significant pressure drop in front of the blades which will suck it in to the blade swept area. If it is approaching the turning blades with the wind behind it and

seeks to change course it has the counter that wind speed which is likely to be significant during operation of the turbine. If it passes through the swept area, it will experience that same pressure drop behind the blades. All of this suggests that a 99 percent avoidance through multiple rows of such situations is completely arbitrary and the BOEM needs to go back and present something realistic.

It is not known if the BOEM is using the "BAND" model in its Biological Assessment (BA) to analyze collision risk as the bird goes through the wind complex. The description of the BAND model in other literature, as a "static" model indicates that it scores a collision only when a bird actually hits a blade. The blades are relatively thin and the area occupied by the blades compared to the entire area swept by the rotation is very small, so obviously using only that, the risk of collision will be small. This does not account for the risk of injury or fatality from the extreme turbulence and pressure changes that the bird would experience as it passes through the rotor swept area and beyond it, especially just downwind of the turbine. It ignores all the turbulence, pressure changes, and wind shear effects occurring in between and downwind of the blades which could also maim or kill a bird. Any use of the model, without modification, would seems especially inappropriate considering the huge 110-meter blade length and blade tip tangential speeds approaching 200 miles per hour. The BOEM needs to do a current, realistic assessment of the risk of injury and fatalities here in its BA. It cannot rely on the BAND model as it did for the Vineyard Wind 1 Biological Assessment, based on the model's limitations described above, and other major drawbacks expressed by the U.S. Fish and Wildlife Service. **(3)**

It is expected that BOEM will apply CRMs to evaluate avian impacts in its BA. While limited, CRMs are one of the only tools available to hypothesize potential impacts to birds from collision in the offshore environment. As such, CRMs provide a mechanism for testing outcomes (e.g., observed collision rates) against the model predictions (e.g., expected collision rates), and BOEM must address the need to collect the data necessary to test these hypotheses. 114 The DEIS should include a CRM-driven collision risk analysis for all species of conservation obligation which may occur within 20 km of the Atlantic Shores footprint and for which a current CRM would be appropriate, even if the species has not been documented within the footprint. This should include a recent stochastic derivation of the Band model, such as the McGregor (2018) version **(1A)** . BOEM must be transparent in its CRM application. These models are extremely sensitive to the input parameters. A study by Cook et al. (2014) found that estimations of avoidance and collision risk from Band models were highly sensitive to the flux rate (total number of birds passing through the wind farm), corpse detection rate, rotor speed, and bird speed. Factors such as weather (i.e., wind speed and visibility) and habitat use would also affect the accuracy of these estimates, as such factors would greatly influence avian flight patterns and behavior **(2A).**

Therefore, the Draft EIS and application for C must provide the inputs used in its analysis for public comment and transparency. Providing CRM results without transparency to the inputs and analytical process would never be acceptable from a scientific perspective and, therefore, should not be acceptable from BOEM. Providing inputs would show whether BOEM followed the guidance provided by Band in assessing collision risk. These details regarding inputs should include, but not be limited to, avoidance behavior, flight height, flight activity, flux rate, corpse detection rate, rotor speed, bird speed, and collision risk.

(1A) McGregor RM, King S, Donovan CR, Caneco B, Webb A. 2018. A Stochastic Collision Risk Model for Seabirds in Flight:61. https://tethys.pnnl.gov/sites/default/files/publications/McGregor-2018- Stochastic.pdf.
(2A) Cook ASCP, Humphreys EM, Masden EA, Burton NHK. 2014. The Avoidance Rates of Collision Between Birds and Offshore Turbines. Scottish Marine and Freshwater Science 5:263. 62

Additionally, CRMs should consider differences in daytime and nighttime flight patterns. As Band himself stipulates: For some species typical flight heights are dependent on the season, and in such a case it will be best to use seasonally dependent typical flight heights in assessing collision risk for each month, rather than average flight heights across the year...Flight activity estimates should allow both for daytime and night-time activity. Daytime activity should be based on field surveys. Night-time flight activity should be based, if possible, on nighttime survey; if not on expert assessment of likely levels of nocturnal activity...collision model[s] should take both day and night flights into account. Where there is no night-time survey data available, or other records of nocturnal activity, for the species in question, (or for other sites if not at this site), it should be assumed that the Garthe and Hüppop/ King et al. 1-5 rankings apply. These rankings should then be translated to levels of activity at night which are respectively 0%, 25%, 50%, 75% and 100% of daytime activity. These percentages are a simple way of quantifying the rankings for use in collision modelling, and they may to some extent be precautionary **(3A)**. 115 There are new derivations of the Band model under development, namely the 3-D CRM for seabirds by the Shatz Energy Research Center **(4A)** and stochastic CRM specific to ESA-listed species in southern New England from the University of Rhode Island **(5A).**

(3A) Band, B. 2012. Using a collision risk model to assess bird collision risks for offshore windfarms. SOSS report for The Crown Estate, Norway. https://www.bto.org/sites/default/files/u28/downloads/Projects/Final_Report_SOSS02_Band1ModelGu idan ce.pdf.
(4A) Seabird Distribution in 3D: Assessing Risk from Offshore Wind Energy Generation, Shatz Energy Research Center (2020), https://schatzcenter.org/2020/04/seabird3dstudy/.
(5A) Transparent Modeling of Collision Risk for Three Federally-Listed Bird Species to Offshore Wind Development, US Fish and Wildlife Service with University of Rhode Island (Oct. 29, 2020) https://www.boem.gov/sites/default/files/documents/environment/environmentalstudies/Transparentmodeling-of-collisionrisk-for-three-federally-listed-bird-species-to-offshore-winddevelopment_1.pdf.

BOEM Cannot Assume that Larger Turbines, Further Apart, Reduces Risks to Birds There is no substantial evidence to suggest that larger turbines, spaced farther apart, reduces risks to birds, and it should be a goal of BOEM to understand the effects of displacement and mortality relative to turbine size and spacing. The size of turbines has grown substantially over the past decade, and this trend is expected to continue. In its Vineyard Wind 1 project, Vineyard Wind plans to use GE's 12 MW Haliade-X turbine, which has a 220-meter rotor swept zone and is estimated to reach a maximum height of 260 meters above sea level. University of Virginia is currently developing 200-meter-long blades to power a 50-mw turbine, with a potential rotor swept zone of approximately 400 meters. Given that the tower height would need to be more than 200 meters in height to accommodate rotor blades of this size, turbines could soon reach heights greater than 400 meters above sea level. Studies, Karas (2009),(**6A)** and Johnston et al. (2014),(**7A)** which suggest that fewer, larger turbines reduce avian collision risk, are based on turbines less than 5 mw. As turbines increase in size, they are more likely to encroach on airspace occupied by nocturnal migrants **(8A)** while not necessarily avoiding airspace occupied by relatively lower flying foraging marine

(6) Smallwood KS, Karas B. 2009. Avian and Bat Fatality Rates at Old-Generation and Repowered Wind Turbines in California. The Journal of Wildlife Management 73:1062–1071.
(7) Johnston, A., A.S.C.P. Cook, L.J. Wright, E.M. Humphreys, and N.H.K. Burton. 2014. Modeling Flight Heights of Marine Birds to More Accurately Assess Collision Risk with Offshore Wind Turbines. Journal of Applied Ecology 51, 31-41. (8) Id. 64 bird species.

Conversely, studies by Loss et al. (2013) Choi et al. (2020) and Huso et al. (2020), find that bird deaths not only increase with turbine size, but also suggest that the number of bird deaths from collision with wind turbines is proportional to the number of mw produced in a wind farm. Turbulence above and below the rotor swept

zone can affect flight performance. If this should make birds more susceptible to physical interactions with turbines, then larger turbines would only increase that risk.

Additionally, limiting risk evaluations to the rotor swept zone 116 neglects the risk of collision from the tower itself and turbulence around the rotor swept zone. Suggestions that increased spacing (1 nm) between turbines would reduce risks to birds from both collision and displacement is unfounded, as offshore wind farms in Europe do not provide this level of spacing, and therefore, there is no operational comparison to be made. Instead, increased spacing means fewer turbines and less energy production within the footprint of the project, so more projects (and more space) will be necessary to meet state and national energy goals.

Furthermore, greater space between turbines may increase collision risk if species vulnerable to collision end up using the wind farm more frequently. Unfortunately, these are all unknowns, and BOEM will need to fund studies to answer these questions. The Draft EIS should have included a risk assessment, considering the full range of the potential rotor swept zone provided in the COP, to assess 1) impacts from collision and barrier effects to migrating birds, including the piping plover, and 2) potential increased habitat loss that may need to occur. Similarly, the federally threatened and State endangered red knot is likely crossing the lease area as well, and a similar analysis should be done for it. It has a critical habitat in the Holgate and North Brigantine areas during its fall migration (PP4). The results of all Atlantic Shore's Phase 1 and subsequent studies of its migration routes should have been included in the DEIS. The list of project authorizations should also include compliance with the Migratory Bird Protection Act, and the criteria used to determine that.

Other References

James D. McLaren,2 Holly F. Goyert, 3 and Peter W. C. Paton , Supportive wind conditions influence offshore movements of Atlantic Coast Piping Plovers during fall migration Pamela H. Loring, American Ornithology.org, Supportive wind conditions influence offshore movements of Atlantic Coast Piping Plovers during fall migration | Ornithological Applications | Oxford Academic (oup.com) Volume 122, 2020, pp. 1–16 DOI: 10.1093/condor/duaa028, 184

Michelle L. Stantial, Flight Behavior of Breeding Piping Plovers: Implications for Risk of Collision with Wind Turbines, New York College of Environmental Science and Forestry Syracuse, New York, Flight Behavior of Breeding Piping Plovers: implications for risk of collision with wind turbines(nj.gov) December 2014.

US Fish and Wildlife Service, New England Office, Letter to the BOEM, Vineyard Wind Offshore Wind Energy Project, Massachusetts TAILS:2019-I-0479, October 16, 2020.

Status of the Red Knot in the Western Hemisphere. Map 20, Prepared for the USFWS, NJDEP, May 2007.

Potential Impact of Atlantic Shores and other Offshore Wind Projects on Freshwater Aquifer, Shoreline Sinking, and Potential Catastrophic Offshore Landslides

Per subsection 7:7-16.3, Water Quality, (b) coastal development which would violate the Federal Clean Water Act, or State laws, rules and regulations enacted or promulgated pursuant thereto, is prohibited. In accordance with N.J.A.C. 7:15 concerning the Water Quality Management Planning and Implementation process, coastal development that is inconsistent with an approved Water Quality Management (208) Plan under the New Jersey Water Quality Planning Act, N.J.S.A. 58:11A-1 et seq., is prohibited.

AS response in the CZMA Consistency Review is that the project will not violate any Federal or State water quality laws, but nowhere does AS or BOEM address the potential for the project causing saltwater intrusion

into the underlying freshwater aquifers. BOEM further notes in section E.1.1.2 that no incomplete or unavailable information related to the analysis of impacts on water quality was identified. Yet nowhere does AS or BOEM address the potential for the Project causing saltwater intrusion into the underlying freshwater aquifers.

A Rutgers study on the impact of climate change (New Jersey's Rising Seas and Changing Coastal Storms: Report of the 2019 Science and Technical Advisory Panel – Kopp, et al, 2019) identifies two major components to rising sea levels at the NJ shore – global warming and the sinking shoreline. Contributors to the sinking shoreline include "glacial isostatic adjustment" (GIA) which is tied to the fresh water aquifers that underlie the continental shelf, and sediment compaction which is due to increasing weight on the developed land.

Another study shows the connection between the onshore aquifers and the huge deep freshwater aquifer that extends out to the edge of the continental shelf (Aquifer Systems Far Offshore on the US Atlantic Margin – Gustafson, et al, Scientific Reports 9, article 8709 2019).
Further validating the information in this study, in an Earth Science press 6/30/19 release, *Scientists Map Huge Undersea Fresh-Water Aquifer Off US Northeast*, it was announced that scientists discovered a gigantic aquifer of relatively fresh water trapped below the salty ocean from New Jersey to Massachusetts. If these newly discovered aquifers are connected with the freshwater aquifers used for coastal water supplies, pounding 200 monopiles into the ocean's floor could have major unintended consequences.

A study (Overpressure and Fluid Flow in the New Jersey Continental Slope: Implications for Slope Failure and Cold Seeps authored by Dugan and Flemings and published by in Science July 14 2000) documents the instability in the NJ seabed above the deep aquifer. That study was reported in Science News July 25, 2000 under the title Trapped Water Could be a Cause for Underwater Landslides, Tidal Waves.

The Atlantic Shores DEIS does not address this very significant issue (although it does acknowledge in the context of potential biological injury that "very few studies have examined the effects of substrate vibration from pile driving, yet many have acknowledged that is a field of urgently needed research" 3.5.2-22). Nor has there been a programmatic analysis done of the multiple projects planned off the northeast Atlantic coast to evaluate the combined potential impact on the unstable ocean floor from these massive industrial developments.

These two Atlantic Shores projects alone contemplate 200 massive 1047 ft tall turbines as close as 9 miles to the NJ shore which will likely have monopole bases that are each 15 meters in diameter and each weigh 2500 tons (5 Million pounds). They will be pile driven up to 242 feet into the seabed with repeated hammer strokes each up to 4400 kilojoules. And these giant turbines will generate significant continuous low frequency operating vibrations that will be transmitted into the ocean floor for their entire multi - decade operating life. Over 1000 similar turbines are planned for this NY/NJ area of the continental shelf.

The public needs assurance that these massive projects will not impact our fresh water aquifers, that they will not exacerbate the current sinking of the NJ shore line related to the changing pressure dynamics of the underground aquifers, and that they will not trigger underwater landslides in the unstable continental shelf.

Water Quality

There are many instances of deficiency or missing information with regard to water quality in the area of the Proposed Action. Pg E-1 of Appendix E, specifically subsection E.1.1.2, states that "No incomplete or

unavailable information related to the analysis of impacts on water quality was identified." This claim is grossly inaccurate. Some of the adverse impacts and issues that have been oversimplified and inadequately addressed in the DEIS are described below.

The DEIS oversimplifies and incorrectly concludes that "No incomplete or unavailable information related to the analysis of impacts on water quality was identified (E.1.1.2, pg. E-1). The affected environment with respect to potential Project-related water quality impacts includes the marine waters of the Offshore Project Area encompassing the outer continental shelf ("OCS") waters of the wind turbine area ("WTA") to the nearshore and intertidal waters along the export cable corridors ("ECCs") to each landfall site. The COP on which the DEIS is based states that water quality offshore in the waters of the WTA and along the ECCs is generally considered good and supportive of marine life based on regional monitoring data syntheses for offshore waters(COP, Vol II). 16 This is based on the National Coastal Condition Assessment Report from U.S. EPA (2015) from 23 sampling sites located along New Jersey's coast extending from Sandy Hook Bay to Delaware Bay. The DEIS states that "No NCCA stations directly correspond to the WTA and ECCs, but they provide indicative coastal water quality conditions in the nearby waters."

Chlorophyll a is a measure of how much photosynthetic life is present. Chlorophyll a levels are sensitive to changes in other water parameters, making it a good indicator of ecosystem health. USEPA considers estuarine and marine levels of chlorophyll a under 5 micrograms per liter (µg/L) to be good, 5 to 20 µg/L to be fair, and over 20 µg/L to be poor. Table 3.4.2.1 (pg. 3.4.2- 6) shows that none of the 23 sites tested good for Chlorophyll a with eight sites actually exceeding the threshold values and rated "poor." The proposed project and its offshore and nearshore activities will adversely impact and add to the chlorophyll burden on these environments and has not been discussed in the DEIS.

Eutrophication in coastal waters has been a growing problem of concern threatening the ecosystem health of coastal and estuarine environments. Table 3.4.21. also shows that dissolved inorganic nutrients are a source of concern, and the DEIS fails to state how the proposed activities onshore, along the ECC, and in offshore environments will not exacerbate this pollution source.

NJ Surface Water Quality Impairments

New Jersey's Waterways are impaired. Coastal onshore waters in the geographic analysis area include North Branch of the Metedeconk River, Manasquan River, Mingamahome River, Jumping Brook, Stephen Creek, Great Egg Harbor River, Mill Branch, Patcong Creek and associated tributaries to these waters. The majority of the assessment units within the water quality geographic analysis area are listed as impaired and 303(d) listed by NJDEP (USEPA 2020). The impaired assessment units are generally non-supporting for ecological use, fish consumption, and recreation use caused by factors including, but not limited to, oxygen depletion, pathogens, and PCBs. Nearly all water quality assessment units of Barnegat Bay, Great Egg Harbor Bay, the Delaware River, and associated tidal tributaries within the geographic analysis area in New Jersey are listed as 303(d) impaired. These waters are non-attaining for fish consumption, ecological function, or recreation, with causes including pathogens, turbidity, oxygen depletion, pesticides, and PCBs. Waters along all the ocean-side barrier island shorelines in the geographic analysis area are non-attaining for ecological function due to oxygen depletions (pg. 3.4.2-10). Table 3.4.2.2 further shows that the Monmouth Landfall Site, Monmouth ECC, Atlantic Landfall Site, and Atlantic ECC are unsupportive of general aquatic life, and fish consumption is largely undetermined, while shellfish harvesting is largely unsupportive for Monmouth Landfall Site and Atlantic Landfall Site. NJDEP monitors coastal waters during the summer under the Cooperative Coastal Monitoring Program and both

these areas routinely have pathogen exceedances that have resulted in beach closures. The DEIS fails to address additional impacts to these impaired waters from the proposed project.

Specific to Monmouth County/Larrabee onshore project area, the DEIS fails to prove how the proposed activities will ensure the safety drinking water supply to the local communities. The private New Jersey American Water company manages a public community water system that supplies Howell Township with drinkable water through fourteen groundwater wells and one surface water source (DEIS, pg. 3.4.2-13). According to the DEIS, these groundwater wells and surface water are not shown or discussed in the COP as they are over one mile from the onshore project area. Approximately 60 percent of the drinking water for the Monmouth County communities of Sea Girt Borough and Wall Township, as well as other communities, is sourced from the Manasquan Reservoir in Howell Township. This reservoir is managed by the New Jersey Water Supply Authority and is located over 1,000 feet (305 meters) to the northwest of the Onshore Project area at its nearest point (DEIS pg. 3.4.2-13). How did the DEIS arrive at the conclusion that the onshore activities of the proposed project will not impact these vital drinking water sources? What criteria did BOEM use to determine this find?

Environmental Justice

According to DEP Laws: Environmental Justice requires fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, in the development, implementation and enforcement of environmental laws, regulations and policies. This goal can only be achieved when everyone enjoys the same degree of protection from environmental and health hazards and has equal access to the decision-making processes in the places they live, learn, and work, and recreate in a community of concern; the presence of disproportionate environmental and public health stressors; and the absence or lack of environmental and public health benefits.

Specifically, the Law directs the DEP to determine how to address these permit applications based on a comparative analysis that determines if the additional environmental or public health stressors from the permitted action would, together with the baseline stressors already impacting the community, cause or contribute to adverse cumulative environmental or public health stressors within that Community.

According to Subsection 7.7-9.41, Special Urban Areas, development that would adversely affect the economic well being of these areas is discouraged, when an alternative which is more beneficial to the special urban areas is feasible.

Table B.4-7 in Appendix B in the DEIS includes data on at-place employment by industry in the New York and New Jersey geographic analysis area. The industries that employ workers reflect recreation and tourism's importance to these counties. A greater proportion of workers in these counties are employed in accommodation and food services (31.1 percent in Atlantic County, 18.8 percent in Cape May County, 9.9 percent in Monmouth County, and 8.9 percent in Ocean County) than in New Jersey as a whole.

Environmental justice populations would have to adjust somewhat to account for disruptions due to notable and measurable adverse impacts.

Views of offshore WTGs could also have impacts on individual locations and businesses serving the recreation and tourism industry, based on visitor decisions to select or avoid certain locations. Because the service

industries that support tourism are a source of employment and income for low-income workers, impacts on tourism would also result in impacts on environmental justice populations.

Impacts would result from navigational complexity within the WTA, disturbance of customary routes and fishing locations, and the presence of scour protection and cable hardcover, leading to possible equipment loss and limiting certain commercial fishing methods. Overall, during construction and installation, O&M, and conceptual decommissioning, the offshore structures for the Proposed Action alone would have minor to moderate impacts on marine businesses (Sections 3.6.1, 3.6.3, and 3.6.8), resulting in long-term, continuous, negligible to minor impacts on environmental justice populations due to the impact on low-income workers in marine industries and low-income residents who rely on subsistence fishing.

During both construction and operations, the impacts on low-income employees of marine industries and supporting businesses (commercial fishing, support industries, marine recreation, and tourism) from all IPFs would range from negligible to moderate.

BOEM anticipates that the cumulative impacts associated with the Proposed Action when combined with impacts from ongoing and planned actions including planned offshore wind, would be noticeable and moderate. The main drivers for the impact ratings are the long-term, minor impacts associated with the presence of offshore structures, which affect marine-dependent businesses (commercial fishing, for-hire recreational fishing, boat tours and other marine recreational businesses) that may hire low income workers. The Proposed Action would contribute to the overall impact rating primarily through the same IPFs.

Damage to Atlantic City Neighborhoods Related to EMF Cable Installation

The installation of onshore cabling including trenching, horizontal direct drilling and jack and bore will result in the degradation of tourist area and underserved population in Atlantic City. The landfall site will eliminate a parking lot covering an entire block in Atlantic City. According to the NOAA survey, 49% of tourists ranked convenient parking as very important as a beach characteristic. You intend to claim close to 2.5 acres of these residents' valuable parkland, plus a temporary impact for another 11 acres of parkland. Purchasing land as a potential replacement outside of Atlantic City as a replacement does absolutely nothing for Atlantic City. The installation of onshore cabling including trenching, horizontal direct drilling, and jack and bore will result in significant degradation of neighborhoods, and destruction of tourist areas, recreation areas and most importantly the climate justice populations in Atlantic City. This project will not be just disruptive, it will add significant noise, air pollution, diminished access, dust and dirt which will be a nightmare for the residents.

Health Risks of EMF Cables to Atlantic City Neighborhoods

And most importantly, based on current science there will be significant health risks for our neighbors living in these environmental justice protected areas because of EMF (Electro-Magnetic Frequency) emitted from high voltage underground cables.

First, Atlantic Shores LLC fails to use a respected source but instead uses the International Commission for Non-Ionizing Radiation Protection (ICNIRP) guidelines in evaluating EMF exposure. Studies have shown that this organization's guidelines fail to meet fundamental scientific quality requirements and are not suited to set EMF exposure limits. Medical research scientists who study health based impacts of EMF rely on the World Health Organization (WHO) and the Institute for Research in Immunology and Cancer (IRIC).

Back in 2007 the WHO and IRIC stated that EMF was not harmful. Then in 2011, these scientific institutions classified EMF exposure under a category called "Group 2B". Group 2B states something is "possibly

carcinogenic", but that classification comes from studies that were looking at less than a measurement of 3 Milligauss.

Now we have even more recent studies that show that even a small increase in EMF will change health outcomes. Examples found on PubMed are both meta-analysis of the exposure to EMF related to childhood leukemia and fetal development.

The first study, titled, ***Exposure to magnetic fields and childhood leukemia: a systematic review and meta-analysis of case control and cohort studies, published in the journal, Reviews in Environmental Health,*** was a **Childhood Leukemia Metanalysis printed in 2022,** including 36,000 children diagnosed with childhood leukemia going back to 1970. The study concluded that statistically significant associations were observed between exposure to ELF-MF (**extremely low frequency-magnetic field**) and childhood leukemia. Altogether there was a 2 fold increase in childhood leukemia.

The second study was another meta-analysis of 6 studies and only included power line based EMF exposure. Children of pregnant women who were exposed to 4 Milligauss or higher were found 14 times more likely to develop all cancers over 4 years. The results of the study showed that the residential period of more than 4 years near high-voltage power lines before or after birth is an important factor for all in childhood. Material exposure to EMFs significantly increased development disorders in their fetus such as embryonic development. There was a 3.95 times and significant increase in placental apoptosis or cell death. There were 5-fold central nervous system defects and spina bifida increase as well as a significant increase in club foot in the fetus.

These studies represent populations such as children and fetuses whose cells aren't developed, and whose DNA is easily cleaved.

The authors concluded that the 2011 guidelines must be revised to reflect recent studies. Even a small amount of enhancement of exposure will result in unacceptable health consequences of our future generations. EMF exposure is a significant environmental danger for pregnant women and their fetuses.

Atlantic Shores is planning to run EMF cables on the exact beaches, parks, where young mothers who may be expecting another child and fathers bring their children to play. Atlantic Shores LLC is planning to run EMF cables through residential neighborhoods and next to the Sovereign public school building. Is Atlantic Shores LLC going to guarantee that the children who live, play and go to school in these areas are safe?

Atlantic Shores has stated in their documents that these export cables will operate at peak loads at up to 349mG versus the studies which determined that 4mG is potentially dangerous. Have you had neighborhood meetings with these underserved communities to inform them of these dangers to the health and welfare, most importantly their children?

<u>Toxic Substances in Ocean Water Impacting Climate Justice Areas in Atlantic City and Other Coastal Areas</u>

Leading edge erosion of turbine blades results in a substantial release of fiberglass and epoxy particles that will contaminate the marine food web. These microplastics contain the harmful bisphenol A (BPA) and the "forever" PFAS chemicals. The marine food web accumulates and magnifies these toxic substances. Moreover, heavy metals from the corrosion protection on the turbines will leach into the water, further compromising the health of marine life.

Increased Air Pollution in Climate Justice Areas

According to the American Lung Association, Atlantic County has one of the lowest air pollution levels in New Jersey. The climate justice areas will be affected by the Atlantic Shores project's local pollution more than any other area.
12 NJ Counties Ranked Among Worst Air Quality In The USA: Report | Rumson, NJ Patch

How will the vessel and road traffic from constructing and maintaining 400-500 wind energy bases and turbines off our coast impact the air pollution in Atlantic County? Below is the table of ocean vessels that will be used for just the Atlantic Shore South Project. According to Atlantic Shores South COP

> "Currently, maximum estimates for the total number of vessels required for any single offshore construction activity range from two vessels for scour protection installation to up to 16 vessels for OSS installation. For export cable installation, it is currently estimated that up to six vessels could be operating at once. Across the Projects, if all construction activities were occurring concurrently (which is unlikely), a total of 51 vessels could be present at any one time."

According to Construction Timelines in Atlantic Shores South and Orsted Ocean Wind 1 Projects construction plans, many of the construction phases will be running currently for both projects. Construction will continue to increase air pollution as Atlantic Shores North and Ocean Wind 2 projects are constructed. Reporting is absent for increased air pollution and there is no mention of on shore road traffic vehicles and their pollution. On shore pollution from construction and maintenance vehicles is equally ignored.

Major Impact to Historical Properties in or near Climate Justice Areas

According to BOEM, Climate Justice Areas in Atlantic City will be near the largest number of historical properties listed in its Cumulative Historic Resources Visual Effects Analysis document. The climate justice areas will be in or close to more historic properties negatively impacted by the cumulative effects of offshore wind projects than any other community. The significant negative impact to the integrity of the historical properties in Atlantic City is a public detriment and is a hazard to public welfare. Section 106 of the NHPA requires he consideration of the impacts of Atlantic Shores offshore wind development on the integrity of properties either listed or eligible for listing on the NRHP U.S. Code 36 CFR Part 800- Protection of Historic Properties – the process known as the Section 106 review. The Atlantic Shores project will negatively impact the feeling of the historic properties such that it will significantly impact the historic properties' expression of the aesthetic or historic sense of a particular period of time. Based on the viewshed analysis of historical properties, it is determined that the reduction in visual resources will have a direct negative impact on the scenic view and integrity of these properties which can clearly not be mitigated.

This document doesn't include the lighthouse in Atlantic City in the historical property list. How many more properties in the climate justice areas were omitted from the list?
*Atlantic Shores Offshore Wind South DEIS_ Cumulative Historic Resources Visual Effects Analysis.pdf

Further Degradation of Beach Experience near Climate Justice Areas and Other Coastal Areas

Atlantic Shores Project will result in further degradation of beaches areas as follows:

1. **Reduced Wind Speed at the Shore**

   Small turbines, 7% reduction 6 miles downwind of wind complex. Large turbines, 26% reduction 9 miles downwind (same distance from shore to turbines here and fewer wind turbines

2. **Wave Height Decreases with Wind Speed**

   Local Air Temperature Increase will be 1.1 degrees 28 miles downwind of moderate size turbines.

3. **Airborne Wind Turbine Noise to Persons**

   Noise propagates more effectively over water than land, annoying at the beach and causing sleep disruption.

   - Continual Turbine Operation Measurement Study:
     - 1 operating turbine = 118 dBs/Vesta-236 15-megawatt turbine Specifications AND 7 turbines = 126.3 dB
     - Noise loss over 9 miles = 73 dB
     - Net noise = 53.3 dB
     - Night time noise level is 50 dB
     - 3 dB difference doubles the noise intensity to the receiver

   - Construction Pile Driving
     - 137 dB, 10.7 dB higher than the 7-turbine array used above for operational noise example.
     - Noise loss over 9 miles = 73 dB which results in a noise level at the shore of 64 dB, close to the daytime standard of 65 dB, or equal to the noise of a vacuum cleaner

Footnotes:

Stoelinga et. al., "Estimating Long-Range External Wake Losses in Energy Yield and Operational Performance Assessments Using the WRF Wind Farm Parameterization", ArcVera Renewables, 2022

References

Wake studies around a large offshore wind farm using satellite and airborne SAR M.B. Christiansena,*, C.B. Hasager a Risø National Laboratory, Wind Energy Department, Frederiksborgvej 399, P.O. Box 49, DK-4000 Roskilde, Denmark – merete.bruun.christiansen@risoe.dk

LETTERS, Micrometeorological impacts of offshore wind farms as seen in observations and simulations S K Siedersleben1, J K Lundquist2,3, A Platis4, J Bange4, K Bärfuss5, A Lampert5, B Cañadillas6, T Neumann6 and S Emeis1 1 Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research, Atmospheric Environmental Research (IMK-IFU)

Johansson, Sound propagation Around Off-Shore Wind Turbines, 2003.

Offshore Airborne Sound Assessment Revolution Wind Offshore Wind Farm prepared for Revolution Wind, LLC 56 Exchange Terrace, Suite 300 Providence, RI 02903.

Wind Energy Projects will Essentially be the Equivalent of Federal Government Condemnation of the Beaches in Climate Justice Areas

The populations of climate justice areas use the beaches located in Atlantic City for their recreation. The beaches in Atlantic City are free. There is no fee-based badge or pass needed to visit. According to 2019 NOAA study mentioned in the tourist section of this document, 57% of people rank scenic beauty or view as a very important beach characteristic. Climate Justice Areas will have the largest cumulative visual impact of any other area of New Jersey or perhaps the country. There will be 200 wind turbines visible from the Atlantic Shores South project and 876 turbines visible when all projects are complete (cumulative impact), more than any other area, probably more than along other areas located in the eastern coast. The Atlantic Shores project will add substantial visual clutter and the movement of rotor blades will become the focus of the view. The wind turbines will become the dominant feature in the seascape compared to the existing water resources, landform and user activity. As a result, the beaches once enjoyed by minority and low-income families will be essentially condemned by the industrialization of the ocean view and the major negative impact to the low income and minority population's enjoyment of the beaches.

Admission of Unavoidable Adverse Impacts in the Draft Environmental Impact Statement

The Draft Environmental Impact Statement released by the Bureau of Ocean Energy Management predicts that the Wind Turbines (2x the height of the Washington Monument visible up to 40 miles) planned to be constructed off the New Jersey Coast will cause potential "unavoidable", harm to the shore economy including the "irretrievable" loss of jobs , major impacts to historic properties, accidental chemical spills, beach closures, "compounded health issues of local environmental justice communities", navigational issues for military or national security vessels as well as mammal and bird mortality. The following quotes come directly from the Environmental Impact Statement concerning "unavoidable" "adverse impacts". These Impacts are both irreversible and irretrievable despite BOEM's weak justifications that they are reversible when the project is decommissioned. In other words, as long as the project exists the unavoidable adverse impacts will exist. Similarly weak justifications are given for most resource areas.

Table 4.1-1. Potential unavoidable adverse impacts of the Proposed Action

Resource Area	Potential Unavoidable Adverse Impacts of the Proposed Action
Physical Resources	
Air Quality	• Emissions from engines associated with vessel traffic, construction activities, and equipment operation
Water Quality	• Increase in suspended sediments due to seafloor disturbance during construction and installation, O&M, and decommissioning activities • Potential for accidental releases during construction
Biological Resources	
Bats	• Displacement and avoidance behavior due to habitat loss/alteration, equipment noise, and vessel traffic • Individual mortality due to collisions with operating WTGs
Benthic Resources	• Suspension and re-settling of sediments due to seafloor disturbance • Conversion of soft-bottom habitat to new hard-bottom habitat • Habitat quality impacts, including reduction in certain habitat types as a result of seafloor alterations • Disturbance, displacement, and avoidance behavior due to habitat loss or alteration, equipment activity and noise, and vessel traffic • Individual mortality due to construction activities • Possible temporary loss of seagrass resources within Chelsea Harbor and Great Thoroughfares due to cable emplacement
Birds	• Displacement and avoidance behavior due to habitat loss or alteration, equipment noise, and vessel traffic • Individual mortality due to collisions with operating WTGs
Coastal Habitat and Fauna	• Habitat alteration and removal of vegetation, including trees • Temporary avoidance behavior by fauna during construction activity and noise-producing activities • Individual fauna mortality due to collisions with vehicles or equipment during clearing and grading activities, particularly species with limited mobility

Resource Area	Potential Unavoidable Adverse Impacts of the Proposed Action
Finfish, Invertebrates, and Essential Fish Habitat	• Temporary loss of seagrass resources within Chelsea Harbor and Great Thoroughfares due to cable emplacement • Suspension and re-settling of sediments due to seafloor disturbance during construction • Displacement, disturbance, and avoidance behavior due to construction-related impacts, including noise, vessel traffic, increased turbidity, sediment deposition, EMF, and habitat changes • Individual mortality due to construction activities • Changes in habitat and community structure from conversion of soft-bottom habitat to new hard-bottom habitat
Marine Mammals	• Increased risk of injury (TTS or PTS) to individuals due to underwater noise from pile-driving activities during construction • Disturbance (behavioral effects) and acoustic masking due to underwater noise from pile driving, vessel traffic, aircraft, geophysical surveys (HRG surveys) and geotechnical drilling surveys, WTG operation, and dredging during construction and operations • Increased risk of individual injury and mortality due to vessel strikes during construction and installation, O&M, and decommissioning • Increased risk of individual injury and mortality associated with fisheries gear
Sea Turtles	• Increased risk for individual injury and mortality due to vessel strikes during construction and installation, O&M, and decommissioning • Disturbance, displacement, and avoidance behavior due to habitat disturbance and underwater noise during construction • Potential, but minor, EMF effects on migration
Wetlands	• Wetland and surface water alterations, including increased sedimentation deposition and removal of vegetation
Socioeconomic Conditions and Cultural Resources	
Commercial Fisheries and For-Hire Recreational Fishing	• Restriction in harvesting activities during construction of Offshore Project elements and during operations of offshore wind facility • Changes in vessel transit and fishing operation patterns • Changes in risk of gear entanglement, navigational hazards, and space-use conflicts associated with the presence of structures • Changes in the availability of target species because of habitat loss and conversion associated with the presence of structures
Cultural Resources	• Destruction of or damage to ancient submerged landforms • Although unlikely, unanticipated removal or disturbance of previously unidentified marine or terrestrial archaeological resources • Changes to the integrity of aboveground historic resources or visual disruptions to the historic or aesthetic settings from which these resources derive their significance
Demographics, Employment, and Economics	• Disruption of onshore and marine recreational businesses during onshore and offshore construction and cable installation • Potential changes to Ocean Economy sectors due to the long-term presence of the offshore wind facility, including commercial fishing, tourism, and recreation.

Resource Area	Potential Unavoidable Adverse Impacts of the Proposed Action
Environmental Justice	• Compounded health issues of local environmental justice communities near ports as a result of air quality impacts from engine emissions associated with vessel traffic, construction activities, and equipment operation • Loss of employment or income due to disruption to commercial fishing, for-hire recreational fishing, or marine recreation businesses • Hindrances to subsistence fishing due to offshore construction and operation of the offshore wind facility
Land Use and Coastal Infrastructure	• Conversion of undeveloped areas for cable maintenance or replacement • Land use disturbance due to construction as well as effects due to noise and travel delays • Potential for accidental releases during construction
Navigation and Vessel Traffic	• Congestion in port channels • Increased navigational complexity, vessel congestion, and allision risk within the WTA • Potential for disruption to marine radar on smaller vessels operating within or in the vicinity of the Project, increasing navigational complexity • Hindrances to SAR missions within the WTA
Other Uses	• Disruption to offshore scientific research and surveys and species monitoring and assessment • Increased navigational complexity for military or national security vessels operating within the WTA through decreased effectiveness of individual radar systems • Changes to aviation and air traffic navigational patterns
Recreation and Tourism	• Disruption of coastal recreation activities during onshore construction, such as beach access • Viewshed effects from the WTGs altering enjoyment of marine and coastal recreation and tourism activities • Disruption to access or temporary restriction of in-water recreational activities from construction of Offshore Project elements • Temporary disruption to the marine environment and marine species important to fishing and sightseeing due to turbidity and noise • Hindrances to some types of recreational fishing, sailing, and boating within the area occupied by WTGs during operation
Scenic and Visual Resources	• Alterations to the ocean, seascape, landscape character units' character, and effects on viewer experience by the wind farm, vessel traffic, onshore landing sites, onshore export cable routes, onshore substations, converter stations or both, and electrical connections with the power grid