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Edward Chrzanowski, Environmental Committee Chairman  
City of Rehoboth Beach  
229 Rehoboth Ave.  
Rehoboth Beach, DE 19971

2/22/22

Dear Mr. Chrzanowski,

This is to share my extensive analysis of the potential negative impacts of industrial scale offshore wind projects planned off Delaware's coast potentially only 13 miles from Rehoboth Beach. Lease areas have been approved in federal waters, and uncompetitive energy generation projects requiring massive subsidies have been sponsored by the State of Maryland with minimal input from impacted beach communities in Delaware.

Detailed analysis follows, but here is a summary of the issues. The Outer Continental Shelf Lands Act requires the prevention of interference by offshore wind projects of historic uses, such as fishing, navigation, and the unobstructed view of the ocean that is a cornerstone of the beach experience. The approval of Vineyard Wind, the first industrial size project near Nantucket, determined commercial fishing would be abandoned in the project area, navigation would be significantly restricted with an increase in vessel collisions combined with reduced ability to carry out search and rescue missions.

The impact on the view was determined to be minimal using one study of much smaller turbines that even one of the study authors has admitted is no longer applicable. Two other studies showing more significant impacts were ignored. Would we put wind turbines in the Grand Canyon? Why is it OK to despoil the view off every major Atlantic Coast beach visited by 40 million people a year? Clearly protection of historic uses has been ignored along with extensive public comment pointing out these flaws.

Approvals also require numerous other environmental protection laws and regulations be met. Five lawsuits have been filed against the approval of Vineyard Wind for numerous failures to protect the environment. Basically, the project was approved with the idea the only way to determine the impact on marine and avian life, and historic uses was to build the project and see what happens. However, there is no plan to build one project and wait for the results. The approval of the first project will be used as a precedent to approve 16 more projects covering an area the size of Connecticut as quickly as possible.

All of this follows a poor experience with the first five turbines installed six years ago at Block Island, RI. In addition, two different Maryland Public Service Commission Consultants pointed out the local offshore projects simply offset onshore wind projects that could be built at about one fifth the cost with less negative environmental impact. Following are more details and questions you might want to ask the wind project developers, and suggestions of actions the city can take.

The proposed Ørsted Garden State Offshore Energy project that will fill up the northern portion of the federal lease area off the coast of Delaware will be subsidized by New Jersey electric customers<sup>1</sup>. The lease area comes as close as 13 miles to Rehoboth Beach. **When will the project be built? How close will the Garden State project come to the beach? Will power transmission lines come ashore in Delaware, and if so where?**

The entire Garden State, Skipjack, and US Wind projects lease areas sit atop the Carl N. Shuster Jr. Horseshoe Crab Sanctuary<sup>2</sup>. Acres of concrete and rock will be added to the sandy seabed for scour protection, power cables will have electromagnetic fields, and construction and operational noise may exceed federal standards that protect sea life,



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and there are no existing studies of these issues. **Will studies of these environmental impacts on the horseshoe crab be conducted prior to federal approval of the projects?**

Each 12 MW turbine will sweep an area the size of 8 football fields with blade tip speeds up to 180 MPH<sup>3</sup>. Hundreds of thousands of migrating birds stop in the Delaware Bay to feed on horseshoe crab eggs over about a six week period in the spring including the endangered Red Knot<sup>4</sup>. It is difficult to count dead birds and bats that fall in the ocean, but it is known onshore turbines kill large numbers of birds and bats each year and it appears likely offshore turbines will also kill birds and bats<sup>5</sup>. **How will avian risks be accurately determined before federal project approval? Will the turbines be stopped during the spring and fall migration seasons?**

The critically endangered North Atlantic right whale has been spotted in the lease area. A recently published study in the Journal of the Acoustical Society shows operational noise levels increase dramatically with turbine size and 10MW turbines have been measured at 170 decibels and do not fall below a recommended NOAA level B harassment requirement of 120 decibels for marine mammals for 0.9 miles<sup>6</sup>. With planned spacing for the Skipjack 1 and 2 projects set at 1 mile overlapping noise shadows will be at unacceptable levels in the entire lease area. **How will noise level requirement be met, and how will any mitigation strategy be tested before project approval?**

The Record of Decision for the Vineyard Wind project<sup>7</sup> off Nantucket admits commercial fisherman will likely abandon areas filled with turbines. Concerns over potential damage to fishing gear, increased vessel collisions and the higher cost of insurance are the driving factors. So is a federal government determination Coast Guard Search & Rescue operations will be compromised adding to safety concerns. Turbines also eliminate the ability to do estimates on the population of commercial seafood species to establish “take” limits. The US Bureau of Ocean Energy Management (BOEM) decided finding a new population estimate procedure would take too long so ignored this in approving the Vineyard Wind project. Timing on a solution was left indeterminate, if ever. The cumulative impact of 17 existing lease areas covers prime fishing grounds in an area the size of Connecticut<sup>8</sup>. Please follow these links to videos provided by commercial fishing litigants explaining their concerns, <https://www.youtube.com/watch?v=2F-bBTsK04k>, [The Environmental Impact of Offshore Wind - YouTube](#). **Do wind developers agree commercial fisherman will abandon areas with wind turbines?**

Skipjack 1 has 10 turbines in two lines pointed at the Indian River Inlet, and Ørsted has applied to the PJM regional grid manager for interconnections at various sites near Bethany Beach and the Indian River Inlet Bridge<sup>9</sup>. Construction and Operations plans (COP) that must be submitted for an Environmental Impact Study by BOEM are required to list the primary intended site to come ashore. **What is the primary site to come ashore? Will a copy of the Construction and Operations plan be released soon?**

The Maryland Public Service Commission approved Skipjack 2 after a consultant review<sup>10</sup>. A key finding of the consultant was moving power west from the project into the PJM grid would require transmission line upgrades costing up to \$450 million. They stated the assumption a project called the Transource Independence Energy Connection near York, PA would be approved. Last May the Pennsylvania Public Utility Commission rejected the project. **How will the transmission be accomplished in the absence of that project, how much will it cost, and will Delaware electric customers have to pay for the upgrade?**

The Skipjack projects will see revenue from the sale of electric power and capacity attributes to PJM, and from Offshore Wind Renewable Energy Credits (ORECs) that must be bought by electric distribution utilities that will be



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passed onto Maryland electric customers. ORECs represent the premium price paid for offshore wind power. Ørsted has reported on an OREC cost of \$71.61/MWh, but often missed is this is in 2012\$, and is subject to a 3% a year increase for twenty years once the project starts<sup>11</sup>. Using increases in the Consumer Price Index the OREC cost may average about \$125/MWh in current dollars over twenty years. The PSC consultant estimated PJM revenue would average \$54/MWh<sup>12</sup> so the total cost to electric customers may be \$179/MWh. Similar onshore wind contracts are averaging \$37/MWh<sup>13</sup>, so offshore wind is 4.8 times as expensive as onshore wind. Skipjack 1 transparently published the actual expected OREC cost by year. **Why has the Skipjack 2 OREC schedule been redacted?**

Both Skipjack project consultants made the point the projects were only replacing Maryland onshore wind requirements and would not result in a net increase in renewable energy generation. The consultant for the Skipjack 1 project went on to calculate the relative emission savings of onshore versus offshore wind. The conclusion was onshore saved more emissions as it would be centrally located in the PJM grid and the offshore project would be on the edge of the regional grid resulting in greater transmission losses<sup>14</sup>. **Since offshore wind is 4.8 times the cost of onshore wind is offshore wind worth the environmental risks?**

The Skipjack 2 project is expected to create 857 direct jobs during the approximate one year construction period, and 25 permanent jobs<sup>15</sup>, the same number of permanent jobs estimated for the Skipjack 1 project. Since the premium costs are to be paid by Maryland electric customers the jobs have been promised to be filled in Maryland. No estimate was made as to how many jobs will be lost permanently because of hundreds of millions of dollars in electric premiums, but our estimate is about 1800. **Since the turbines will be made in Europe and shipped and installed on European vessels, how many temporary direct jobs will be created in the US? How many jobs will be in Delaware?**

The General Electric 12 MW Haliade turbines are expected to last 20 years. However four of the five Block Island much smaller GE Haliade 6 MW turbines stopped operating last June<sup>16</sup>. A public relations consultant stated “stress lines” were found during inspection of the Ørsted owned turbines resulting in the shutdown. Ørsted has not disclosed the cause of the stress lines, the seriousness, nor the cost and timeline for repair. According to GE those turbines can withstand 112 MPH sustained winds (up to a Category 2 hurricane), and the maximum sustained winds experienced by the turbines so far was 70 MPH<sup>17</sup>. Also, cables buried 6 feet deep have been uncovered for most of the last 6 years and have not been re-buried. **Are “stress lines” cracks? Turbines contain fuel and lubrication oil, so how many gallons might leak into the ocean if the towers collapse? What wind speed can the larger 12 MW turbines withstand? Since the lone tower ever built is only two years old and sits on land at the Port of Rotterdam, what testing has actually been conducted on the durability of the larger towers? What happens if a Category 3 or larger hurricane hits?**

The Skipjack 1 project started with 6 to 8 MW turbines then switched to taller 12 MW turbines. The Skipjack 2 project is starting with 12 MW turbines, but there are now taller 20 MW turbines available. **Will Ørsted commit to not switching to taller turbines?**

Wind developers often quote a University of Rhode Island study Block Island rentals increased 19% between 2014 and 2017 proving tourism increased after the turbines were installed in 2016. However, few rental properties have a view of the turbines, and no interviews were conducted to determine if any of the renters came to see the turbines, or even visited the turbine site<sup>18</sup>. The researchers only looked at Airbnb rentals, and ignored more traditional rental reservations. The researchers didn't publish 2015 or 2016 reservations to determine if a trend of increasing



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Airbnb rentals was already in progress. According to Airbnb<sup>19</sup>, their global rentals increased eight fold, and the number of listings increased 4 fold over the same time period as more people began to use the service. It appears all the study measured was the growth of Airbnb. **Will developers continue to quote this flawed study as proof offshore wind doesn't impact tourism?**

A University of Delaware study surveyed eight Atlantic Coast beach communities including Rehoboth Beach to estimate the impact of visible offshore wind turbines on tourism. The study Figure 6 shows<sup>20</sup> 16% of survey respondents felt the experience/enjoyment of the beach experience would be better with visible wind turbine at 15 miles distance. 16% of respondents also felt the experience would be worse with turbines 15 mile distant. The study has several flaws. The surveys used visualizations of 579' tall turbines while the turbines planned now are 853' tall. Adjusting for the greater height approximates the response at 10 miles where 29% felt the view would be worse, and only 10% felt it would be better. The study also adjusted the percentage of survey respondents downward based on a question of how certain they were they would not return to the beach because of the turbines, but didn't do the same adjustment for those who might find the experience better. The study also admits 35% of the surveyed panel visited the beach area but not the beach itself. However, the study is now moot as one of the two study authors, Dr. George Parsons, stated in the February, 2021 issue of Delaware Today Magazine<sup>21</sup> the study is no longer applicable for taller turbines. Unfortunately the Maryland PSC, and BOEM still use the study as there only evidence for consideration of potential damage to the viewshed. **Will developers continue to quote this survey as evidence tourism will not be harmed?**

An alternative study by North Carolina State University<sup>22</sup> interviewed actual recent Outer Banks renters showing visualizations of 600' tall turbines and determined 38% of visitors would not return if there were visible turbines at 5 and 18 miles, and at any density. BOEM ignored this study, but the study does cover relevant distances. **Will developers admit this study has merit?**

BOEM conducted a study showing visualizations of 600' tall turbines to survey respondents from 16 points on beaches expected to have future turbines<sup>23</sup>. It ranked the visible impact on a scale from 1 to 6. The visual impact from Jones Beach scored a 6, its worst rating. A 6 rating was defined as; "Dominates the view because the study subject fills most of the field of view in its general direction. Strong contrast in form, line, color, texture, luminance, or motion may contribute to view dominance". Based on that study New York State recommended no turbines be built within 20 miles of the coast, and BOEM agreed even canceling a lease area 12 miles off the Hamptons<sup>24</sup>. Larger turbines suggest turbines should be excluded within 30 miles of the beach. Supporting that suggestion BOEM agreed with the National Park Service turbines should be at least 28 miles from Kitty Hawk National Park<sup>25</sup> so they wouldn't be seen. Lease areas were moved 27 miles off the Virginia coast because of potential radar and navigation interference for the Navy port in Hampton Roads. BOEM has announced new leases will be offered in the Central Atlantic Wind Energy Area the 4<sup>th</sup> Quarter of 2022<sup>25</sup>. The potential lease area begins 31 miles off the Delaware coast. Ørsted will likely invest about \$7 billion filling out the lease area off the Delaware coast, and receive about \$27 billion in revenue over a 20 year period. The money they have invested so far in the existing lease area is equivalent to a rounding error compared to those numbers. **Developers should buy leases in the new Central Atlantic lease areas and abandon the current leases to protect tourism, navigation, the Horseshoe Crab, and migratory birds. Will they commit to abandoning the current lease?**





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Five lawsuits have been filed over BOEM approval of the Vineyard Wind project claiming the approval process violated numerous laws and regulations<sup>26</sup>. **Do developers agree if BOEM loses one or more of these lawsuits it will likely impact approval of similar projects near the Delaware coast?**

A new study from the National Academy of Science reports on the dangers of wind turbine interfering with navigational radar, and recommends mitigation actions<sup>27</sup>. **Will developers adopt the mitigation procedures for their projects?**

Beach communities have several actions they can take in the light of the risks of the proposed projects.

- Pass resolutions opposing visible offshore wind, and bringing power ashore in Delaware for Maryland projects
- Petition state government to pass legislation to ban offshore wind transmission lines from coming ashore in the protected Coastal Zone as was done to oppose offshore oil wells
- Petition the government to create a 30 mile exclusion zone for offshore wind lease areas
- Comment on BOEM Environmental Impact Statements to oppose approval of Construction & Operation Plans for projects closer than 30 miles of the Delaware coast
- Prepare for a legal challenge if BOEM approves COPs in violation of federal laws and regulations (support existing lawsuits against early approvals)

Maps of the Horseshoe Crab Sanctuary, and the lease area off the Delaware coast are attached at the end of this document.

Respectfully submitted,  
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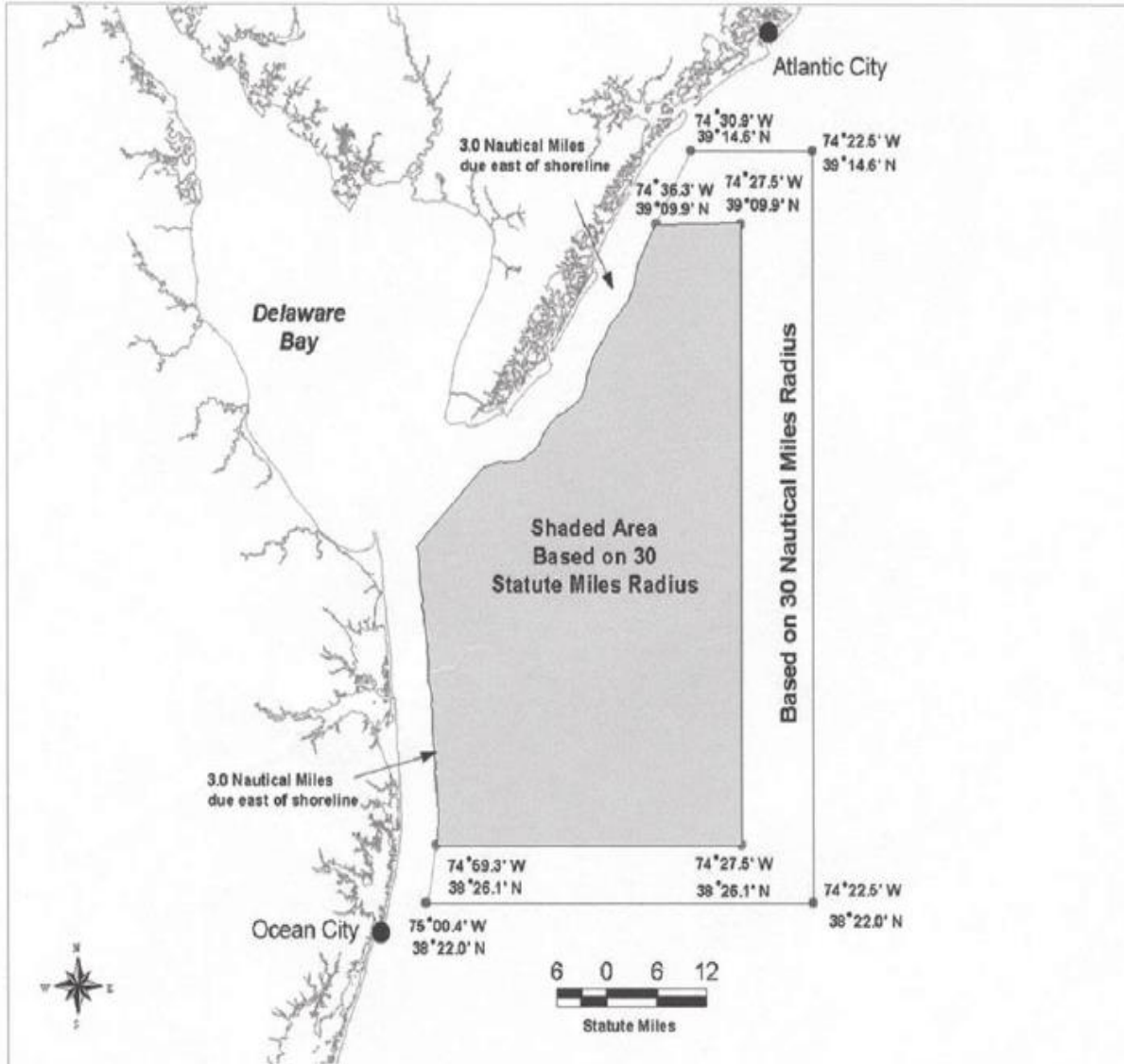
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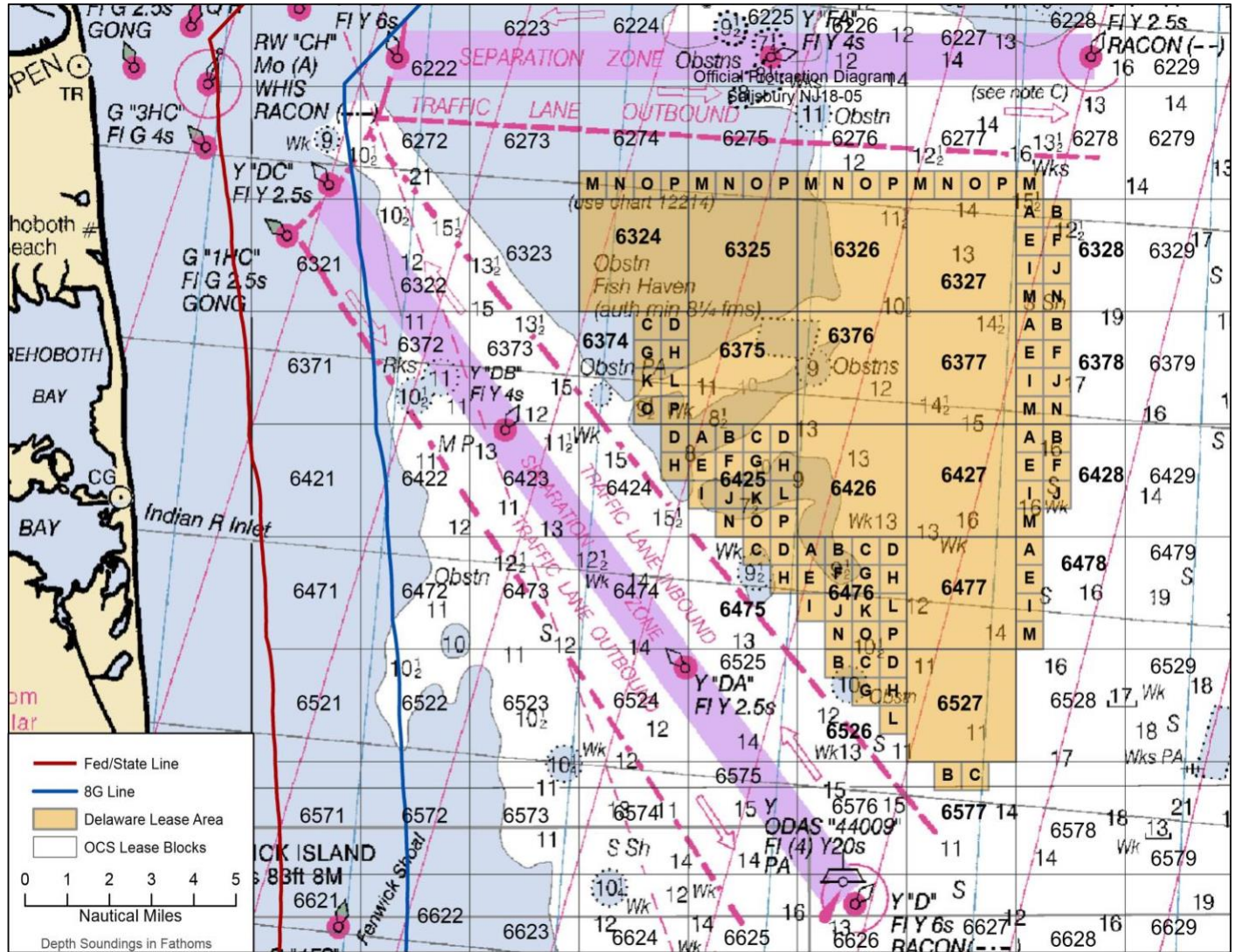




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Offshore wind lease area near Delaware coast



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