

Offshore Wind Energy

Environmental Impacts at the Jersey Shore

Defend Brigantine Beach, INC
www.DefendBrigantineBeach.org
[June 2023](#)

The Wind Projects Proposed Off of Brigantine

- **Four Hundred Fifty Seven 13.6 megawatt (mw) or larger, noisier, gearbox turbines, along the entire coast. Brigantine will be surrounded by three wind turbine projects, Ocean Wind I and Atlantic Shores South and North. Atlantic Shores South will be directly in front of Brigantine.**
- **Ocean Wind I Project will be 15 miles off the coast of Atlantic City and visible to Brigantine. Future Ocean Wind lease area phases show wind turbines 9 miles off the coast of Atlantic City. Atlantic Shores South will be 8.7 miles directly off the coast of Brigantine. Atlantic Shores North will be located north of Brigantine and continue up the coast of Long Beach Island.**
- **Closely spaced, .6-1 mile apart**
- **Up to 1046 feet (3 football fields) high above sea level**

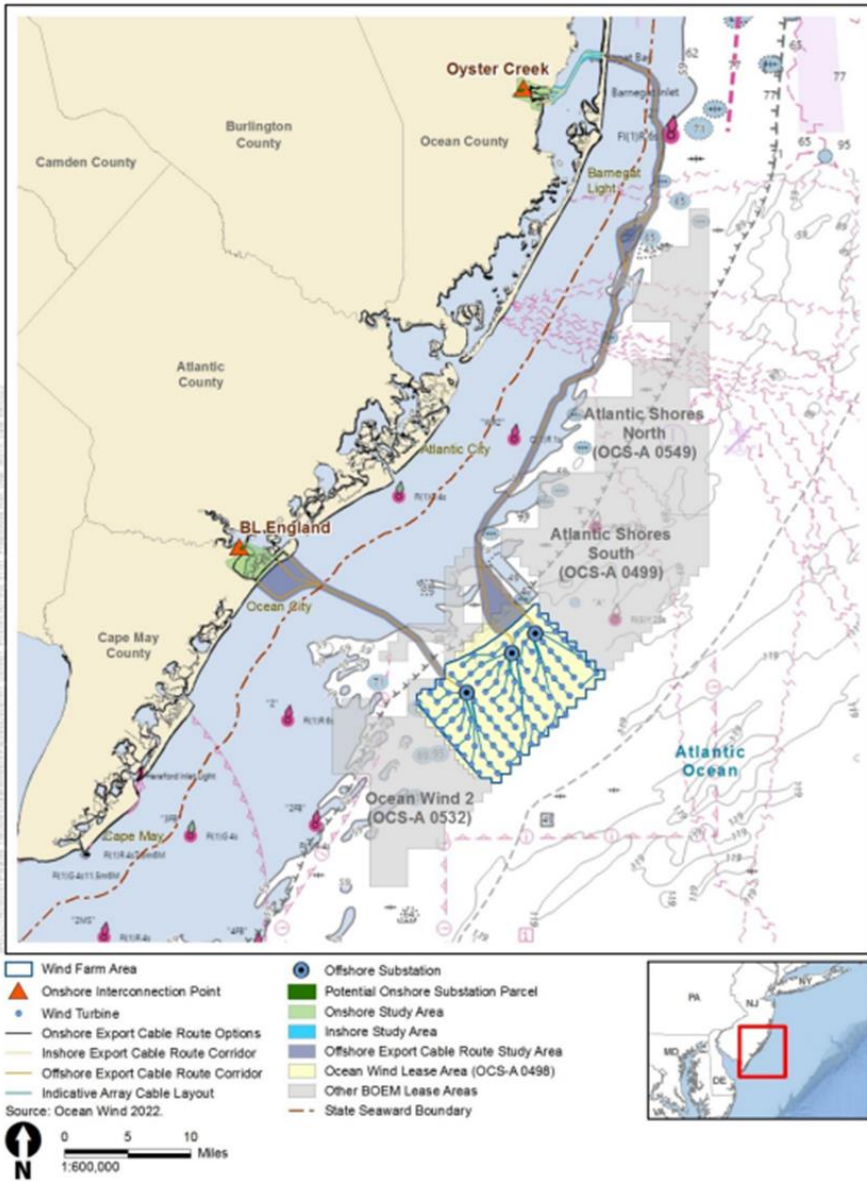
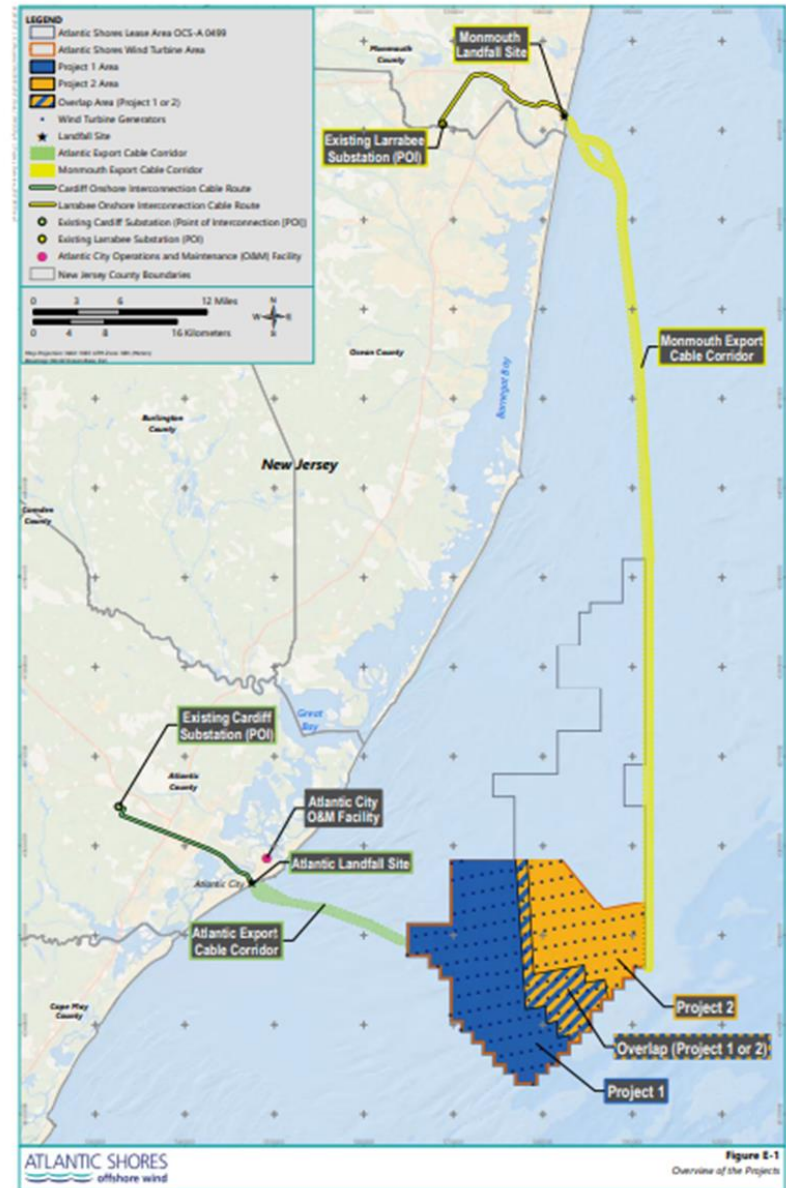


Figure S-1 Ocean Wind 1 Project

Ocean Wind I



Atlantic Shores South

New Jersey Blue Ribbon Panel on Development of Offshore Wind Turbine Facilities

- Blue Ribbon Panel was created by Governor Executive Order in 2004.
- The Blue Ribbon Panel Report submitted to the Governor in 2006 served as a template of guiding principles for developing renewable technologies and for evaluating its costs and benefits as authorized by Section 307 of the Coastal Zone Management Act 16 U.S.C 1451 et Seq.
- Report addressed energy, environment, tourism/commercial ocean uses, and other. [Blue Ribbon Panel on Development of Wind Turbine Facilities in Coastal Waters Final Report.pdf \(nj.gov\)](#)

Table 5

Guiding Principles for Development of Renewable Technologies in New Jersey

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.

Table 7

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

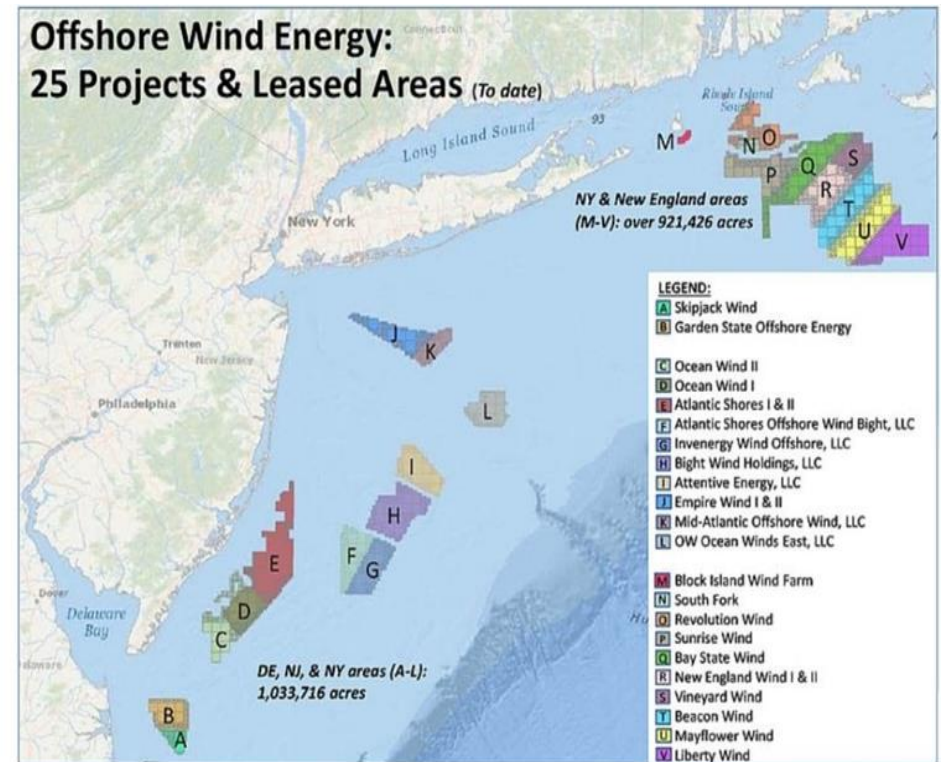
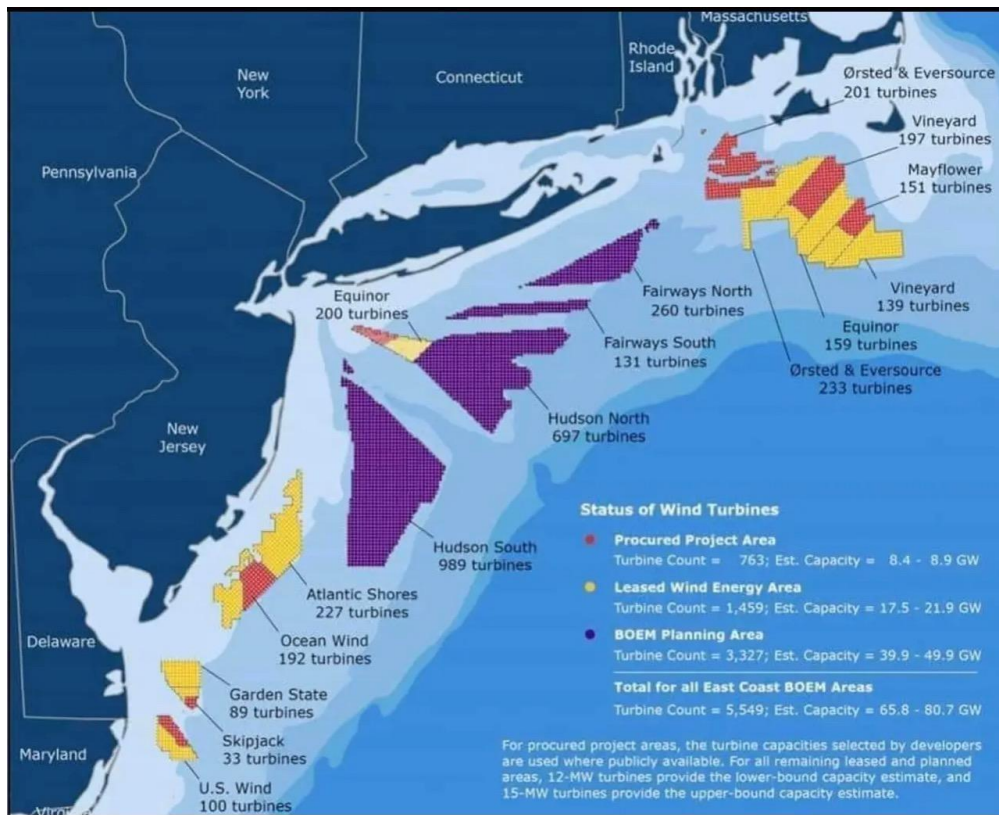
Environment	Impact on wildlife and natural resources.
	Impact on and disturbance of benthic habitat.
	Environmental Justice Implications.

Must Also Consider Cumulative Environmental Impacts

The Atlantic Coast Continental Shelf Used for Wind Energy Power Plants

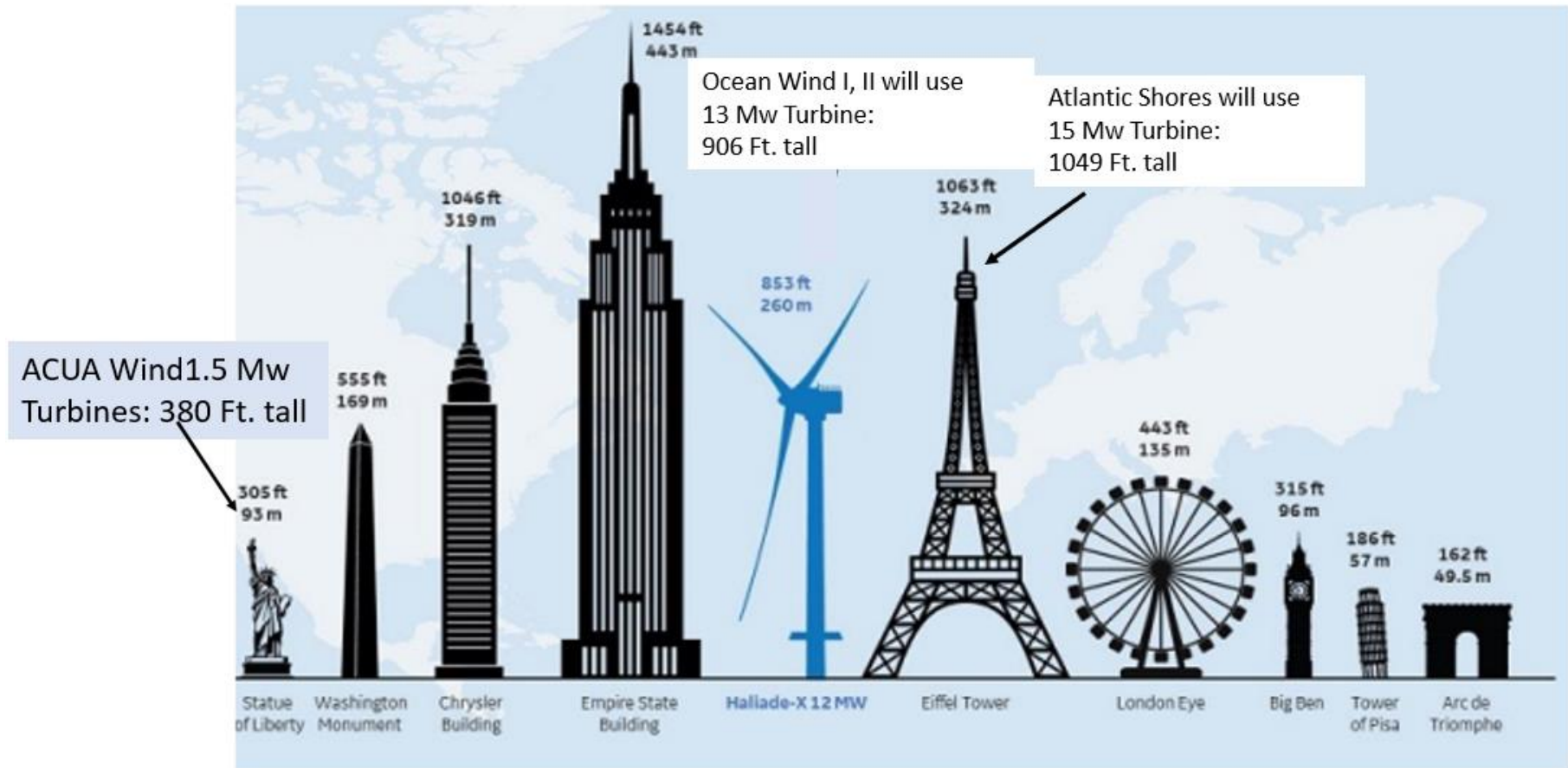
Future Estimated Turbine Count: 5549

Acres: 2 million



Prepared by Clean Ocean Action, Updated June 2022 Map Source: MARCO

Comparisons of Wind Turbine Size



ACUA, in AC
Atlantic Shores
Ocean Wind I, II

Hub Height 262 feet
Hub Height: 574 feet
Hub Height 512 feet

Rotor Blade Diameter: 240 feet
Rotor Blade Diameter: 919 feet
Rotor Blade Diameter 788 feet

Chemical Products: Atlantic Shores South Wind Turbines in our Ocean

Table 7-1 List of Potential Chemical Products Used for WTGs

Component	Description	Approximate Quantity per WTG		Approximate Total Quantity for Project 1 and Project 2 (200 WTGs)	
		Gallons	Liters	Gallons	Liters
Emergency generator fuel	Diesel fuel	400	1,514	80,000	302,833
Hydraulic systems	Hydraulic fluid	350	1,325	70,000	264,979
Yaw/pitch system grease	Grease	150	568	30,000	113,562
Drive rain, yaw, pitch system	Gear and bearing lubricating oil	500	1,893	100,000	378,541
Gearbox	Gear and bearing lubricating oil	581	2,199	116,200	439,865
Transformer	Biodegradable dielectric insulating fluid/synthetic ester oil	1,800	6,814	360,000	1,362,748
Hydraulic accumulators	Nitrogen	21,134	80,000	4,226,753	16,000,000
Equipment cooling system	Water/glycol	400	1,514	80,000	302,833
Passive tower damper system	Water/glycol	3,700	14,006	740,000	2,801,205
Component	Description	Pounds	Kilograms	Pounds	Kilograms
Switchgear	Electrical insulator/arc suppressor	243	110	48,502	22,000

- Atlantic Shores disguises sulfur hexafluoride (SF6) as merely a “switchgear”, electrical insulator/arc suppressor.
- According to US Environmental Protection Agency, “SF6 is the most potent greenhouse gas known. It is 23,500 times more effective in trapping infrared radiation than an equivalent amount of CO2 and stays in the atmosphere for 3200 years.”
- The Agency also notes a relatively small amount can “have a significant impact on global climate change” and that leaks can occur during “installation, maintenance and servicing, and decommissioning” of turbines.
- Each turbine will use 243 pounds or 48,502 pounds for the 200 wind turbines in Atlantic Shores South project and each offshore substation will use up to 9,480 pounds.
- As gaskets fail, leaks will occur.

[Atlantic Shores Offshore Wind \(boem.gov\)](http://boem.gov) pg 218- 220/224

Chemical Products: Atlantic Shores South Offshore Substations in our Ocean

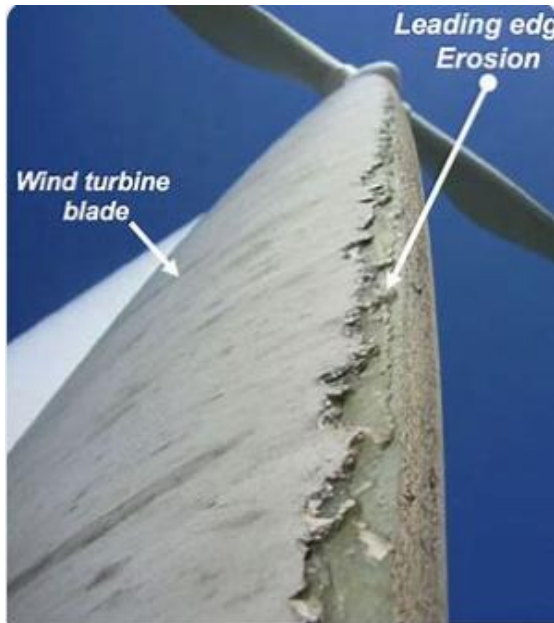
Table 7-2 List of Potential Chemical Products Used for OSSs

Component	Description	Approximate Quantity per Small OSS		Approximate Quantity per Medium OSS		Approximate Quantity per Large OSS	
		Gallons	Liters	Gallons	Liters	Gallons	Liters
Diesel fuel storage	Diesel fuel	7,500	28,391	12,000	45,425	20,000	75,708
Diesel engines	Internal motor lubrication	5	19	10	38	15	57
Main power transformers, earthing transformers	Biodegradable dielectric insulating fluid, mineral oil, or synthetic ester oil	26,000	98,421	78,000	295,262	130,000	492,104
Reactors	Biodegradable dielectric insulating fluid, mineral oil, or synthetic ester oil	11,000	41,640	33,000	124,919	55,000	208,198
Uninterruptible power supply (UPS) batteries	Electrolyte inside lead/acid batteries or valve-regulated lead acid battery	250	946	400	1,514	400	1,514
Fire suppressant for electrical equipment without oil	Firefighting	676	2,560	1,014	3,840	1,353	5,120
Firefighting aid	Aqueous film-forming foam and water mixtures at 3% by volume	3,500	13,249	4,000	15,142	5,000	18,927
Diesel engine cooling	Water/glycol	30	114	50	189	50	189
Equipment Cooling System	Water/glycol	1,000	3,785	2,000	7,571	3,000	11,356
Component	Description	Pounds	Kilograms	Pounds	Kilograms	Pounds	Kilograms
Switchgear	Electrical insulator/arc suppressor	3,307	1,500	9,480	4,300	9,480	4,300
Air conditioning/condensers	Refrigerant	198	90	397	180	794	360

- According to the Atlantic Shores Maintenance table 5-4-1, pg. 208/244 :
 - Wind Turbine Generator gearbox oil changes will be required 2-3 times over lifespan or as needed.
 - Diesel generator refueling will be required as needed.

- With over 5,500 wind turbines planned off the Atlantic Coast, over 1.3 million lbs. of SF6 will be used along with millions of gallons and pounds of fossil fuels and other chemicals.

Toxic Chemicals in Our Ocean from Wind Blade Erosion



- **Bisphenol A (BPA) is a known endocrine inhibitor and damaging to reproductive health in both people and fish. It persists in water for a very long time and the duration is not yet known. As blades erode from harsh weather conditions, BPA will contaminate our ocean.**
- **Neodymium is the primary rare earth metal used in the permanent magnets contained in the nacelle of each turbine, with up to a tone of this metal contained in each nacelle. As the blades erode from turbine spinning the dust is shed from the turbines, and studies in Norway and other heavy wind power dependent Nations have found this toxic metal in the hair of cattle, wildlife, in plants an even people living near wind factories.**
- **Deicing in winter and glycol potentials, a known toxin to wildlife and people. How will this be addressed?**

[leading-edge-erosion-and-pollution-from-wind-turbine-blades-final-5-july-english-130721.pdf](#)

Wind Energy Area Located Over Sustainable Food Source

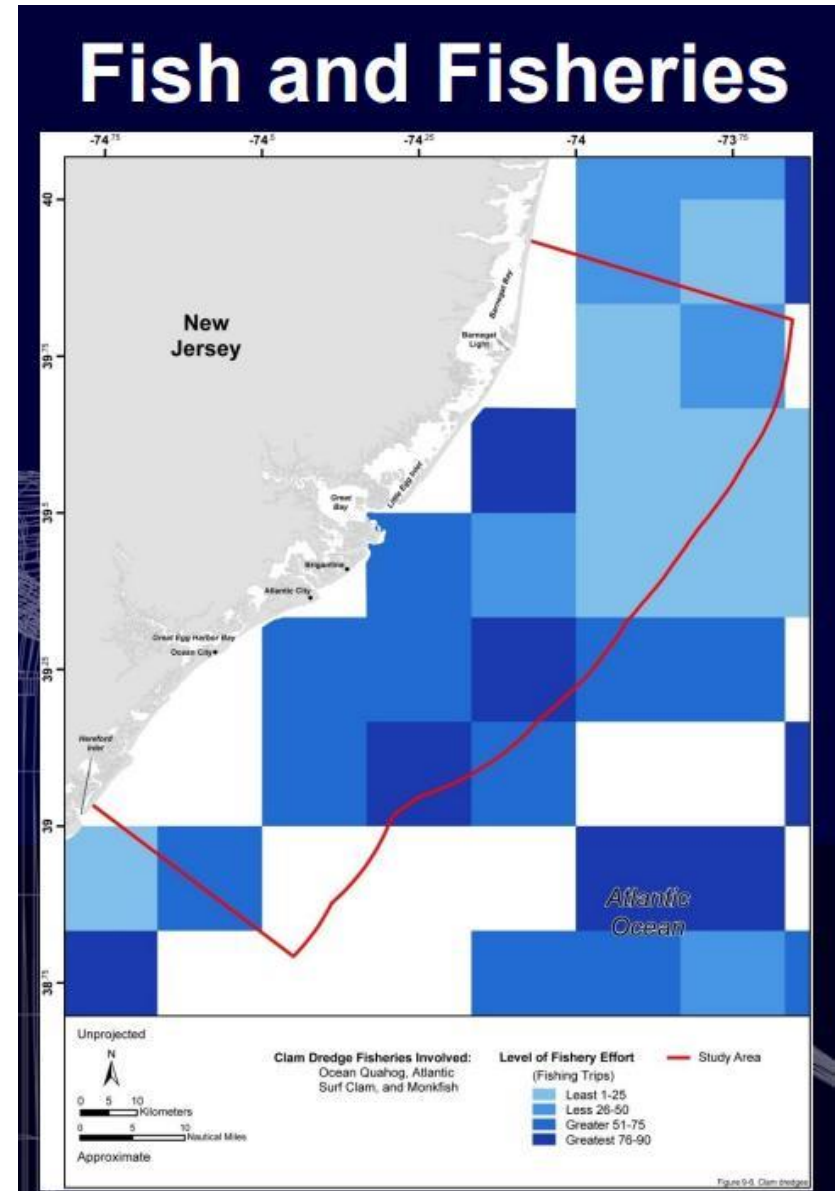
The historic Atlantic City clamming industry is one of the largest in the US and is a major SUSTAINABLE food source.

Comprises a total of 14 million pounds of a sustainable food source per year.

The industry has been proven over decades to be sustainable and compliant with all stringent government regulations.

Great strides have been made to reduce or eliminate the hazard to marine mammals and sea turtles which is well documented.

[COP Volume II Affected Environment \(boem.gov\)](http://boem.gov) pg 485/753
[Ocean Wind Power Ecological Baseline Studies Interested Party Group 3.5.2009 GMI \(nj.gov\)](#)





BOEM 2017 Study on Offshore Wind Development on Fisheries/Sustainable Food Sources

- Study conducted by National Oceanic and Atmospheric Administration (NOAA) and National Marine Fisheries Service (NMFS) after the Wind Energy Areas were defined and the leases were sold.
- Pg 48, “ Nearly all exposure from the NJ WEA is through the surfclam fishery, which is itself highly consolidates.”
- Pg77., 5.4.1 “..... although **highly exposed** to the NJ WEA, clamming fisheries are expected to be negligibly impacted by its development,**expected to be recovered by fishing in alternative locations.**” **THIS IS NOT A SOLUTION!**
- Pg. 114., 6.2.7 “The same characteristics that make the NJ WEA desirable for wind energy development (i.e., it is shallow and close to shore) are the same features that make it desirable as surfclam and ocean quahog habitat.”

Volume One: [Socio-Economic Impact of Outer Continental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic, Volume I—Report Narrative \(boem.gov\)](#)

Volume Two: [Socio-Economic Impact of Outer Continental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic, Volume II- Appendices \(boem.gov\)](#)

Wind Turbines Destroying our Natural Habitat

Table 4.2-1 PDE of WTG Foundations Dimensions and Seabed Disturbance

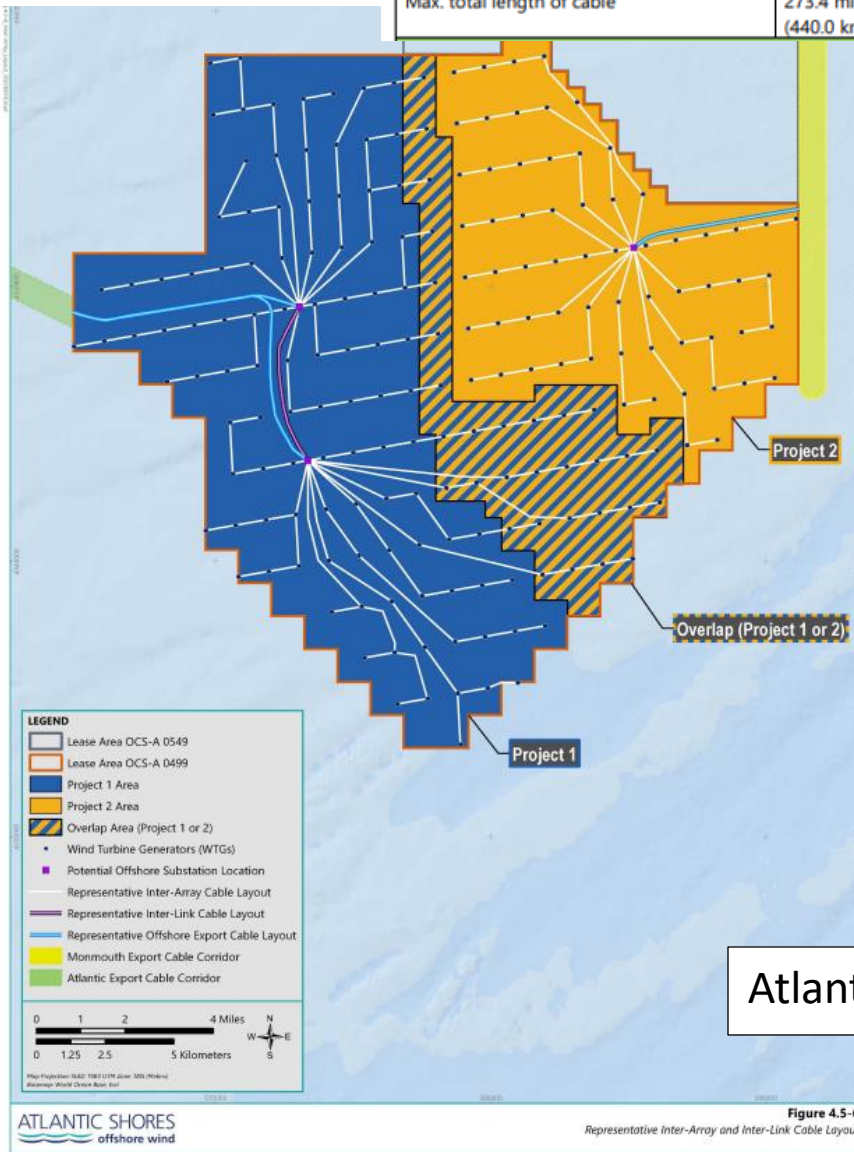
Concept	Piled	
	Monopile	
Foundation Structure		
Max. pile, suction bucket, gravity-base, or gravity-pad diameter at seabed	49.2 ft (15.0 m)	16 (5.0)
Max. # of legs/discrete contact points with seabed	1	4
Max. depth of penetration below seabed	With scour protection: 196.9 ft (60.0 m) Without: 262.5 ft (80.0 m)	22 (7.0)
Monopile/jacket pile/bucket length	With scour protection: 344.5 ft (105.0 m) Without: 410.1 ft (125.0 m)	24 (7.0)
Max. distance between adjacent legs at seabed	N/A	13 (4.0)
Max. foundation diameter/leg spacing at Mean Sea Level (MSL)	39.4 ft (12.0 m)	98 (30.0)
Max. total foundation footprint contacting seabed per foundation ^a	1,902.0 square feet (ft ²) (176.7 square meters [m ²])	84 (27.0)
Seabed Disturbance		
Permanent Seabed Disturbance		
Max. representative ^b outer diameter/size of scour protection	269.0 ft (82.0 m) per foundation	98 (30.0) per foundation
Max. thickness of scour protection	8.2 ft (2.5 m)	6.6
Est. volume of scour protection per foundation	314,300.5 ft ³ (8,900.0 m ³)	12 (3.0)
Max. total permanent footprint per foundation (foundation + scour protection + mud mats (post-piled jackets only))	56,844.3 ft ² (5,281.0 m ²)	30 (2.0)

- Catastrophic devastating change to the sandy sea floor which the Quahog, surf clam and scallops rely on and live in.
- The developers will install 1.3 acres of stone with a depth of 8 feet around each wind turbine foundation.
- With the planned installation of 550 turbines for the Atlantic Shores and Orsted wind developments, the total acres of stone will cover 715 acres just off the coast of the Jersey shore.
- This will destroy the natural habitat and may create a new habitat for non-native species.

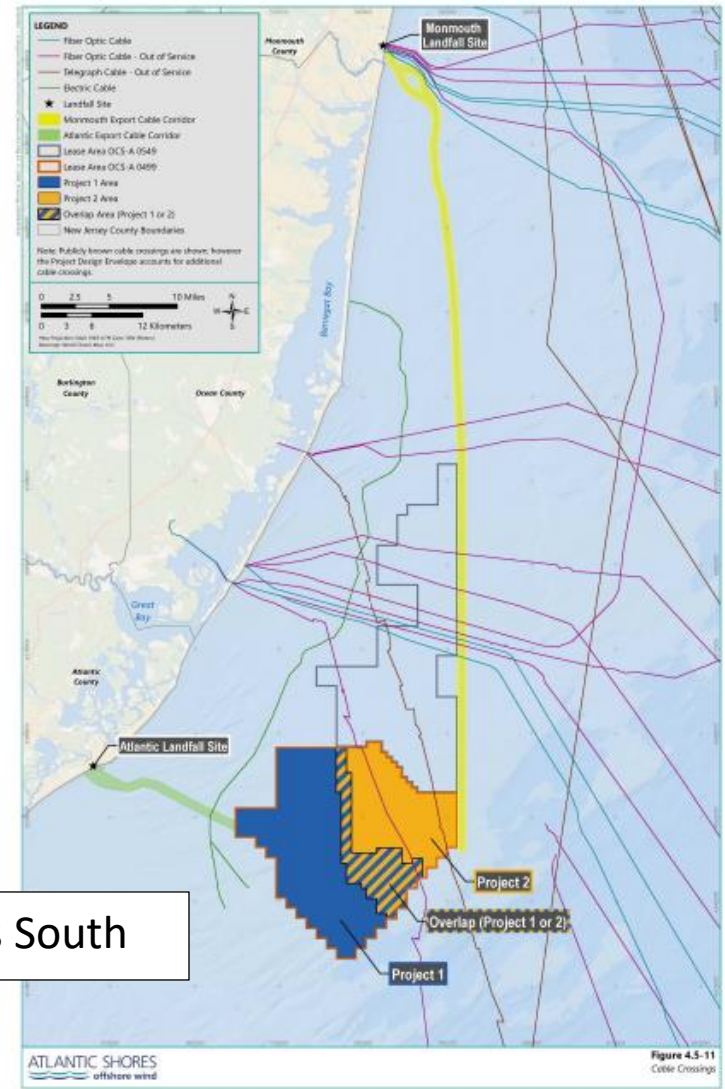
Cable Trenching and Installation in Ocean for 1 Project!

Table 4.5-2 Maximum Seabed Disturbance from Inter-Array and Inter-Link Cable Installation

Installation Activity Characteristics (Maximum)	Project 1		Project 2	
	Inter-Array Cables	Inter-Link Cables	Inter-Array Cables	Inter-Link Cables
Max. total length of cable	273.4 mi (440.0 km)	18.6 mi (30.0 km)	273.4 mi (440.0 km)	18.6 mi (30.0 km)



Atlantic Shores South



Wind Turbine Blade Landfills



- The Electric Power Research Institute estimates there will be 2.1 – 4 million tons of cumulative blades put in landfills between 2020 and 2050.
- Blades are made from fiberglass bound together with epoxy material that is incredibly difficult and expensive to breakdown. Blades end up in landfills or are incinerated creating more pollution.

In February 2023 Vestas announced that it developed a **novel “chemical” process to breakdown epoxy resin to virgin grade material** and the solution can be applied to blades currently in operation.

UNANSWERED QUESTIONS

- Can this “novel chemical process” be scaled up into a commercial solution?
- What is the chemical used in the process and how does the process impact the environment? How is the chemical recycled? How much energy is used in the process?
- Is the process financially feasible?

EPRI. 2018. End-of-Life Disposal and Recycling Options for Wind Turbine Blades. Accessed 14 June 2022

Effects on Shore Wind Speed, Wave Height, and Local Air Temperature

Reduced Wind Speed at the Shore

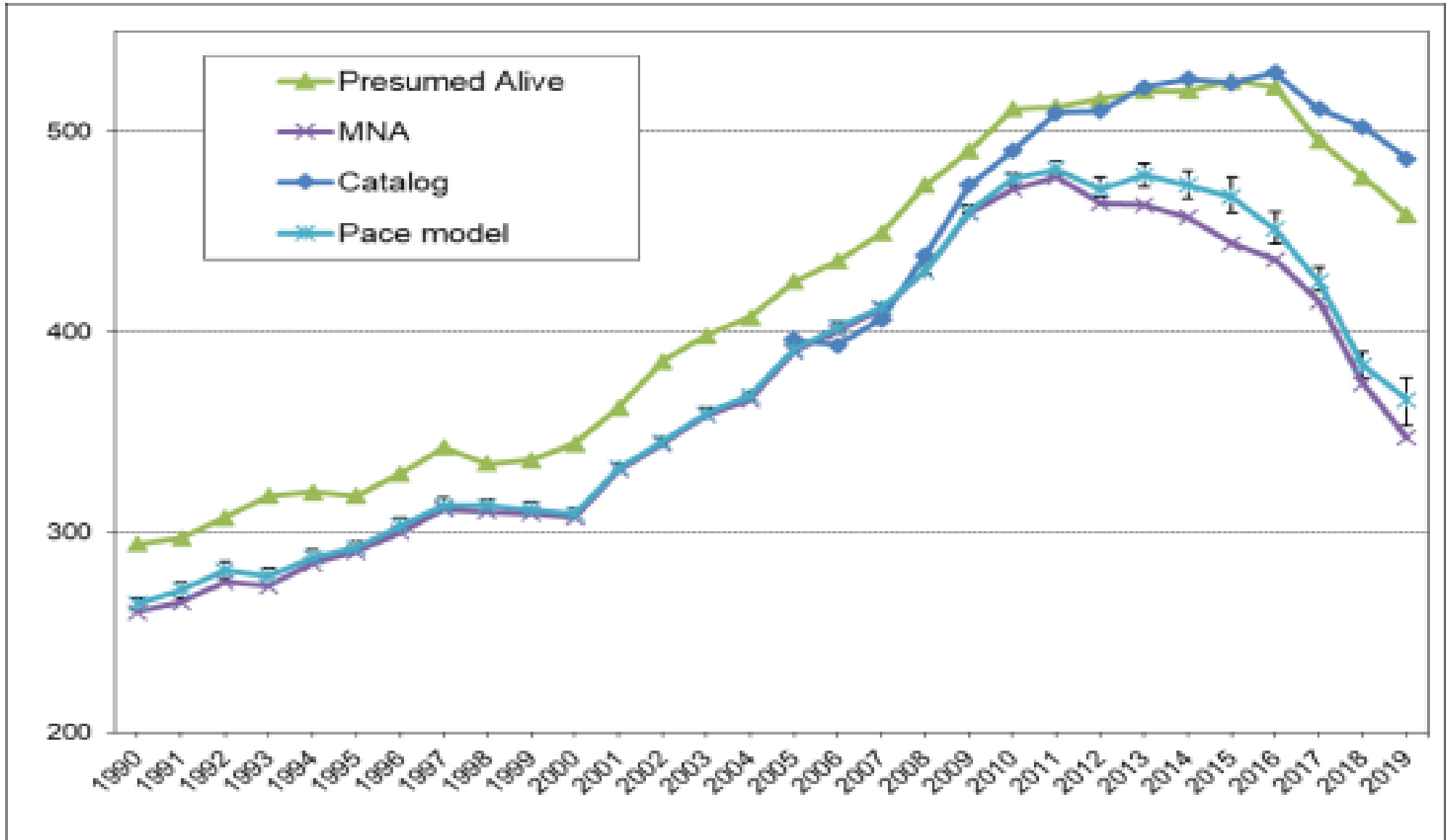
- Small turbines, 7% reduction 6 miles downwind of wind complex
- Large turbines, 26% reduction 9 miles downwind (same distance from shore to turbines here)

Wave Height Decreases with Wind Speed

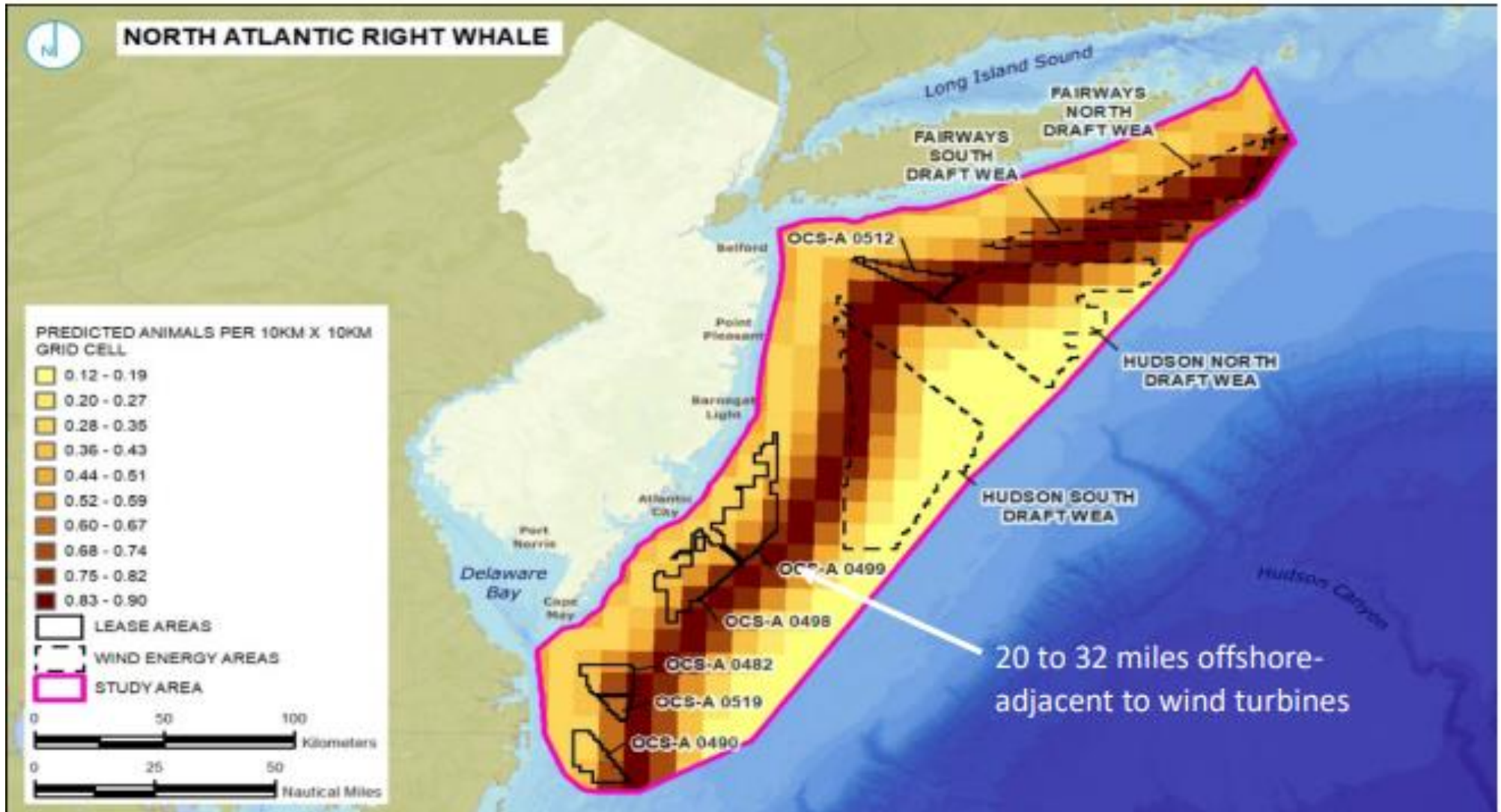
Local Air Temperature Increase: 1.1 degrees 28 miles downwind of moderate size turbines

Marine Mammal Impact-Operational Turbine Noise

Population Decline of the Critically Endangered North Atlantic Right Whale



Migration Corridor-North Atlantic Right Whale

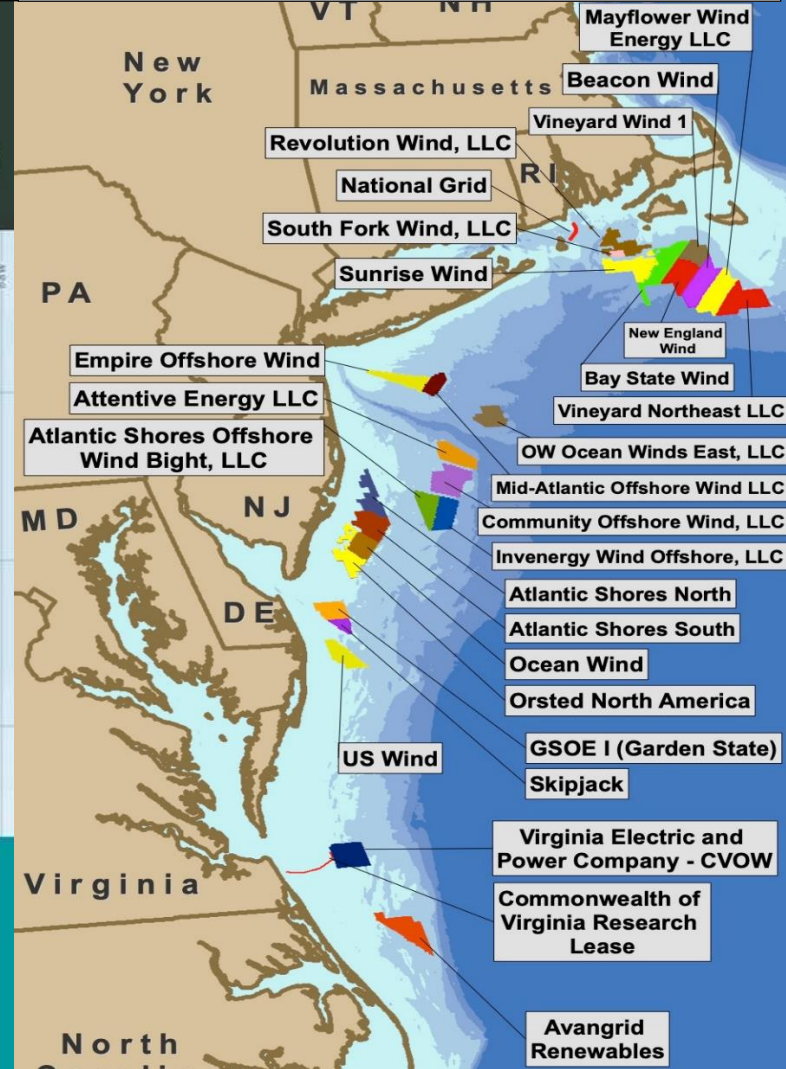


Source, NJ Offshore Wind Strategic Plan, Natural Resource Technical Appendix, Figure 21.

NOAA Map Shows North Atlantic Right Whales in Very Same Areas Targeted for Offshore Wind Development

NOAA (National Oceanic & Atmospheric Administration), Fisheries Division, 12/30/22 Map Whale Areas from notice
 “New Right Whale Slow Zone South of Nantucket, MA – Effective Through Jan 13”

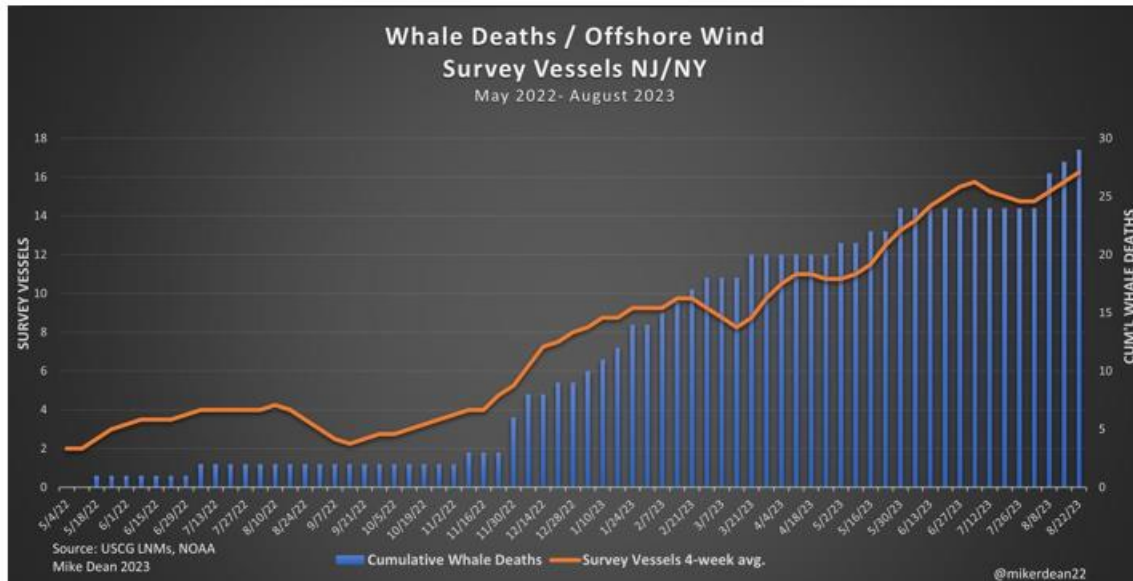
BOEM Map, 6/30/22 shows proposed offshore wind projects.



-  Red Areas = Annual Seasonal Management Area (SMA): 10 knots or less required for boats 65 feet and bigger. These speeds are also recommended for smaller boats.
-  Yellow Areas = where right whales have been sighted (* Dynamic Management Area) or heard. Recommended slow down zones for ALL vessels.
-  If a Slow Zone overlaps with a SMA, mandatory speed reductions are required.

TABLE OF WHALE DEATHS ON THE EAST COAST SINCE DECEMBER 2022

Surveying, Pile Driving



12:23

Whale Deaths Dec 1- 2022 -... Done

34	5/4/23	Whale, minke	MA
35	5/5/23	Whale, minke	NY
36	5/5/23	Whale, minke	ME
37	5/7/23	Whale, minke	MA
38	5/8/23	Whale, minke	MA
39	5/16/23	Whale, humpback	MA
40	5/15/23	Whale, humpback	NC
41	5/18/23	Whale, humpback	NY
42	5/26/23	Whale, humpback	RI
43	5/28/23	Whale, humpback	RI
44	5/31/23	Whale, humpback	NY
45	5/31/23	Whale, humpback	NJ
46	5/31/23	Whale, humpback	MA
47	6/4/23	Whale, minke	VA
48	6/11/23	Whale, humpback	MA
49	6/12/23	Whale, humpback	MA
50	6/14/23	Whale, humpback	MA
51	6/14/23	Whale, minke	NY
52	6/27/23	Whale, humpback	NY
53	6/30/23	Whale, minke	ME
54	7/2/23	Whale, minke	MA
55	7/8/23	Whale, minke	VA
56	7/12/23	Whale, minke	ME
57	7/22/23	Whale, humpback	MA
58	7/29/23	Whale, sperm	MA
59	7/30/23	Whale, minke	ME
60	7/31/23	Whale, humpback	ME
61	8/2/23	Whale, minke	ME
62	8/4/23	Whale, minke	ME
63	8/11/23	Whale, humpback	NY
64	8/12/23	Whale, humpback	NJ
65	8/14/23	Whale, humpback	NY

Increasing Underwater Noise with Turbine Power

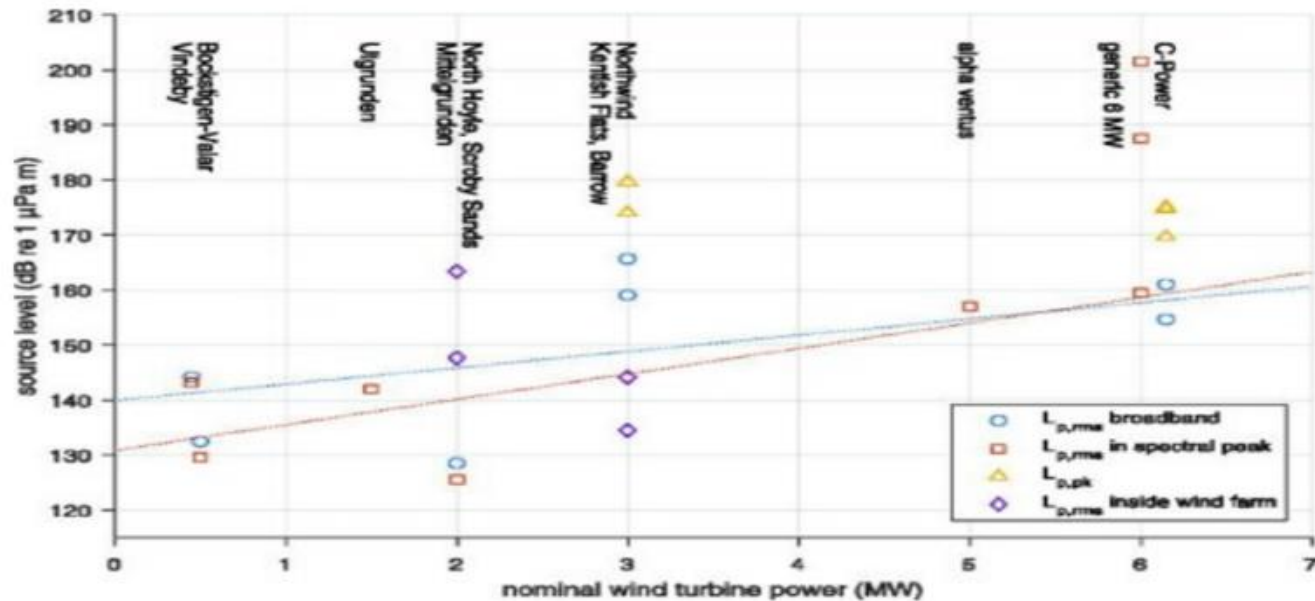


FIG. 1. (Color online) Source SPLs versus nominal wind turbine power as listed in Table I. The names of wind farms or the data source are indicated at the top of the figure. Regression lines for broadband levels (blue) and sound levels at spectral peaks (red) show the increasing trend.

a source are indicated at the top of the figure. Regression lines

Impact of Continuous, Operational Turbine Noise on the North Atlantic Right Whale **Cannot Be Mitigated!**

Primary Migration Corridor Potentially Blocked By Underwater Turbine Noise

- Corridor is 12 miles wide just off the lease area.
- Requires 22 miles for noise from 13.6 megawatt gearbox turbines to comedown to the NMFS level of 120 decibels (dB) to not disturb the whale.
- Noise levels therefore will exceed that throughout the entire 12-miles corridor, potentially blocking migration.
- Responsible Offshore Development Alliance (RODA) lawsuit related to Vineyard Wind Offshore Development 15 miles off the Massachusetts coast against NOAA claims the agency has violated Outer Continental Shelf Lands Act, National Environmental Policy Act, Clean Water Act, Endangered Species Act, Marine Mammal Protection Act, Merchant Marine Act and Administrative Procedure Act.
- NOAA ignored Sean Hayes, Chief of Projected Species Branch at the NOAA's National Northeast Fisheries Science Center, "oceanographic impacts from installed and operating turbines **cannot be mitigated** for the 30-year lifespan of project, unless they are decommissioned."

Right Whales: See them yourself:

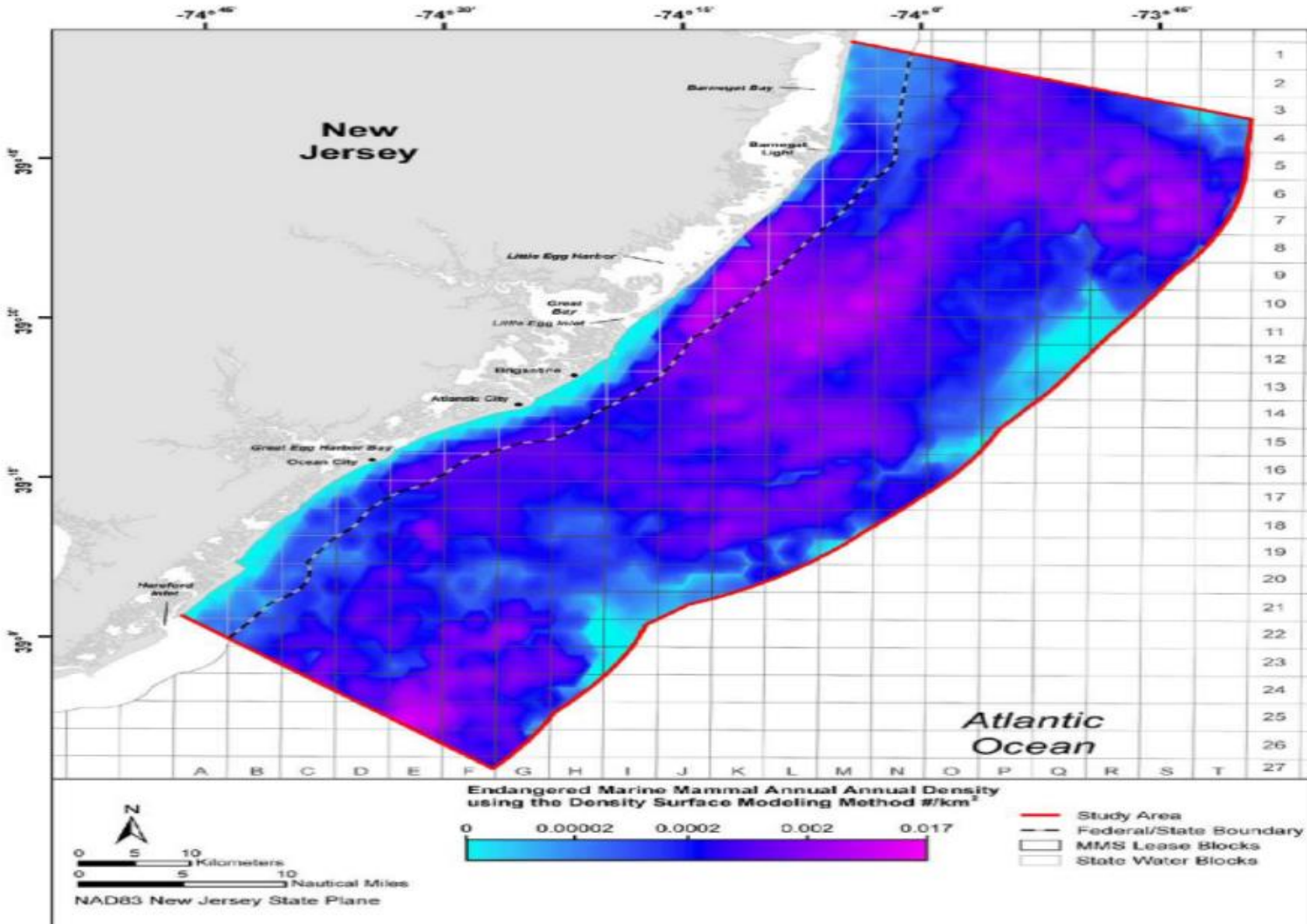


<https://youtube/byElUwZZIWw>

Fin and Humpback Whales
Potentially Driven to Shore by Turbine Noise



Fin and Humpback Whale Density



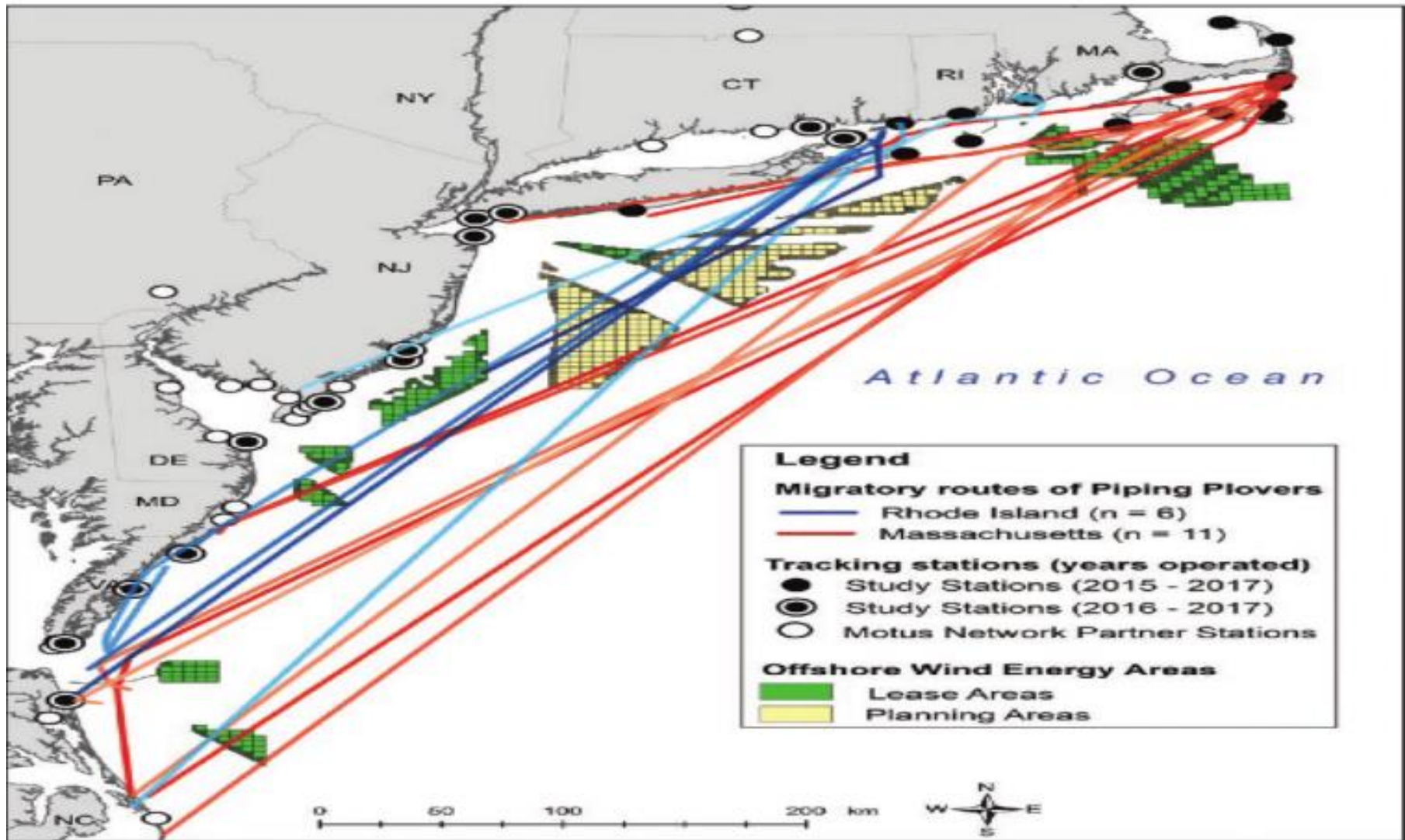
Higher
Density =
Pink Area

Goes Out to
11 Miles!

Fin and Humpback Whales

- **Noise from inner rows of turbines at 9 miles out requires 22 miles to dissipate down to the NMFS 120 DB level.**
- **Noise above that level will exist all the way to shore.**
- **Whales may avoid the entire Brigantine area, or**
- **Be driven towards shore trying to escape the noise, with potential for beach stranding.**

The Piping Plover Crossing the Wind Turbine Complex



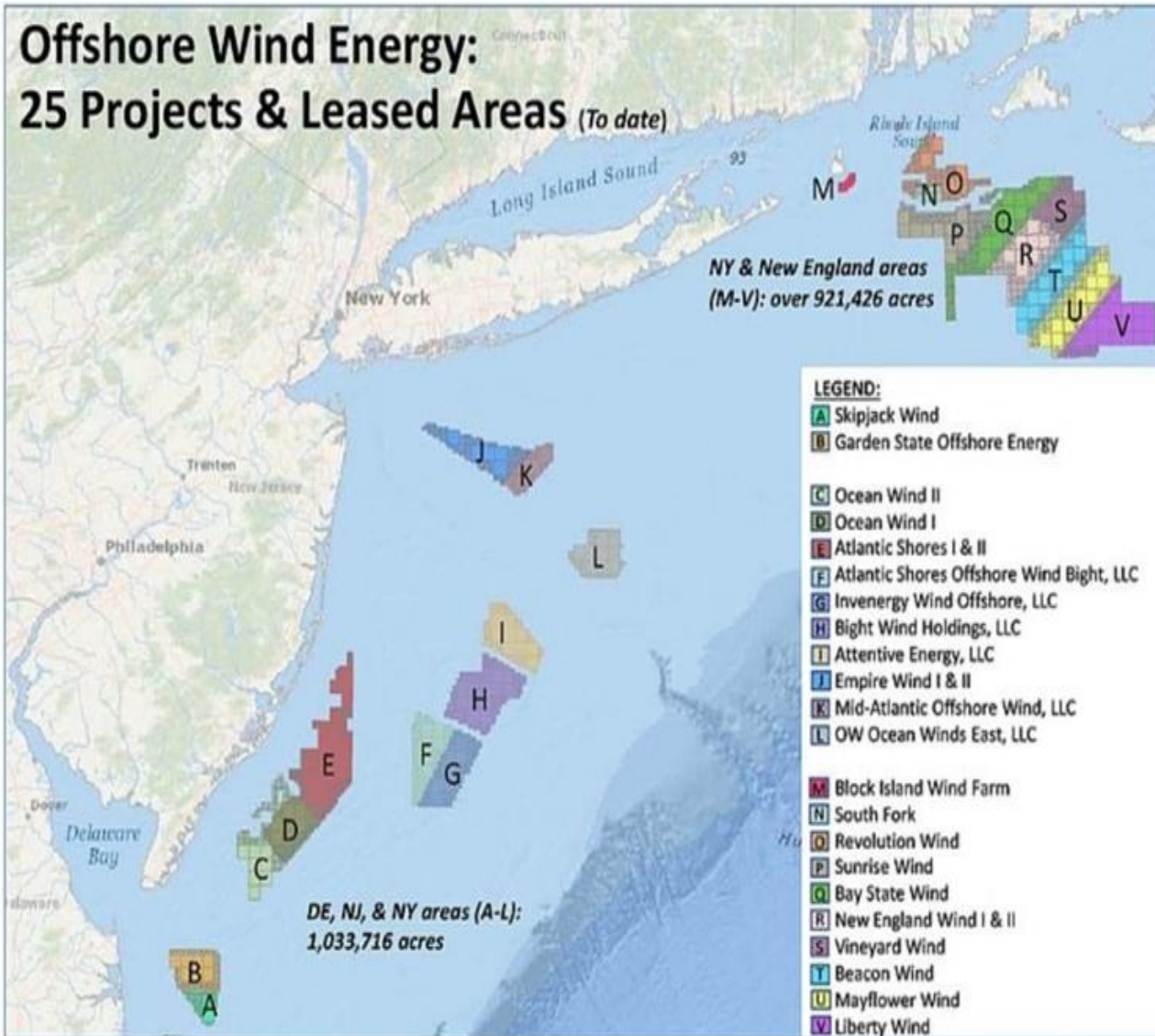
Impact on the Piping Plover

- Existence “threatened” under the U.S. Endangered Species Act, “endangered” per State law.
- Migrates offshore, north-south ^(PP1)
- Protected plover's nests in Brigantine
- Would have to cross multiple rows of turbines
- Very difficult to avoid rotating blades with 765-foot diameter, turbulent air, and a 200 mph tip speed
- Potential for high fatalities ^(PP2)
 - Estimate: 31% per year*
 - Unsupported avoidance rates being used
 - Collision models flawed – no aerodynamic effect
 - Potential Conflict with the Endangered Species Act



*Based on 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, NY, December 2014, Figure 2.25, average of Chapin, Dead Neck, Avalon, Stone Harbor results; also consistent with percent of transit area blocked by rotating blades and 2 lights per bird in and out.

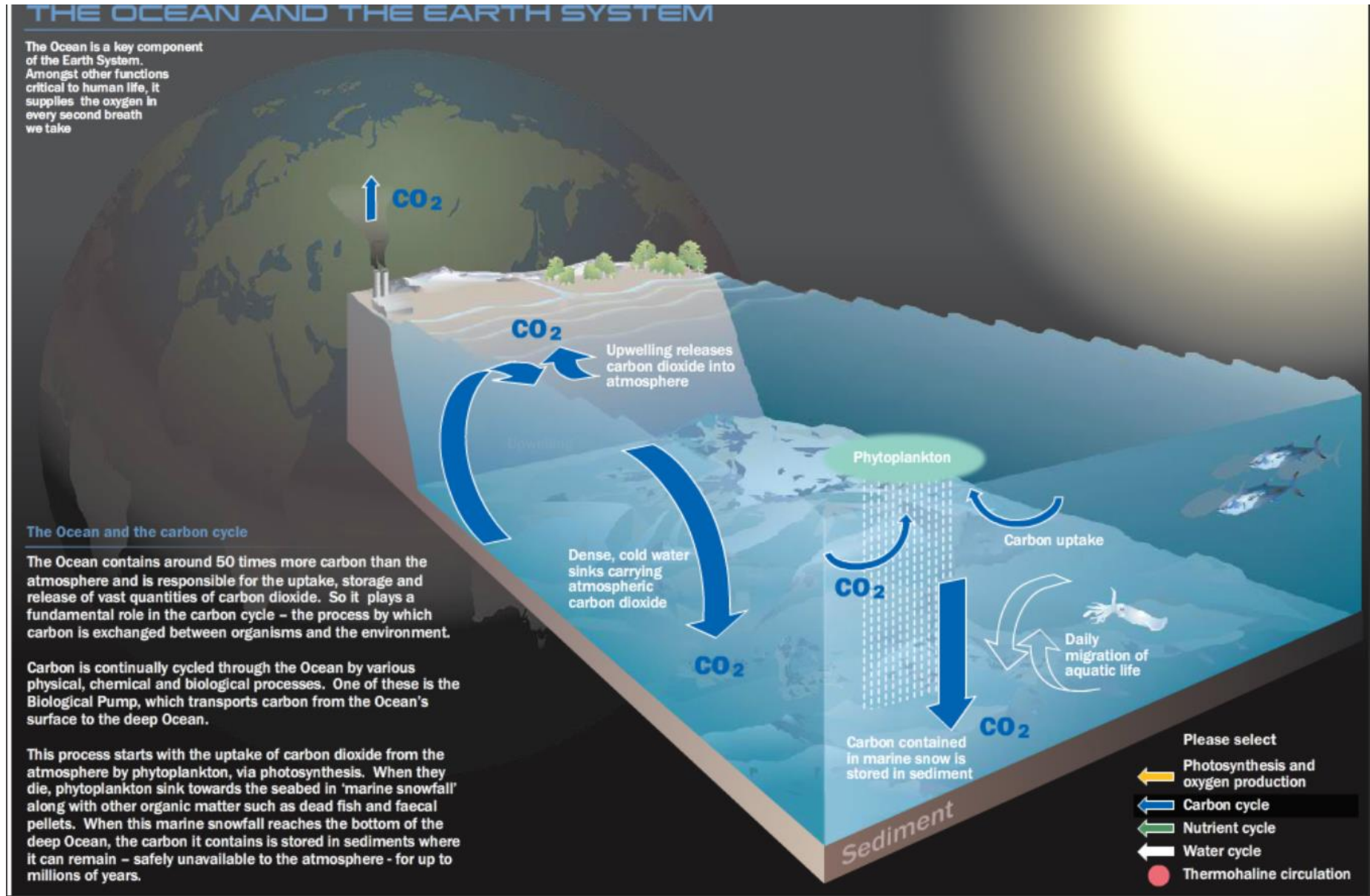
Potential Impact on the Ability of our Ocean to Clean our Air of CO2



Prepared by Clean Ocean Action, Updated June 2022 Map Source: MARCO

- As of June 2022, planned wind turbines will cover 2 million acres of our ocean’s precious continental shelf on the east coast. As more wind turbine developments get approved this number could more than double.
- The continental shelves on our planet make up less than 10% of the total area of ocean, but it is where all the plants, plankton and marine organisms exist which clean 1/3 to 1/2 of our air of CO2 and produce oxygen.
 - Studies have shown that the wind turbine blade movement will cause changes to downstream turbulence, surface wave energy, currents and surface upwelling which may impact the ocean’s efficiency in cleaning our atmosphere of CO2.

Delicate Balance of the Ocean's Ecosystem is Vital to our Planet



Large Wind Turbines are Consumers of Fossil Fuel Energy



Vestas, GE, NEG Micon turbine manufacturers do not include fossil fuel electricity consumption in their specifications, and it is not metered.

- . Wind Turbine functions that may use electricity: yaw mechanism; blade-pitch control; lights, controllers, communications, sensors, metering, data collection; heating the blades; heating & dehumidifying the nacelle; oil heater, pump, cooler, & filtering system in gearbox; hydraulic brake; thyristors; magnetizing the stator**
- . Electricity may be needed to use the generator as a motor to spin the blades and rotor shaft to prevent warping when there is no wind.**

Intermittency of Wind Power Increases CO2

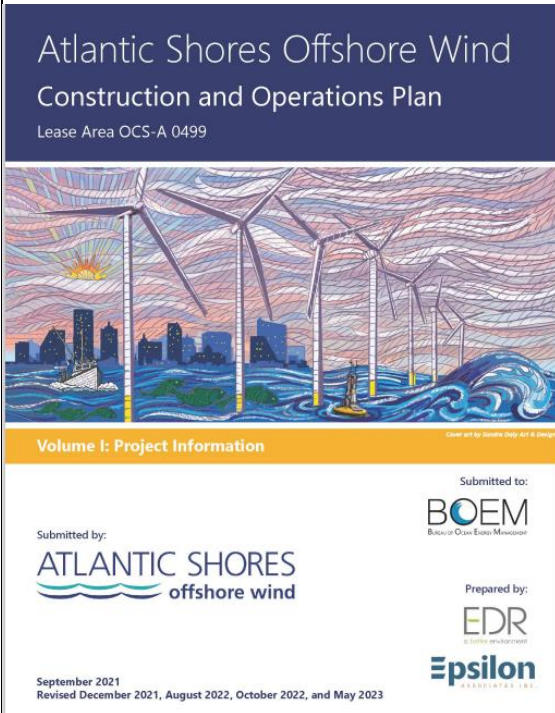
- Wind blows only intermittently and variably.
- Current Solutions for Intermittency:
 - Conventional power plants must run all the time to make sure the lights don't go dark.
 - Conventional power plants must ramp up and down the output (cycling).
- This generally causes an increase in emissions such as a car stuck in stop-and-go traffic.
- Bentek 2009 Energy Study: “Cycling” of Colorado’s coal fired plants, 94,000 more pounds of carbon dioxide were generated and in Texas, cycling fossil fuel power plants due to increased wind energy resulted in a slight savings of CO2 (600 tons) in 2008 and a slight increase (1100 tons) in 2009.
- A 2021 study in Science Direct concluded that “Wind, as a variable renewable energy source, **is not a sustainable independent source of energy and is incompatible with a low-carbon grid** unless it is combined systemically with balancing power that is low-carbon or groundbreaking improvements in battery energy storage systems are found.”
 - Wind displaces far less emissions than typically assessed today.
 - Wind does reduce emissions but insufficiently to qualify as sustainable.

<https://www.wsj.com/articles/SB10001424052748703792704575366700528078676>

<https://www.sciencedirect.com/science/article/pii/S030626192101093X>

Offshore Wind Developer Dubious Claims of GHG Reduction

What Atlantic Shores, LLC Says:



Benefits, Effects, Environmental Protection Measures

“For every megawatt of power generated by the Projects, there will be an associated reduction in GHG emissions, reported as carbon dioxide equivalents (CO₂e), by approximately 2,625 tons per year.”*

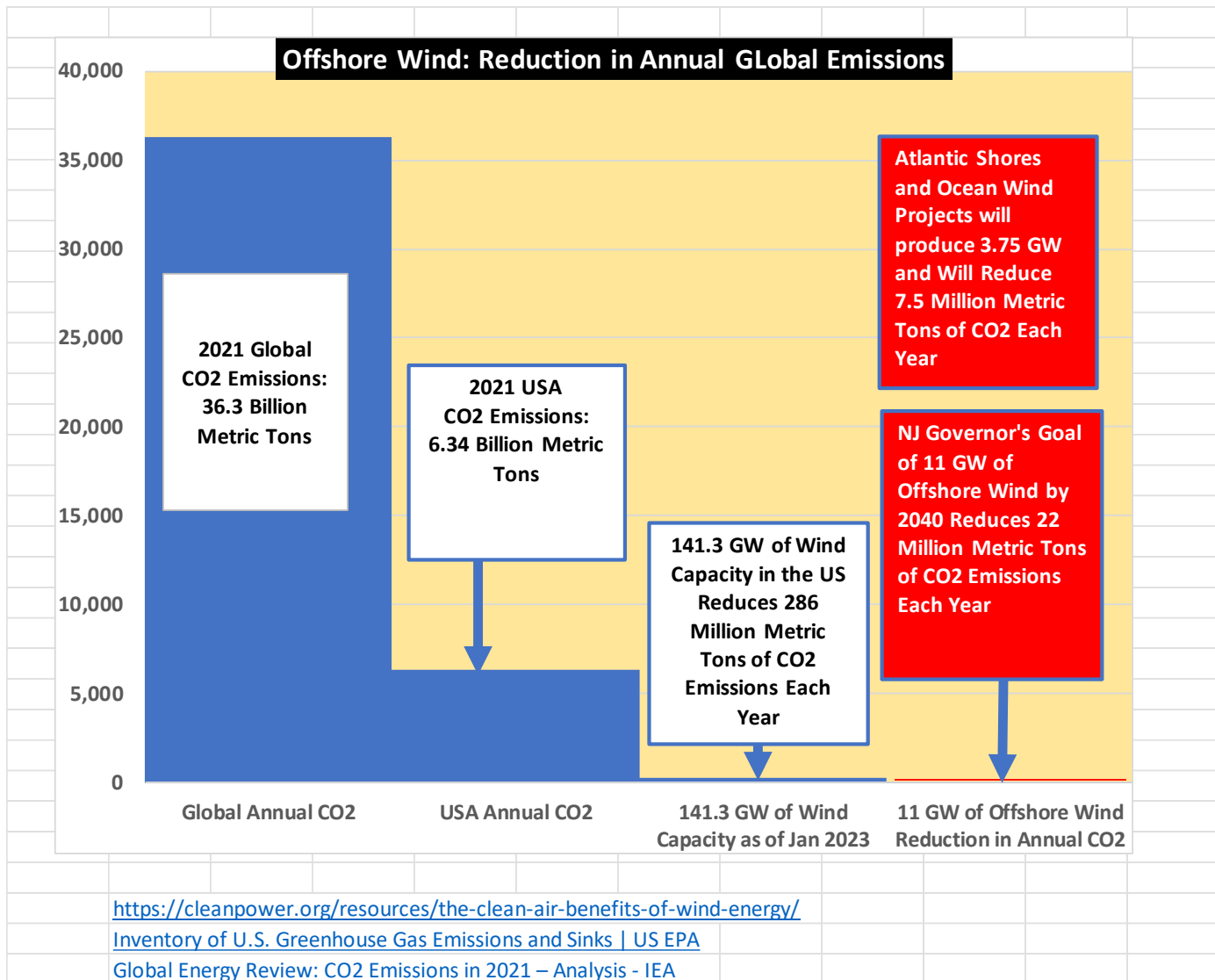
*Avoided air emissions estimates are based on the latest-available non-baseload output emission rates for the Reliability First Corporation (RFC) East subregion as published by the Environmental Protection Agency (EPA 2020), assuming a 50% capacity factor and 4% transmission losses for the Projects.

[Atlantic Shores Offshore Wind \(boem.gov\)](https://www.boem.gov)

Pg 9/224, E-9,

What is Excluded/Included in the GHG Reduction Calculation?

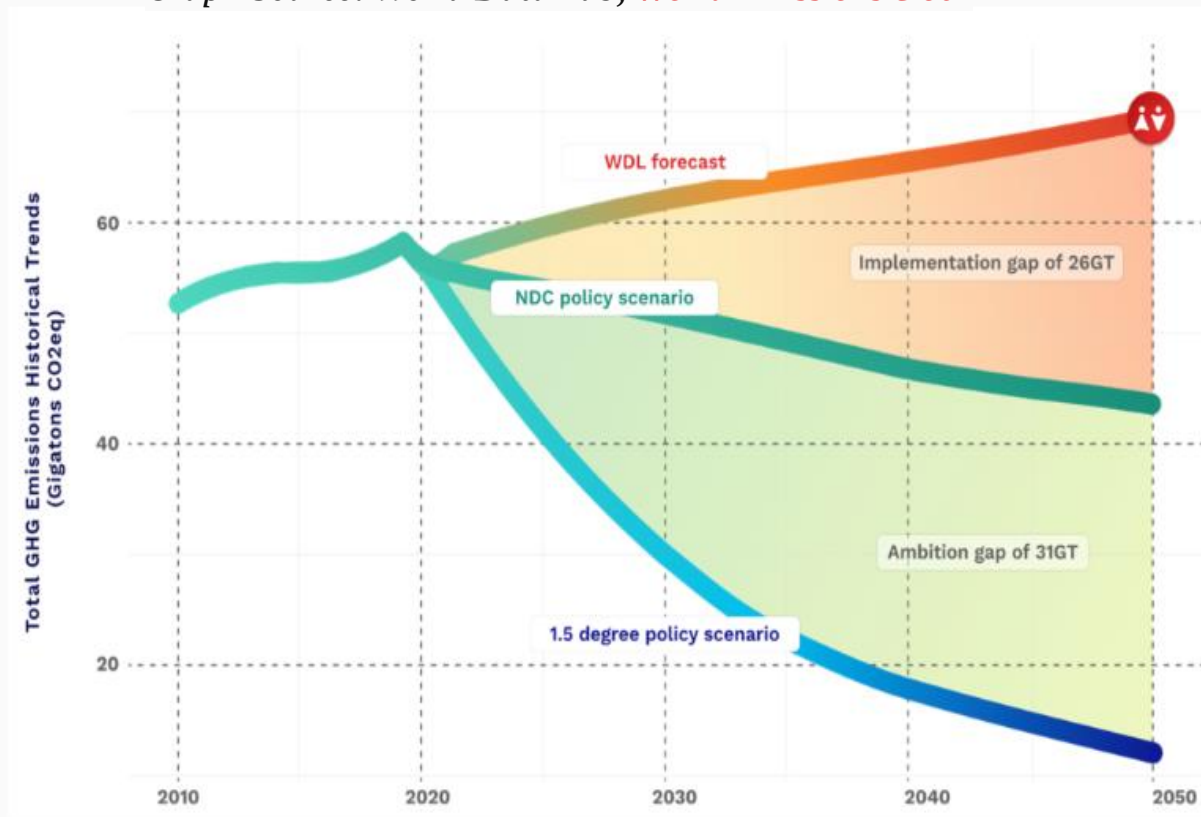
- ↑↑ Emissions of ocean vessels and vehicles during construction, operations and decommissioning phases?
- ↑↑ Emissions of inefficient back up fossil fuel power for intermittent wind?
- ↑↑ Emissions from fossil fuel power used for running the turbines?
- ↑↑ Emissions from fossil fuels used in the operation of turbines and substations?
- ↑↑ Reduction in the ocean’s efficiency in cleaning our atmosphere of CO₂?
- ↑↑ Leading Edge Erosion of Blades



Exact calculation for Wind Energy CO2 reduction is suspect in that Offshore Wind Developers have not yet begun to measure actual operational impact on CO2. Despite any flaws in the overestimation in CO2 reduction, the removal of global CO2 is negligible.

The Difficult Task of Avoiding Severe Climate Change Effects

Graph Source: World Data Lab, *World Emissions Clock*



According to the World Data Lab, GHG emissions will total 58 Gigatons (GT) in 2022.

The Paris Agreement target is to maintain the temperature at or below 1.5 degrees C above pre-industrial levels. The required level in GHG emissions is represented by the bottom line on the graph. Crossing this 1.5 degree C threshold risks unleashing far more severe climate change effects on people, wildlife and ecosystems.

The middle line is the National Determined Contributions (NDCs) which is the level of GHG emissions if annual emission reduction commitments by countries are

achieved. Countries will need to reduce an **ADDITIONAL 31 billion gigatons** of GHG over and above their NDCs to achieve at or below Paris Agreement target. NDC policy commitments were not achieved in both 2021 and 2022.

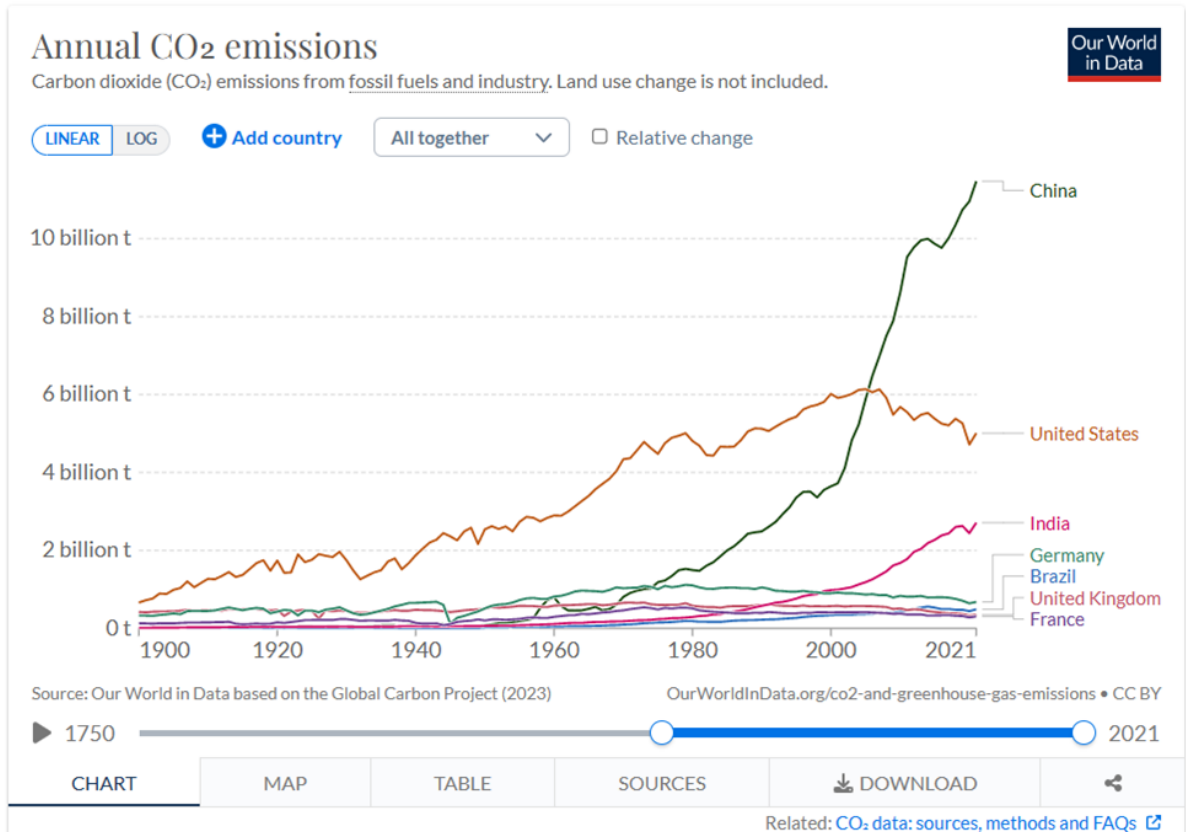
The top line is the projection of global emissions based on current economic growth, demography, and continued emissions intensity trends. **Example of this wicked problem: If the emissions were eliminated from all 1.5 billion cars in the world, annual GHG would be reduced by only 6.9 GT. Meanwhile, it is projected that annual global airline emissions will increase from 9 GT to 27GT by 2050.**

[Tracking emissions by country and sector \(brookings.edu\)](https://www.brookings.edu/press-releases/2022/07/22-tracking-emissions-by-country-and-sector/)

Worse Than Anyone Expected': Air Travel Emissions Vastly Outpace Predictions - The New York Times (nytimes.com)

Will the Offshore Wind Project Solve Our Problems at the Jersey Coastal Towns?

- Do You Believe CO2 Omissions Cause Climate Change?
- The Impact of CO2 Emissions in China and the Rest of the World is Global.
- Our Ocean will continue to rise, flooding will continue, and our severe weather events will persist on the NJ Coast.



NO GUARANTEES FROM WIND DEVELOPERS

Do Offshore Wind Developers guarantee that their wind turbine projects will stop our ocean from rising, stop our flooding, and reduce severe weather events at the Jersey Shore?

NO!



Ocean Wind Pro-NJ
Grantor Trust

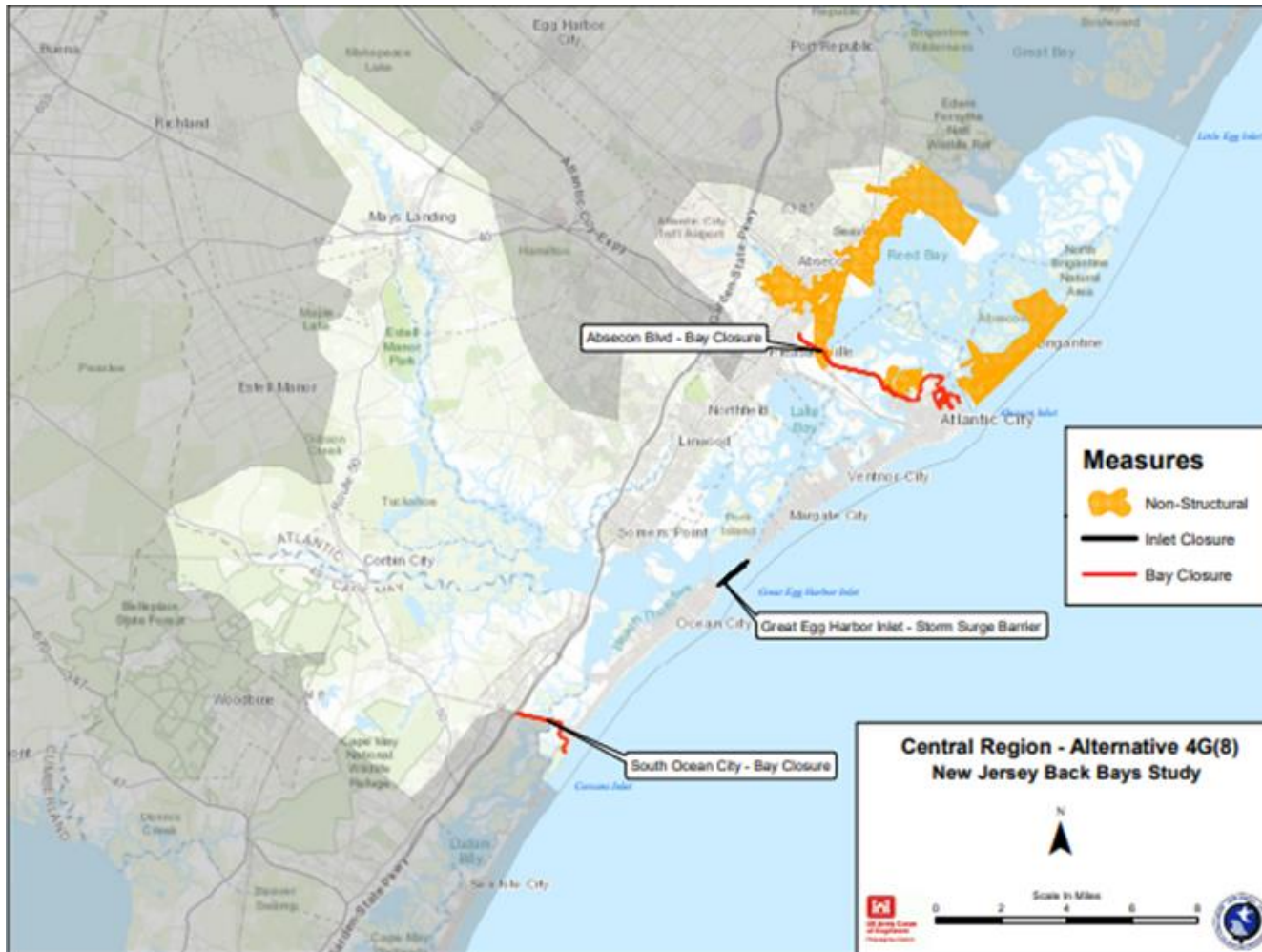
Instead, they are handing out “grants” to Coastal Towns so they can update local infrastructure to mitigate their flooding which will be paid for by electricity ratepayers!

“During this round of funding, the Trust earmarked \$3.5 million in support of coastal infrastructure and resiliency projects that aim to help mitigate the impacts of severe weather occurrences and flooding to help increase resiliency and help municipalities and counties better respond to natural disasters.” **Oct 2022**

[Ocean Wind Pro-NJ Grantor Trust Receives Unexpected Number of Funding Requests from Coastal Towns for Local Coastal Resiliency Projects - Ocean Wind Pro-NJ Grantor Trust \(pronitrust.org\)](https://www.pronitrust.org/Ocean-Wind-Pro-NJ-Grantor-Trust-Unexpected-Number-of-Funding-Requests-from-Coastal-Towns-for-Local-Coastal-Resiliency-Projects)

Addressing New Jersey Coastal Issues

US Army Corps of Engineers, *New Jersey Back Bays Coastal Storm Risk Management Draft Integrated Feasibility Study and Tier 1 Environmental Impact Statement, 2021*



NJ Coast Issues: Rising Ocean, Sinking Land, Slowing Gulf Stream

“Paradigm shift” to industrial flood control – proposed storm surge barriers, cross-bay barriers, floodwalls, and levees to prevent bay flooding from rising sea levels and elevation of 18,000 structures.

<https://www.nap.usace.army.mil/Portals/39/docs/Civil/NJBB/Draft-Report/TSP-Map-Atlantic-CMC-August-2021.pdf?ver=HhpM3MeYOMuPvENdnhXX6Q%3d%3d>



Robert Kopp, et al. from Rutgers University in “The Future Sea Level in New Jersey”

“It is critical that the state and coastal communities develop resilience plans that are robust to the range of possible futures the state might face. A regional approach requires increased communication, provides opportunities for collaboration and facilitates the pooling of resources to complete large-scale projects that are infeasible for individual entities.” <https://impact.rutgers.edu/the-rising-tide/>

Rutgers Solutions:

- **Relocating development away from the shore and/or exposed areas**
- **Blue Acres program**
- **Accommodating natural processes by continuing occupancy and adjusting to the hazard (houses on pilings)**
- **Protecting existing infrastructure in place**
- **Green infrastructure such as local soils, plants, and animals such as oysters**
- **Dredging of clean sediment accumulated in navigation channels to fill up drowning wetlands**
- **Stormwater green infrastructure**
- **Porous paving**

References: Endangered Whales

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W6. Van Der Hoop et al., Foraging Rates of ram-filtering North Atlantic right whales, Functional ecology, Volume 33, pages 1290-1306. <https://core.ac.uk/download/pdf/323987541.pdf>

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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,

PP2. 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

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Offshore wind could shrink Atlantic City's surfclam revenue, study says - WHYY